



Easy HD Expressway!

HV-110 DVB-T HAM TV Receiver Box

Quick Installation Guide

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Package Contents

- HV-110 Receiver Box
- 5V DC adaptor
- CVBS & Line-out cable
- Remote Controller (either type A or B)
- Firmware version code: v0.0.1.72.44

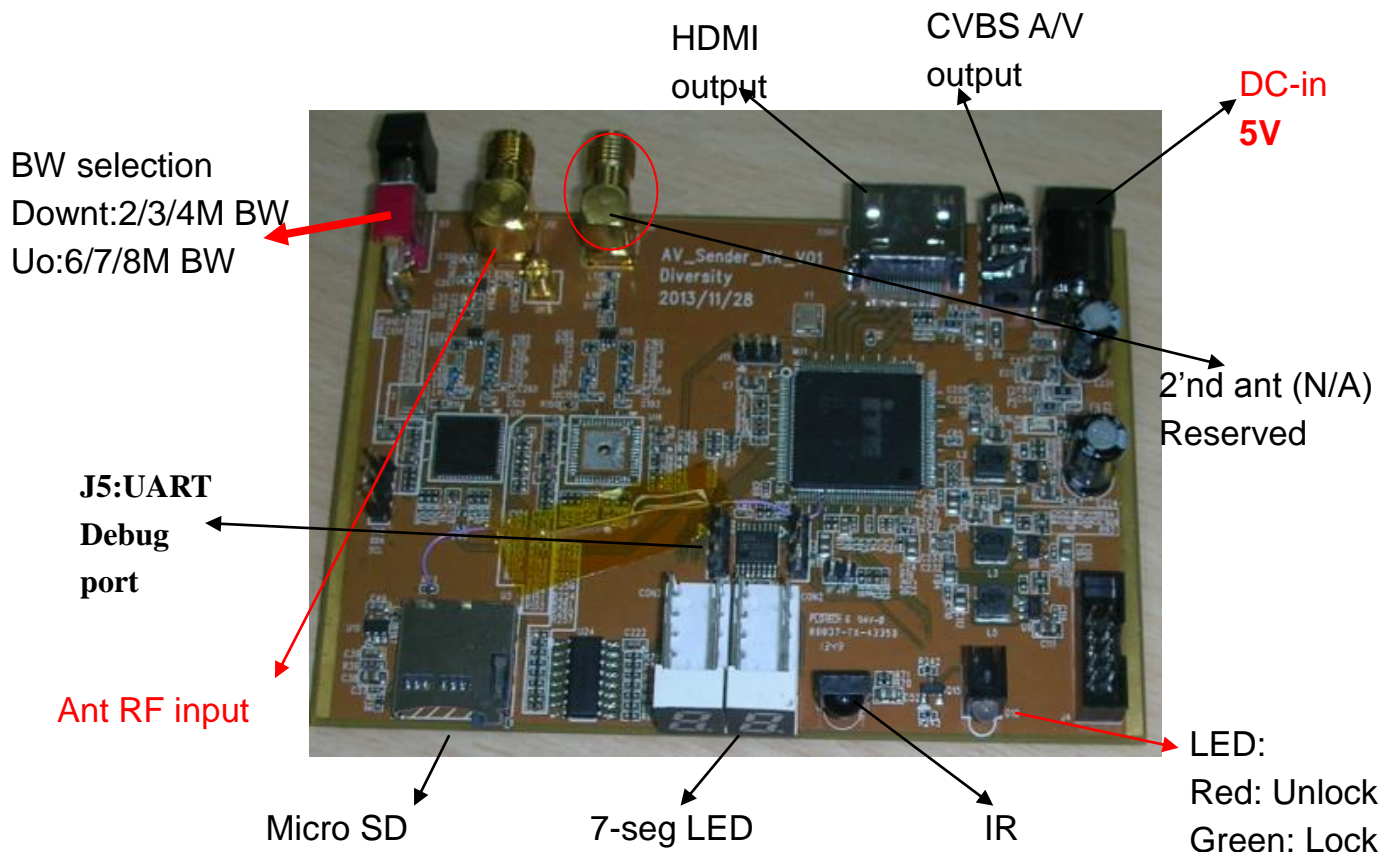
Front Panel View



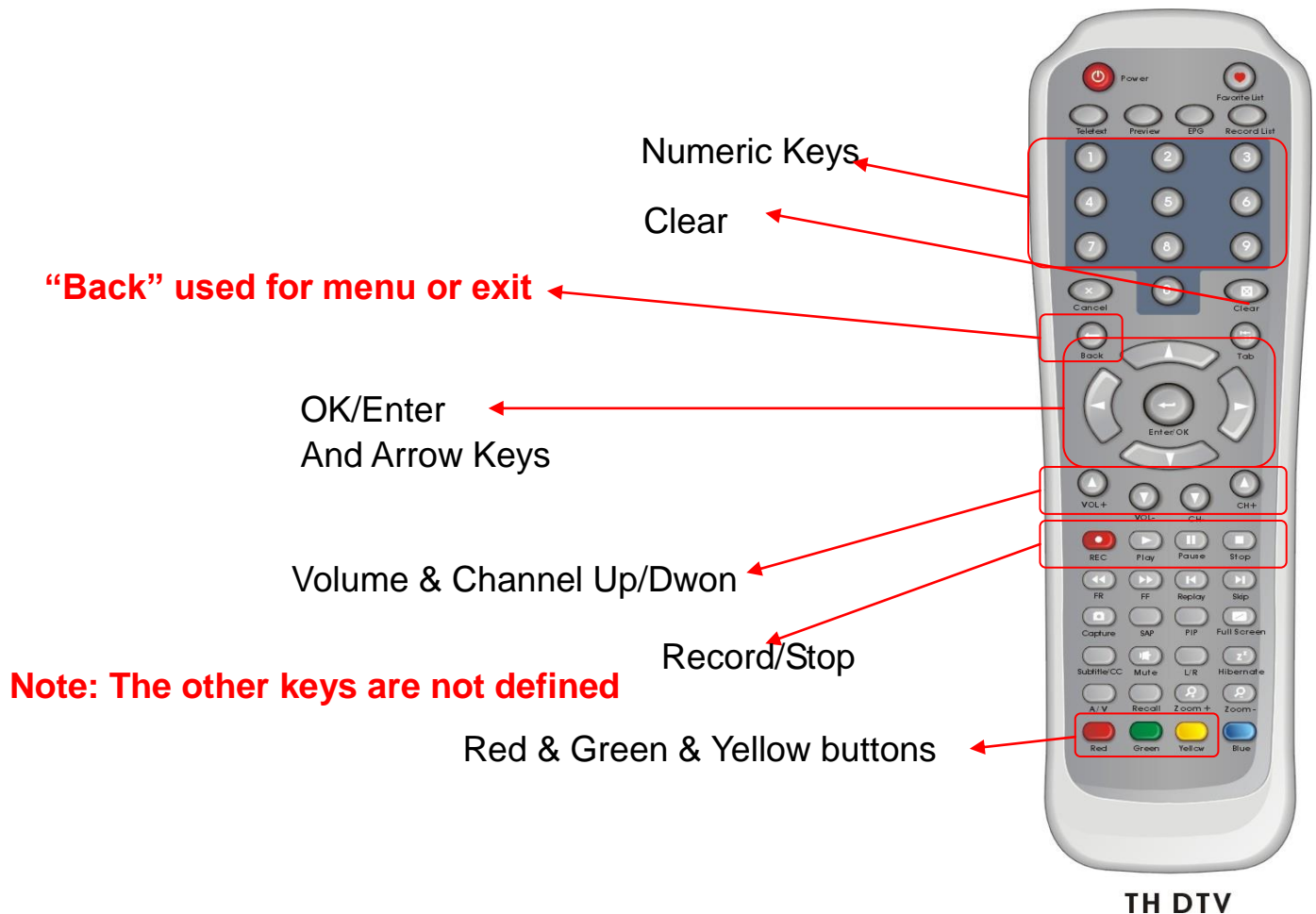
Back Panel View



Board View



IR Remote Controller-TYPE A



Fill Battery to IR Controllers: AAA x 2 pcs



IR Remote Controller-TYPE B

Power button
Reset to PAL CVBS display mode

OK/Enter
And Arrow Keys

menu and exit keys

Note: The other keys are not defined

Red & Green & Yellow buttons



Remove Battery Protector



Remove the thin plastic film

Set Bandwidth and Power on

First of all, please set the bandwidth first.

HV-110 can support 2/3/4 MHz or 5/6/7/8 MHz bandwidth DVB-T signal, but the mode should be selected before power on the box. Bandwidth mode can not be changed after powered on. If you want to change bandwidth support, please power off and power on the receiver box.

Apply DC 5V to either the power jack or the micro-USB connector. One and only one DC power source is enough. Power jack and the micro-USB connector are connected together.

If you are using micro-USB connector, please note the arc is upward



Connect RF-in and the display output

Feed the RF-in to the right SMA connector.

Both HDMI and CVBS output are supported simultaneously, but the mechanical design allows only

one to be connected.



CVBS and
Line-out

HDMI
output

RF-in

Channel Scan

It's necessary to do channel scan in the first time usage.

When the box is powered on well, click on the IR "Back"/"Menu" key to popup the menu



Select Installation. There are three modes to scan channel, auto scan, manual scan and manual input.

The auto scan mode will scan a predefined channel frequency list to find TV service.

The manual scan mode scans a channel specified by the user input.

The manual input mode allow user to specify the program channel frequency, bandwidth and audio/video/PMT/PCR PID's directly..

Channel Scan-Auto mode



1. You may select a Country to do auto scan
2. Country: ATV-2/3/4M is for Europe DATV 2/3/4 MHz BW channel list auto scan
3. Country: ATV-6M is for Europe DATV 6 MHz BW channel list auto scan
4. Country: ATV(US)-2/3/4M is for USA DATV 2/3/4 MHz BW channel list auto scan
5. Country: ATV(US)-6M is for USA DATV 6 MHz BW channel list auto scan
6. Click on Remote Controller "Red" button to start auto scan.

ATV-2/3/4M Channel list

| Frequency(MHz) | Bandwidth(MHz) |
|----------------|----------------|
| 423.000 | 2 |
| 423.000 | 3 |
| 434.000 | 2 |
| 434.500 | 2 |
| 436.000 | 2 |
| 436.000 | 3 |
| 436.500 | 2 |
| 437.000* | 2 |
| 440.000 | 3 |



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| | |
|---------|---|
| 440.000 | 2 |
| 515.000 | 2 |
| 560.000 | 2 |
| 604.000 | 2 |

* 437/2M is added from version **V0.0.1.71.4**

ATV-6M BW Channel list

| Frequency(MHz) | Bandwidth(MHz) |
|----------------|----------------|
| 515 | 6 |
| 525 | 6 |
| 535 | 6 |
| 560 | 6 |
| 580 | 6 |
| 604 | 6 |
| 612 | 6 |
| 624 | 6 |

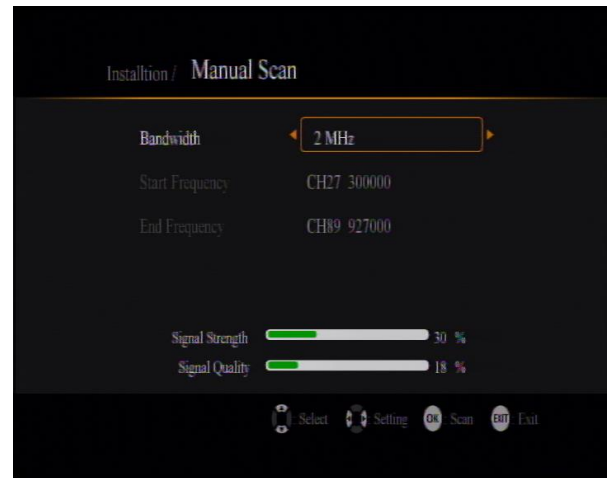
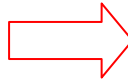
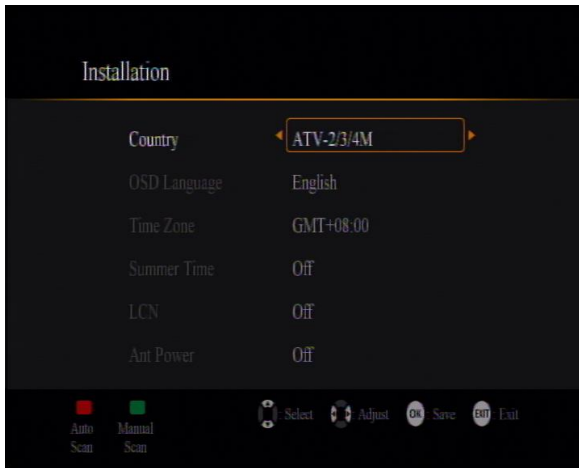
ATV(US)-6M BW Channel list

| Frequency(MHz) | Bandwidth(MHz) |
|----------------|----------------|
| 423 | 6 |
| 429 | 6 |
| 435 | 6 |
| 441 | 6 |

ATV(US)-2/3/4M BW Channel list

| Frequency(MHz) | Bandwidth(MHz) |
|----------------|----------------|
| 423 | 2 |
| 423 | 4 |
| 429 | 2 |
| 435 | 2 |
| 438 | 2 |
| 438 | 4 |
| 439 | 2 |
| 439 | 4 |
| 441 | 2 |

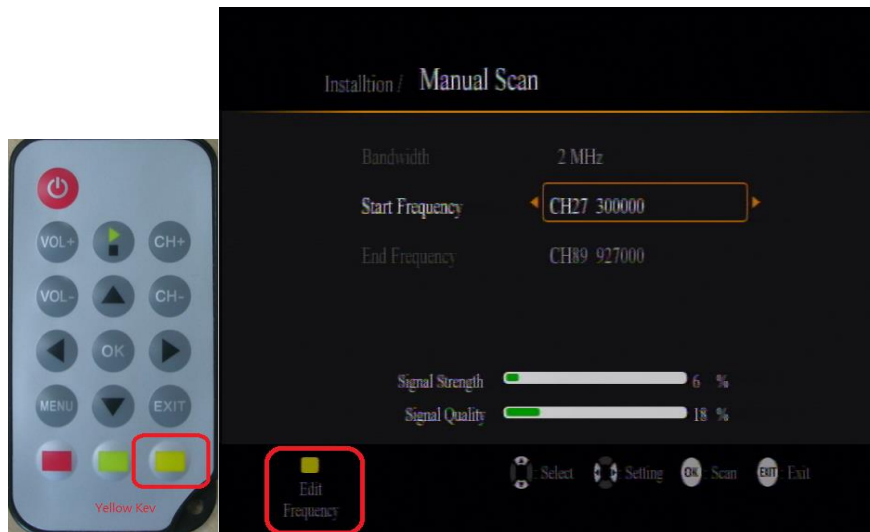
Channel Scan-Manual mode



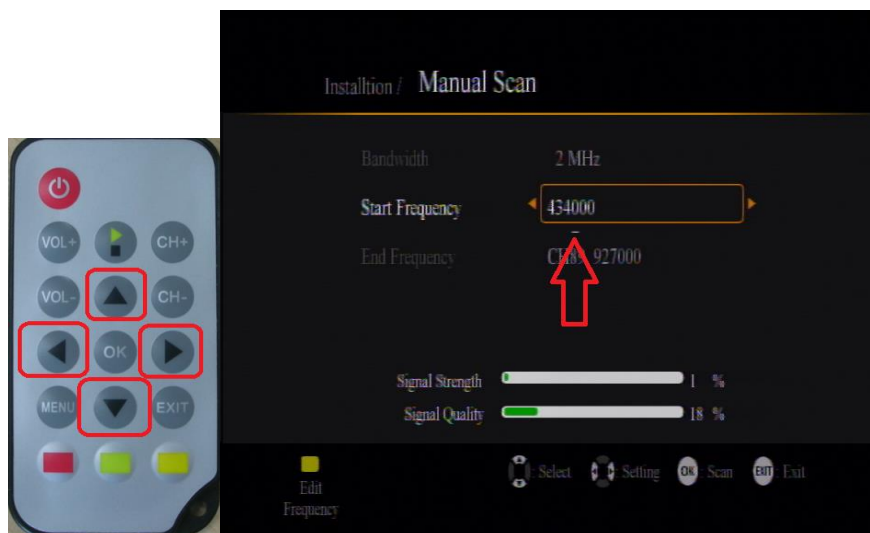
1. In installation menu, if click on Remote controller “Green” button, Manual Scan menu pops up.
2. Select the bandwidth by arrow keys
3. Specify the channel frequency manually,
 - A. Type-A RC, you may input with numeric keys (0~9)



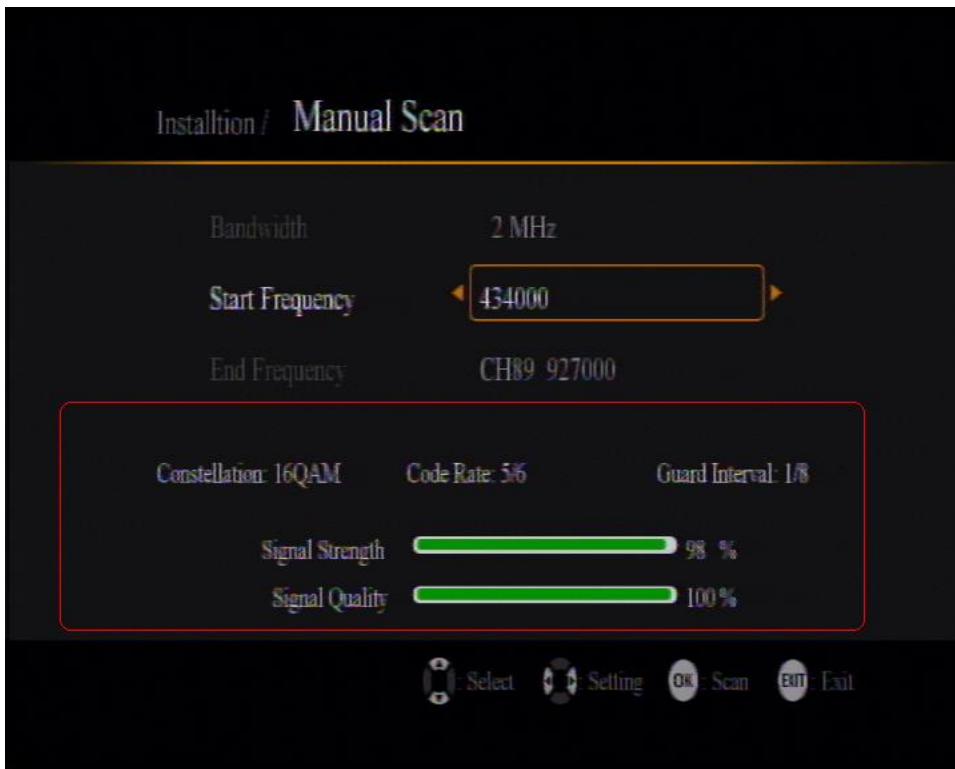
- B. Type-B RC,
 - i. please click on Yellow key first



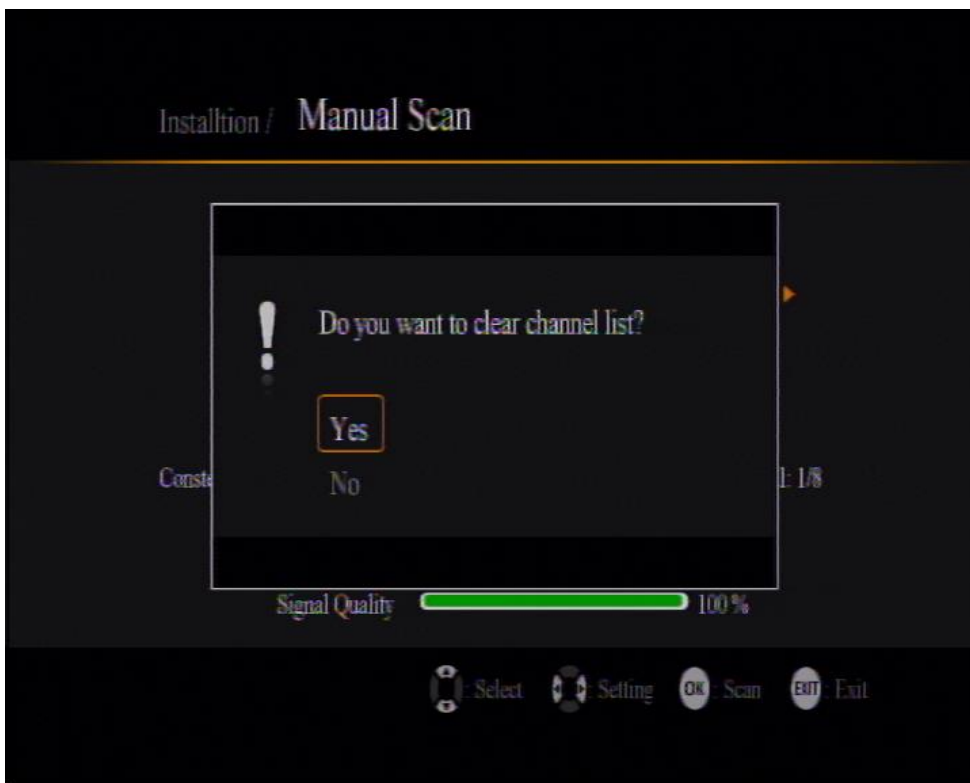
- ii. use arrow keys to edit the start channel frequency.



4. Don't care about "End Frequency" , which will be ignored
5. If the input channel frequency can be locked well, the transmission parameters (TPS), signal quality and strength will be shown, as show below. **You may adjust antenna direction to optimize the reception here.**



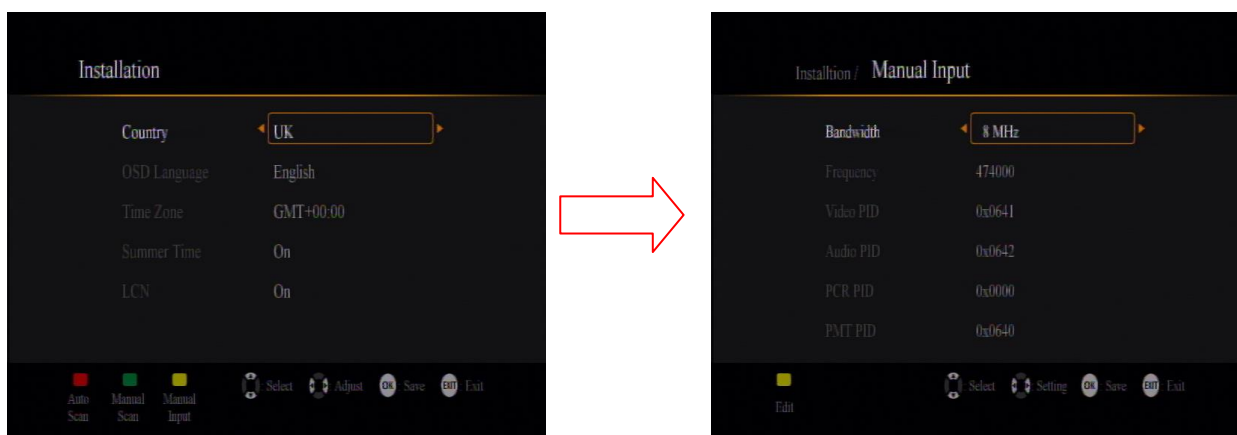
- Press “Enter/OK” to scan the specified channel, it will prompt a message to clear the old program list. You may select “Yes” to continue.



When scan is done and a service is found, it will start to play the first service found.



Channel Scan-Manual Input



1. In installation menu, if click on Remote controller “Yellow” button, Manual Scan menu pops up.
2. Select the bandwidth by arrow keys
3. Specify the channel frequency manually,
 - A. Type-A RC, you may input with numeric keys (0~9)



B. Type-B RC,

i. please click on Yellow key first



ii. use arrow keys to edit the start channel frequency.



iii. Click “OK” button when the frequency input is done.

4. Video/Audio/PCR/PMT PID’s are specified in HEX, and please click on “Yellow” button to edit the PID’s with arrow keys, as described above.

Note:

- A. If PCR PID is 0, it’s assumed PCR PID is the same as VPID PID. (That’s the case in general.)
- B. The default PID’s are set to the same as HV-10x and HV-20x.
- C. While tuning a service/program, you may click on “Yellow” button to learn the signal statistics and the PID’s of current service/program.
- D. In “Manual Input” mode, PAP/PMT mismatch handling mechanism is disabled.

Channel PAT Changed

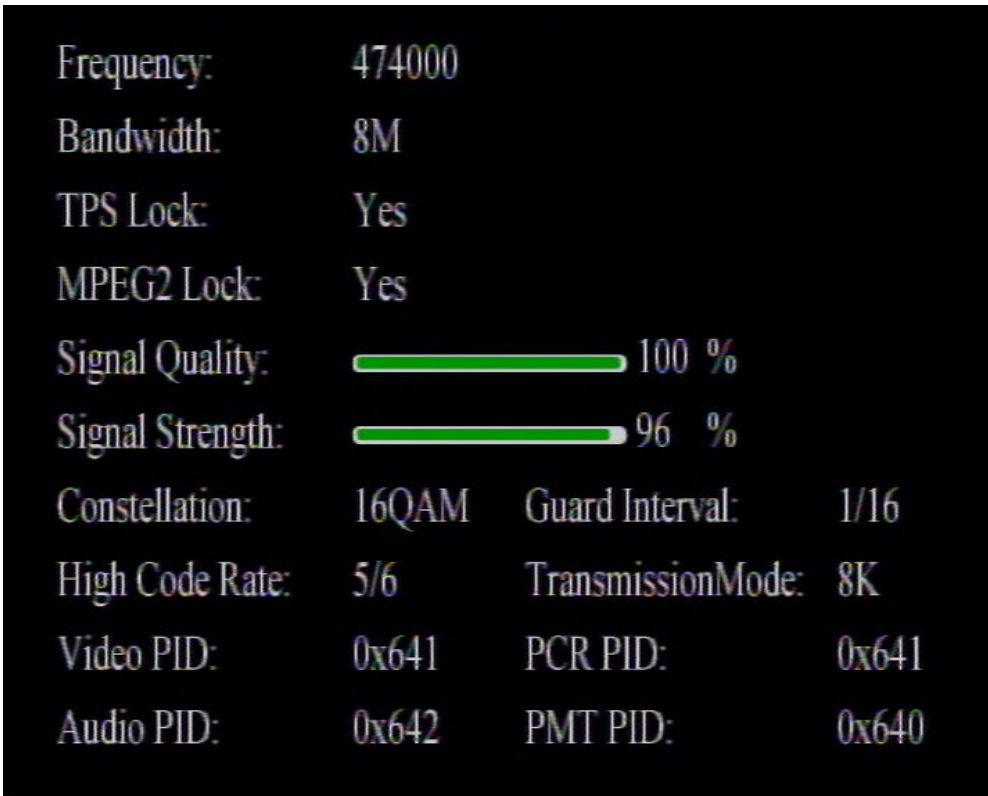
When the source video of the channel is changed and if the PAT version code is different from the previous one, you may need to do channel scan again. Typical example is that the transmitter is changed from HV-100 to DC-101 or any other Tx devices.

If you start to play TV, and the following message pop up, please click on “OK” to do channel scan. (PAT is short for Program Association Table in a video transport stream.)



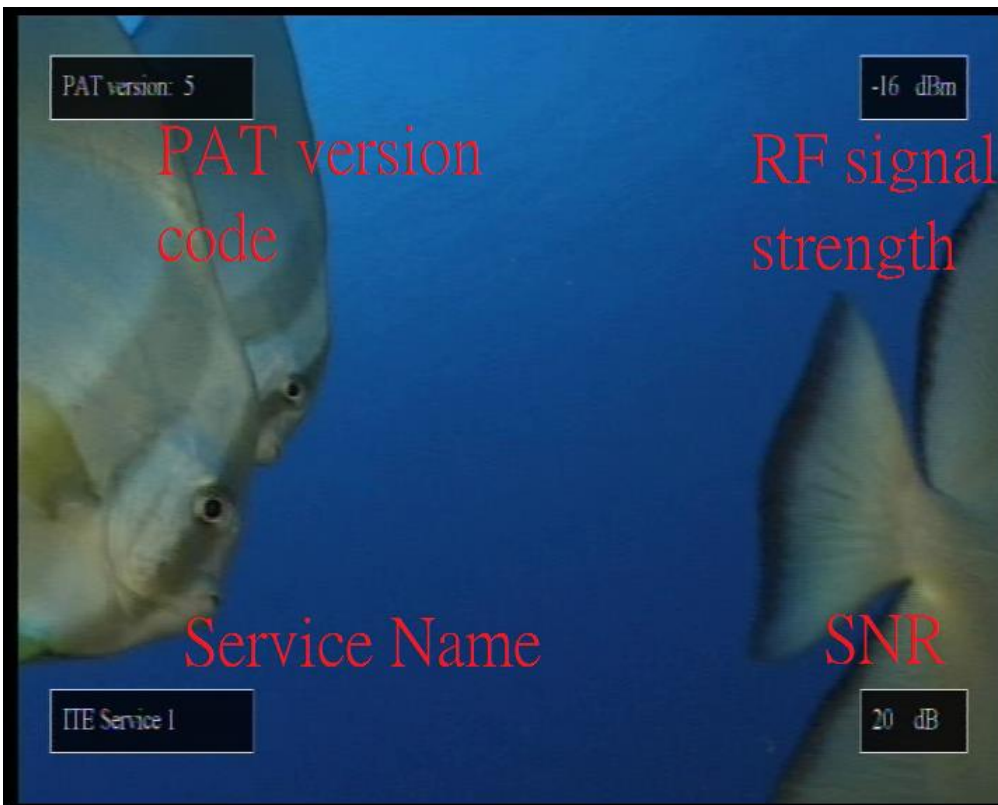
Show Signal Statistics

When watching TV, you may click on “Yellow” Key to pop up simple signal statistics for checking the transmission parameters or optimizing antenna direction.



You click on “Back”/”Exit” or “Yellow” key to close the signal statistics display, and show Signal OSD only service name (call sign), signal strength and SNR

You click on “Back”/”Exit” or “Yellow” key to close Signal OSD and return to TV only.



You may also click on “Green” Key to pop up detailed signal statistics info, as shown below.



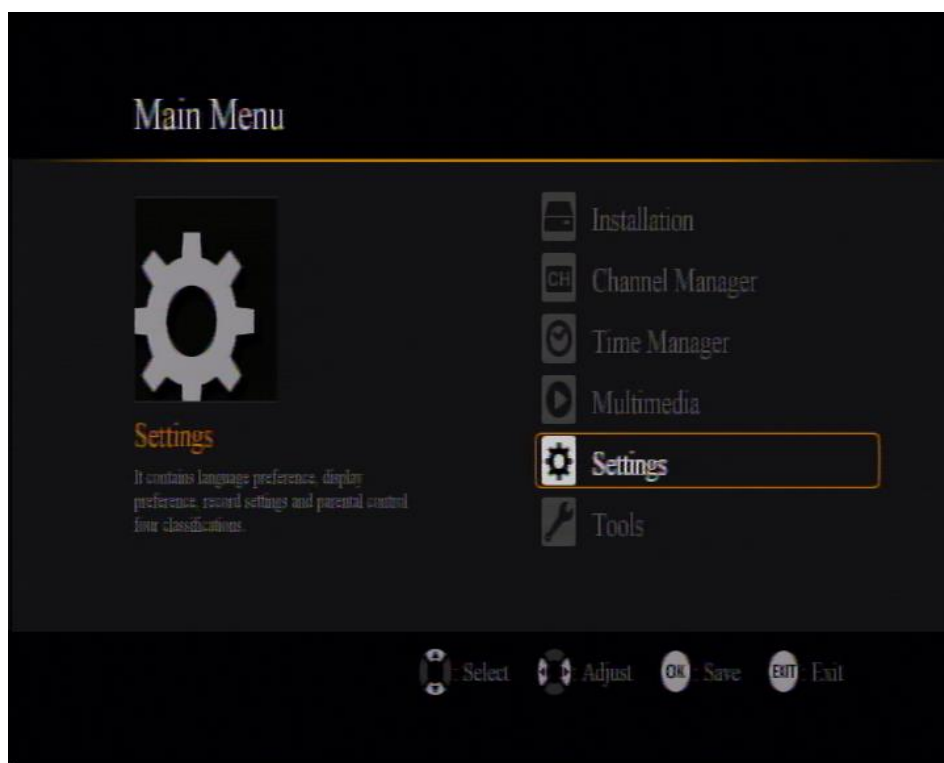
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“Back”/”Exit” or “Green” key will switch to show OSD, then click again to return to TV only.



Set Display Preference: Display Mode

You may set the display output resolution and aspect ratio in this configuration option.
Click on the IR “Back”/”Menu” key to popup the menu



Select Settings



Select Display Preference



When using CVBS AV, the display mode should be 576i50(PAL) or 480i60(NTSC)

The video output should be "CVBS"

If only HDMI output is used, you may set any Display Mode which is supported by the HDMI display.

Note 1:

For firmware version from 1.71.2 (released on 2014/4/30):

If the display mode is set incorrectly, and the display is out of order, please click on the "Clear" key of the Type-A RC or "Power" key of the Type-B RC to reset the display mode to 720i50 PAL mode.



Note 2:

Because your HDMI display may not support CVBS display modes, like 720x576i/720x480i, you may fail to set HV-110 720x576i/720x480i mode if your HDMI display attached.

You may change another HDMI display. Or, you can try in this way,

- remove HDMI cable, and connect CVBS cable to CVBSdisplay.
- power on HV-110

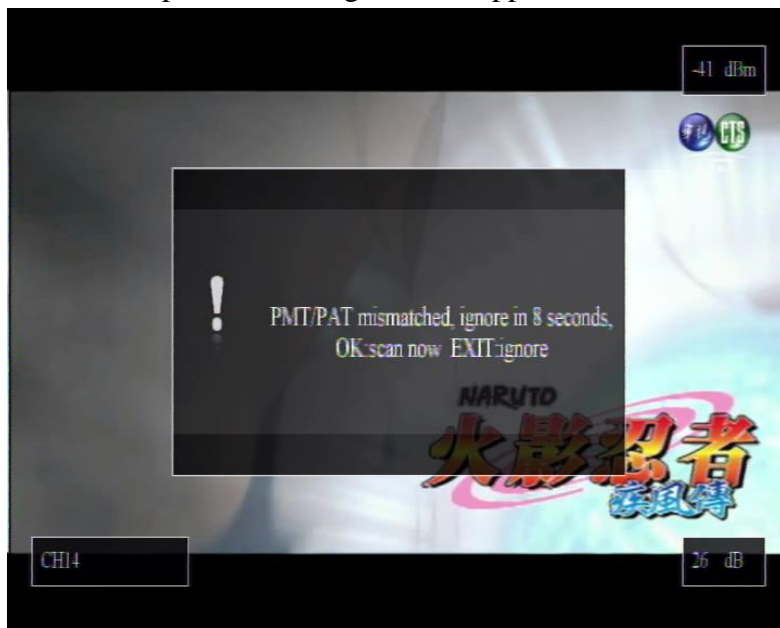
c. press the **“Clear”** key of the **Type-A RC** or **“Power”** key of the **Type-B RC** to set the display to 576i for CVBS.

Set Display Preference: PAT Mismatch

The setting is related to the default behavior when the channel's PAT version code is changed.

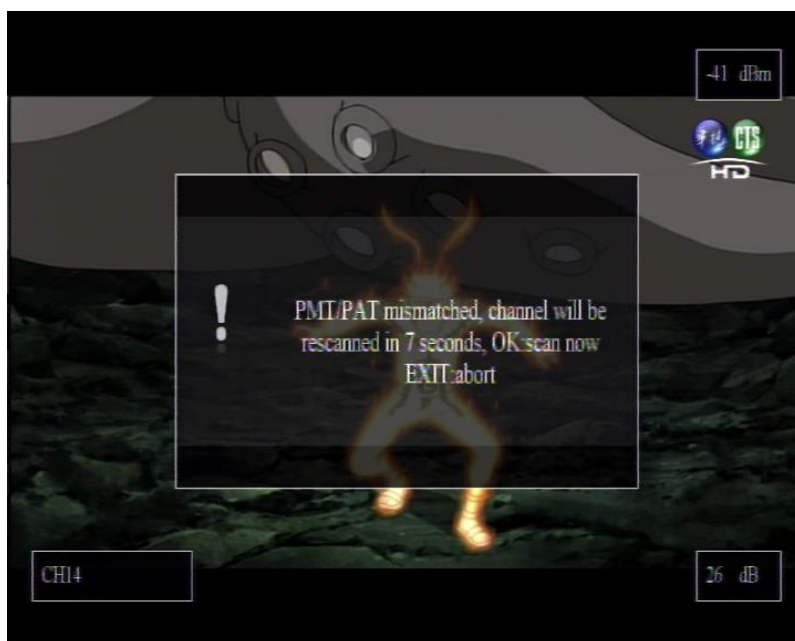
If the setting is OFF, it will pop up the following warning message.

If no user input, the message will disappear in 10 seconds and nothing is changed.



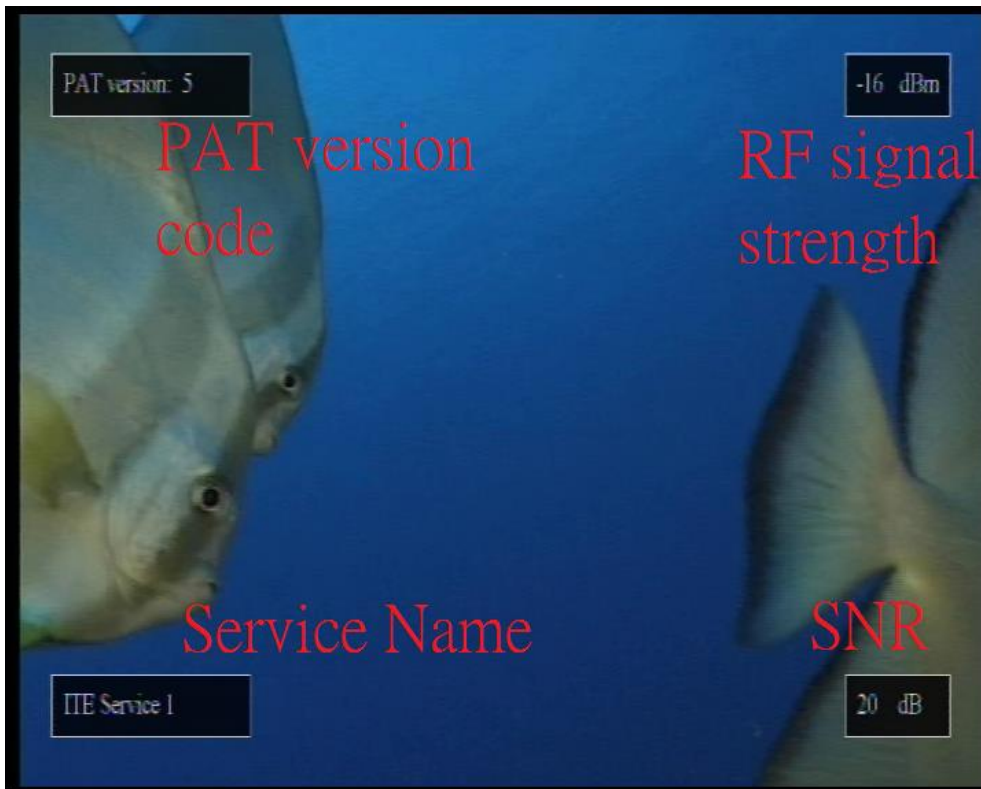
If the setting is ON, it will pop up the following warning message.

If no user input, the system will erase all channels and rescan the current channel automatically.



Set Display Preference: Signal OSD

If it's on, the signal OSD will be shown by default when power on.
You may switch it off by clicking Green or Yellow key.



Record and Playback

From V0.0.1.72.10 on, "Record" feature is supported.

Note: the PVR feature is a trial release and provided as it is.

You may need to open the front panel to plug in a micro-SD card.

The micro-SD card should be formatted in FAT.

NTFS or other formats are not supported.



Click on the “Red” button to start recording.

In the upper-left corner, an OSD pops up to show the recording time.

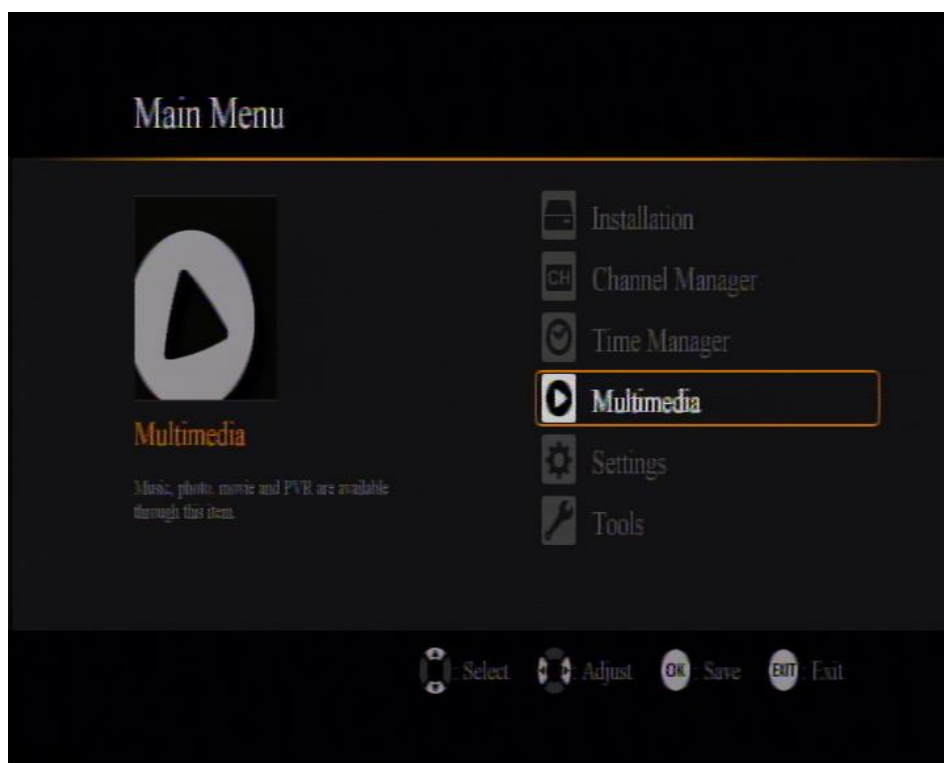


Click on the “Red” button again to stop recording.

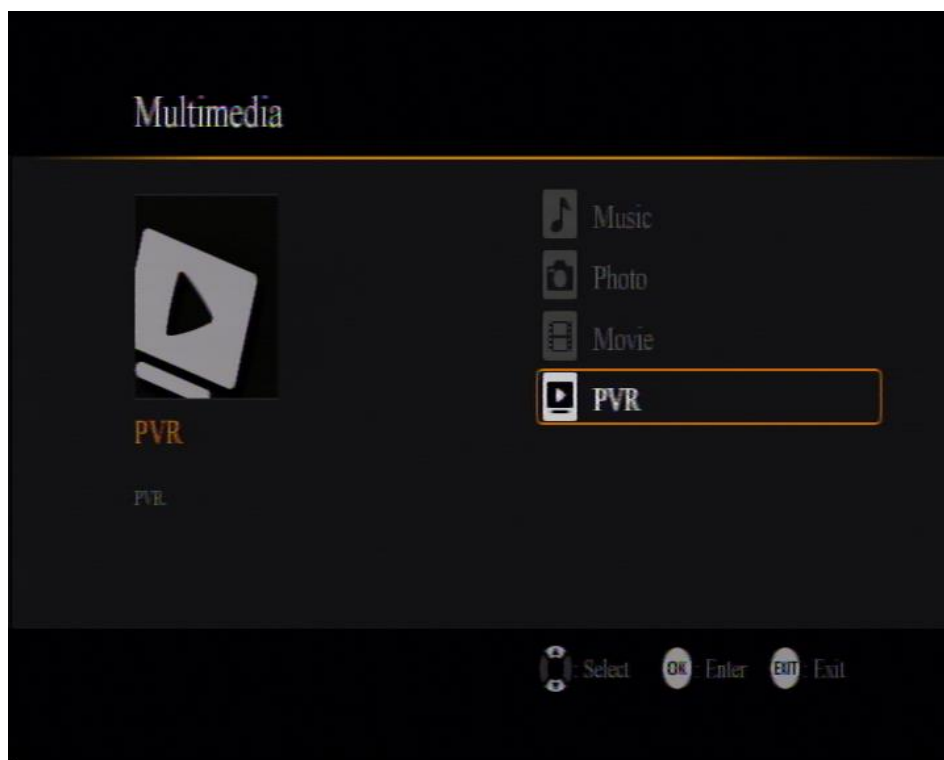
The file recorded can be played in the main menu “Multimedia”.

Click on the IR “Back”/”Menu” key to popup the menu.

Select “Meltimedia”.



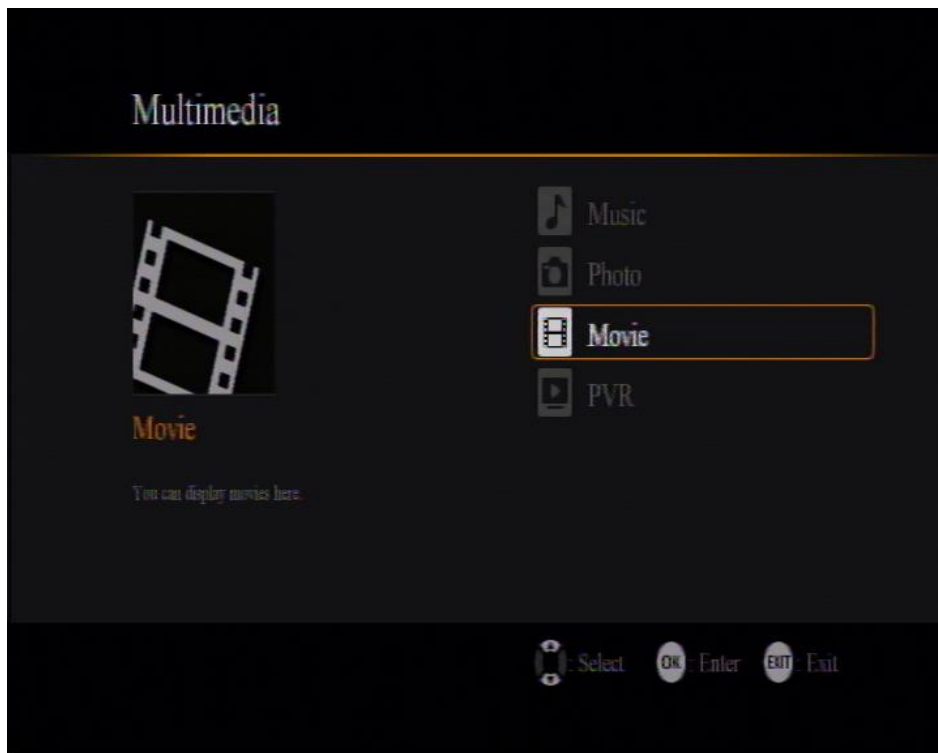
Select "PVR".



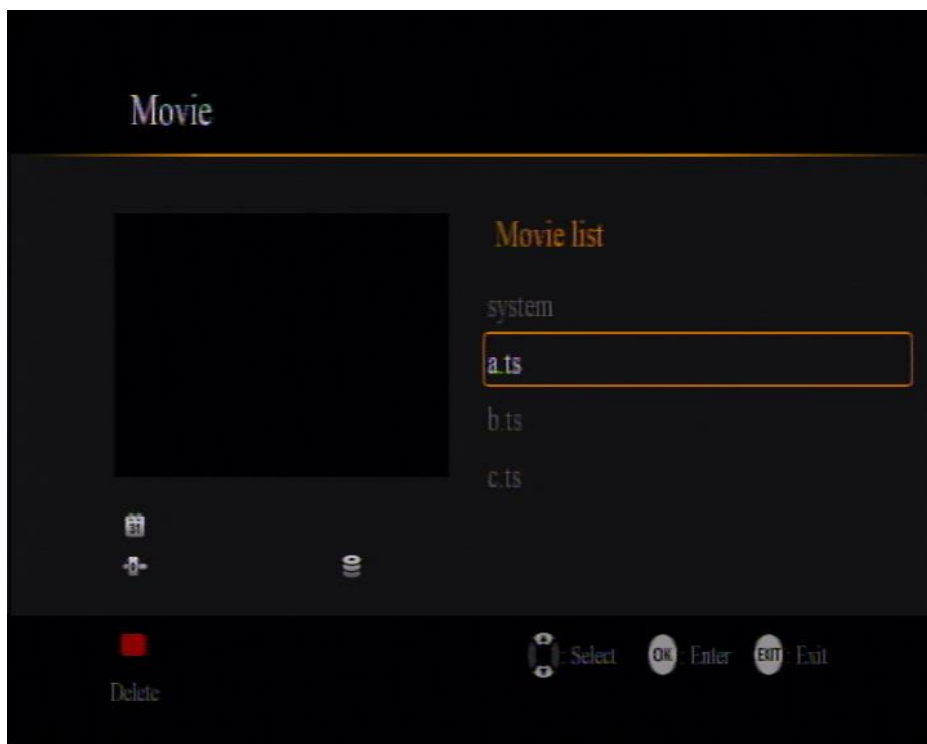
The file recorded is in TS format. If you want to play it in Windows environment, it's recommended to install VLC(<http://www.videolan.org/>) or MPC-HC (<http://mpc-hc.org/>).

Delete Recordings

Menu-> Multimedia->Movie



Click on "Red" Key to delete the selected file.

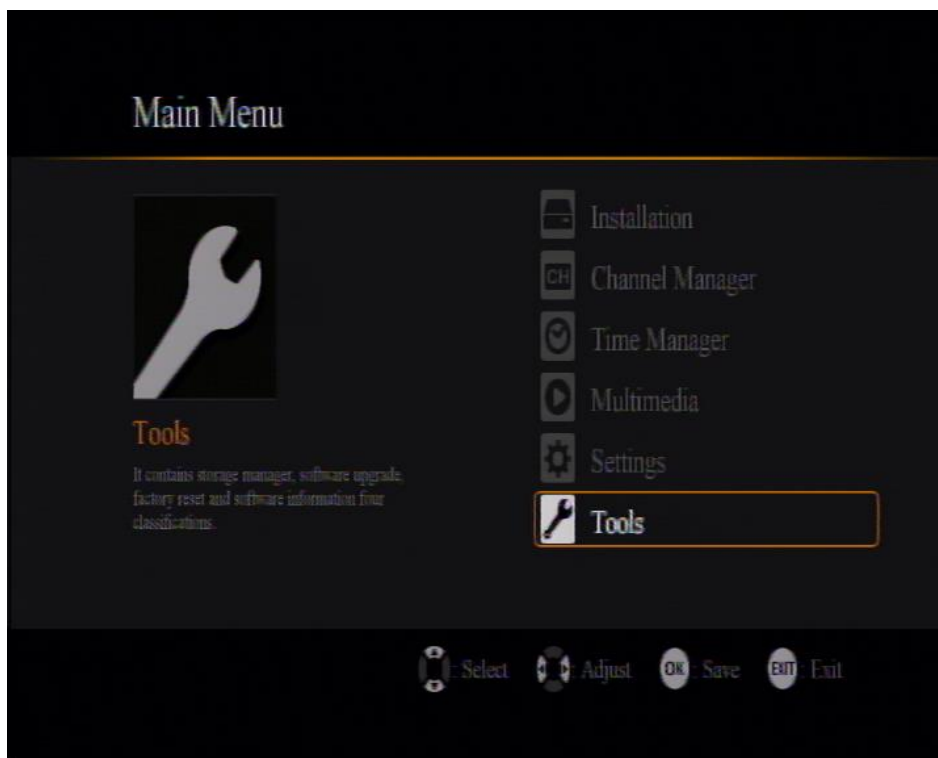


Reset to Default

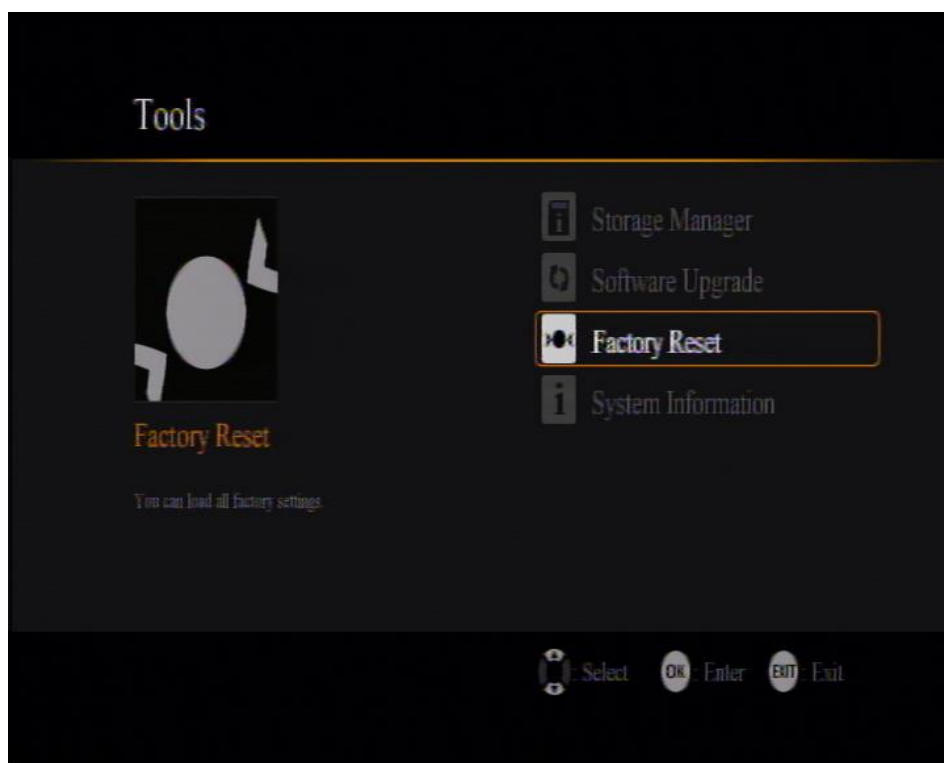
If necessary, you can reset the receiver box to factory default.

The program list will be cleared and the display mode will be set to 720i50 PAL mode.

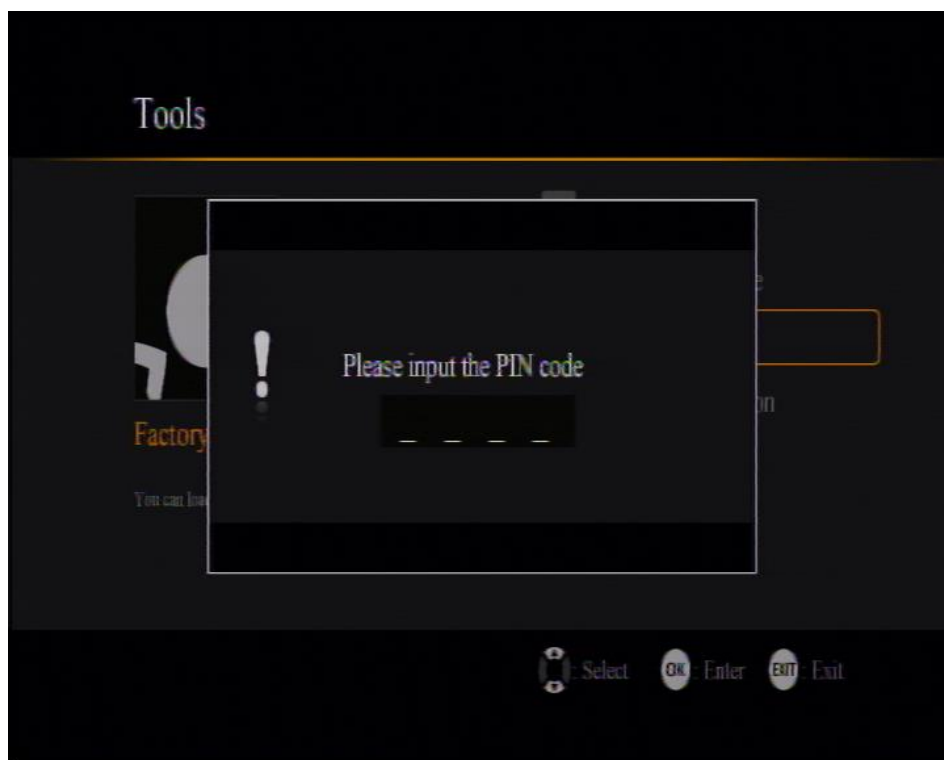
Click on the IR “Back”/”Menu” key to popup the menu



Select Tools.



Select Factory Reset.



The default PIN is "0000".

If reset successfully, all channels will be cleared and it pops up channel scan menu.



Firmware Update-SD card Method 1

There are two ways to update the firmware with SD card. You can choose either one to update the firmware of the box. If you cannot control HV-110 well with remote controller or the display is not normal, please use Method 2.

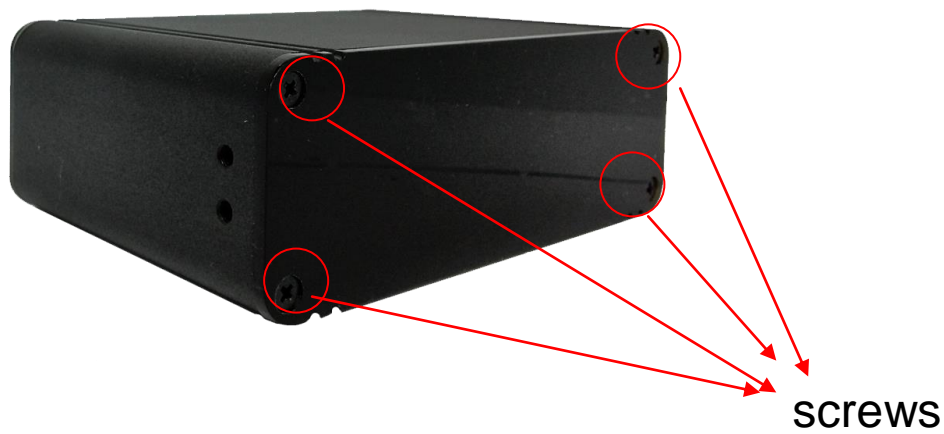
1. Copy the firmware image file “dtv.img” to the root directory of a micro SD card.

Note 1: the micro SD card should be formatted in FAT32 or FAT16.

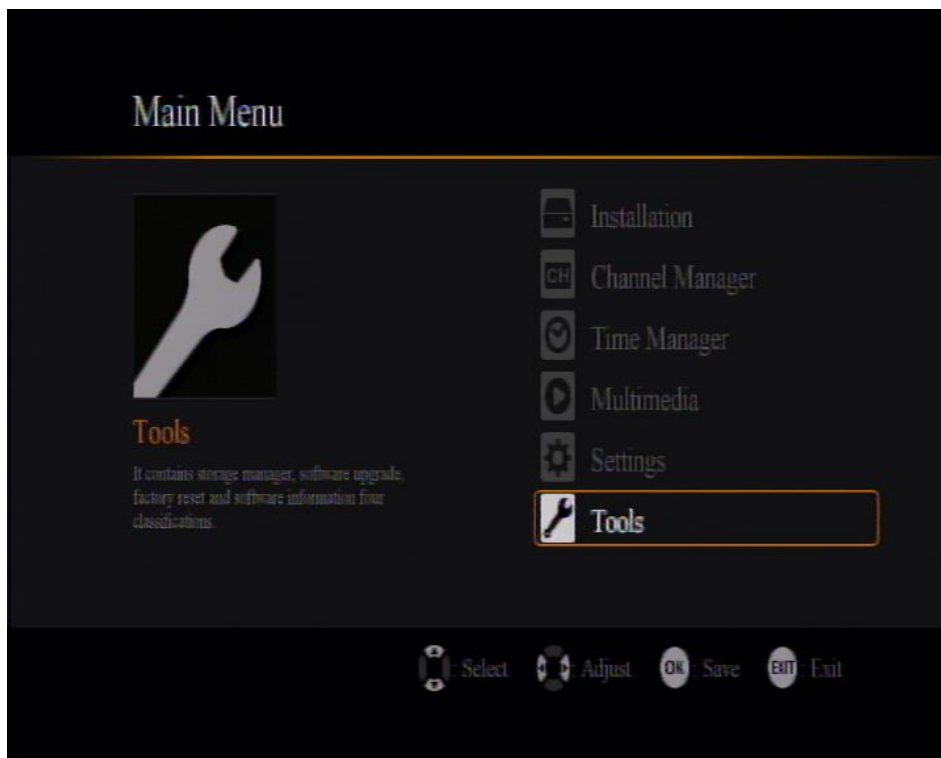
Note 2 Please delete the file dtv_temp.img on the SD card if it exists.

Note 3 the firmware image file “dtv.pkg” is used with a flash kit, described below.

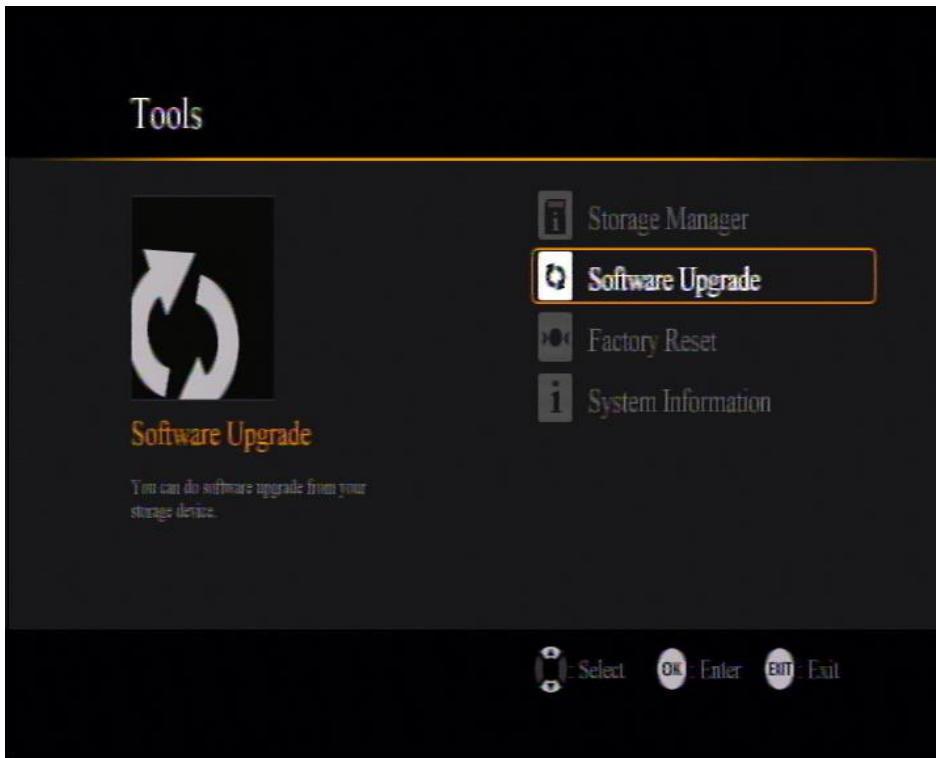
2. Power the receiver box down.
3. Open the front panel one the receiver box by removing the four screws.



4. Power on the box
5. Click on the IR "Back"/"Menu" key to popup the menu, and select "Tools"



6. Select "Software Upgrade"



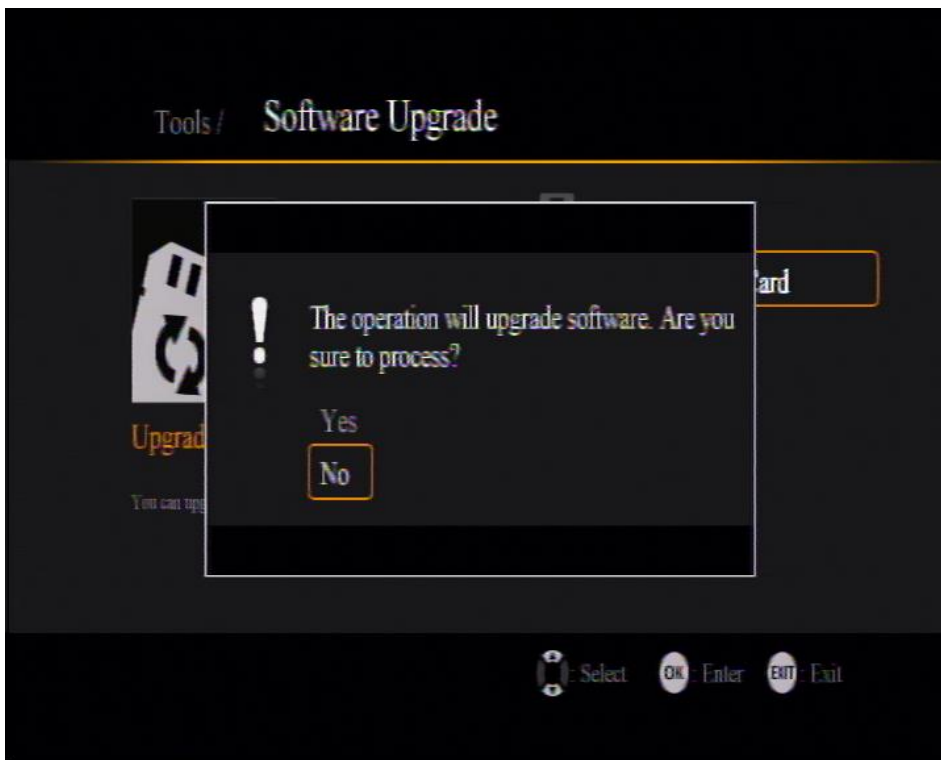
7. Plug in the micro SD card.



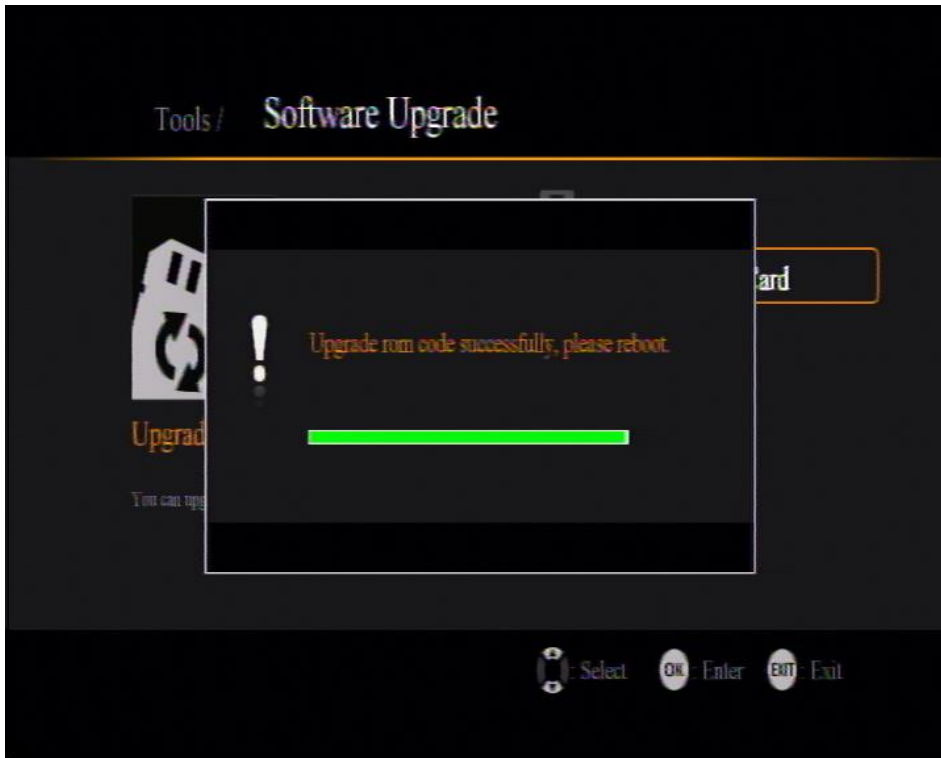
8. Select "Upgrade by SD Card"



9. Select “Yes”



10. When the progress bar reaches the end, the update is done.



11. Remove the micro SD card, power off, then power on the receiver box.

Note: If you do not remove SD card, the reboot will fail!

Firmware Update- SD card Method 2

There are two ways to update the firmware . You can choose either one to update the firmware of the box. If you can control HV-110 well with remote controller and the display is normal, please use Method 1.

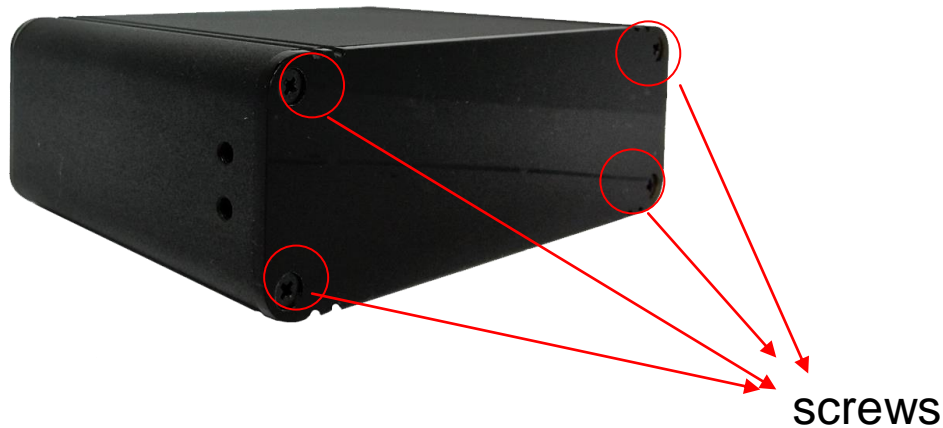
1. Copy the firmware image file “dtv.img” to the root directory of a micro SD card.

Note 1: the micro SD card should be formatted in FAT32 or FAT16.

Note 2 Please delete the file dtv_temp.img on the SD card if it exists.

Note 3 the firmware image file “dtv.pkg” is used with a flash kit, described below.

2. Power the receiver box down.
3. Open the front panel one the receiver box by removing the four screws.



4. Plug in the micro SD card.



5. Power on the receiver box and wait for about 60 seconds.

If the SD card is detected properly and DTV.IMG is found, the update progress will be started.

When the update is on going, it's possible there is no display or the display freezes and no response with remote controller.

If you can connect to the UART debug port (refer to next chapter), you will see the debug messages, "sd upgrade start" and "sd upgrade finish"

Note: From FW version number V0.0.1.71.4 on, the 7-SEG LED shows "88" when updating, and turns off when update is done.

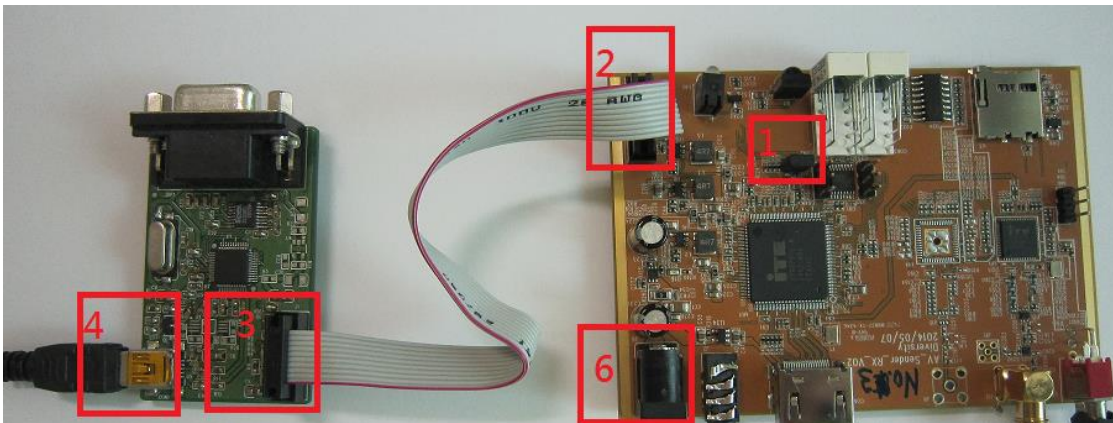
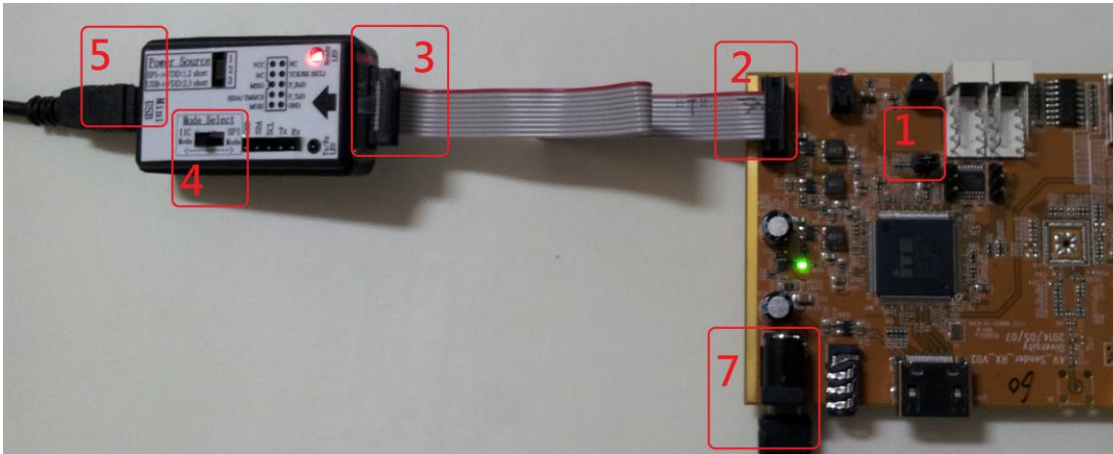
6. Remove the micro SD card, power off, then power on the receiver box.

Note:

1. If you do not remove SD card, the reboot will fail!
2. From FW version number V0.0.1.71.4 on, dtv.img will be rename to dtv_tmp.img when update is done.

Firmware Update- Flash kit

In case the boot code is corrupt due to failure of SD card update, HV-110 will fail to boot and cannot be updated with SD card any more. The only way to recover the boot code and firmware is to re-flash the NOR with a flash kit. The firmware for a flash kit is named “dtv.pkg”, instead of “dtv.img”. Consult Hides for details about the flash kit.



UART Debug Messages

The UART debug port is located in J5.

You may dump debug messages from this J5 pin2 UART Tx.

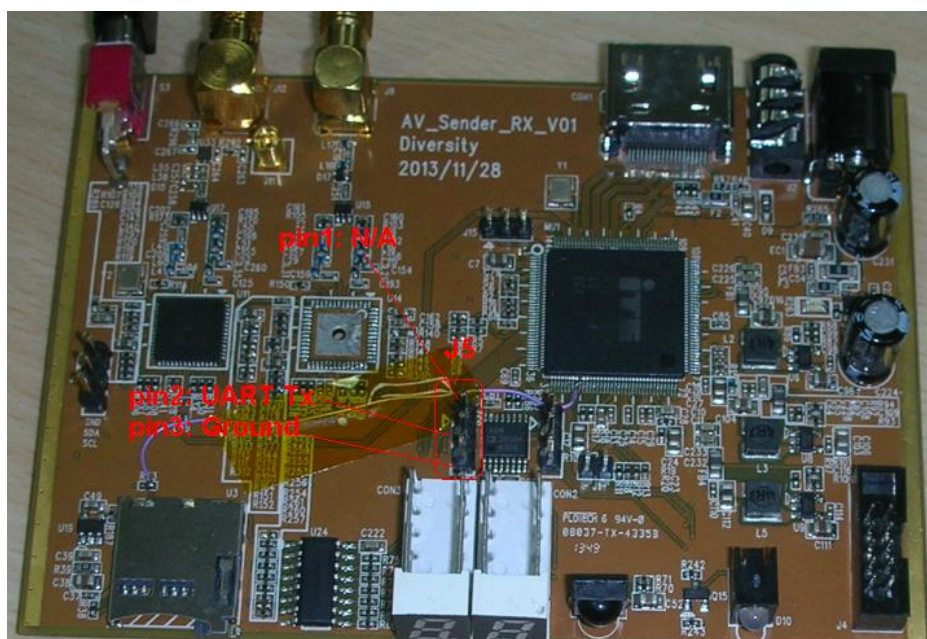
J5:

Pin 1: not used

Pin 2 :UART Tx

Pin 3: Ground

The communication parameters are 115200,n,8,1.

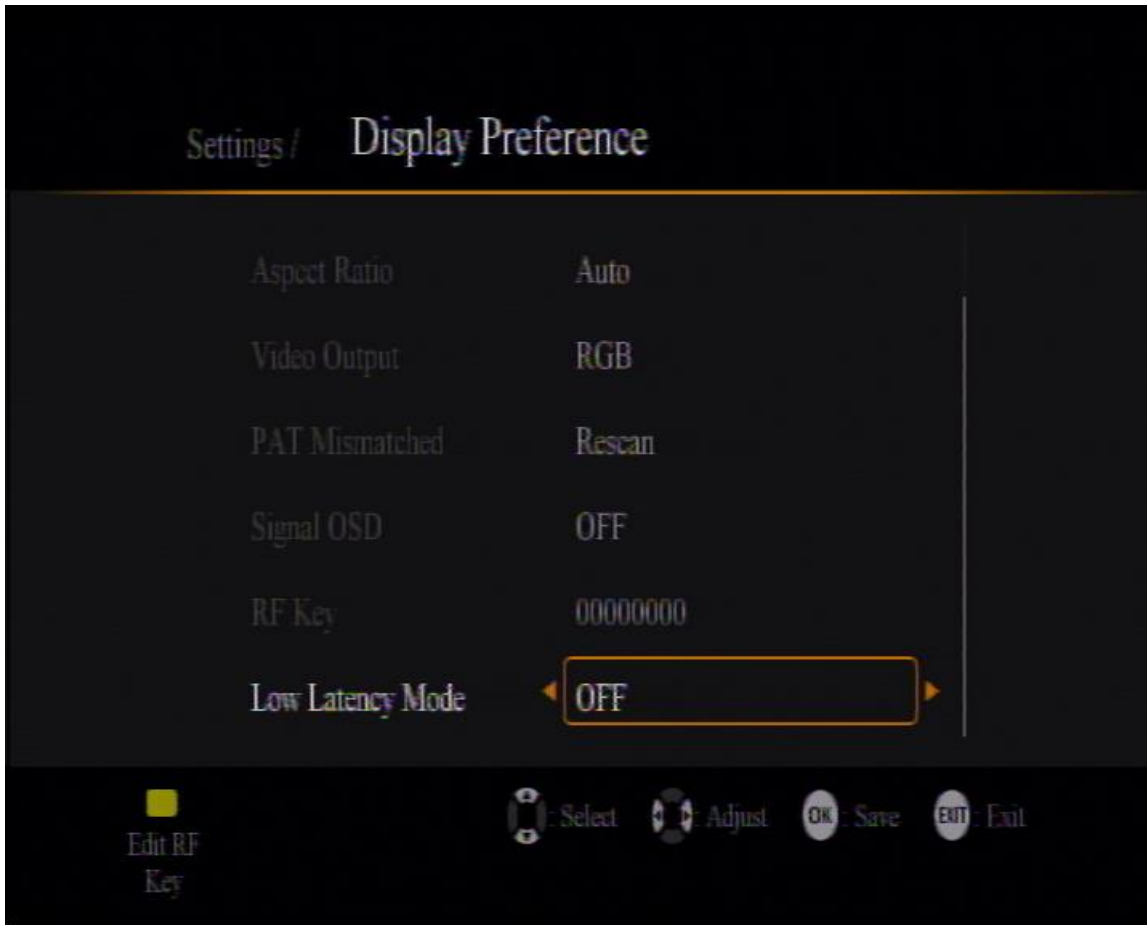


Shorten receiver latency

From firmware vision code: v0.0.1.72.39 on, you may enable “Low Latency Mode” in menu “Settings”->”Display Preference”.

The latency should be less than 800ms if enabled, while 1600ms if disabled.

In low latency mode, the latency is decreased at the cost of video smoothness.



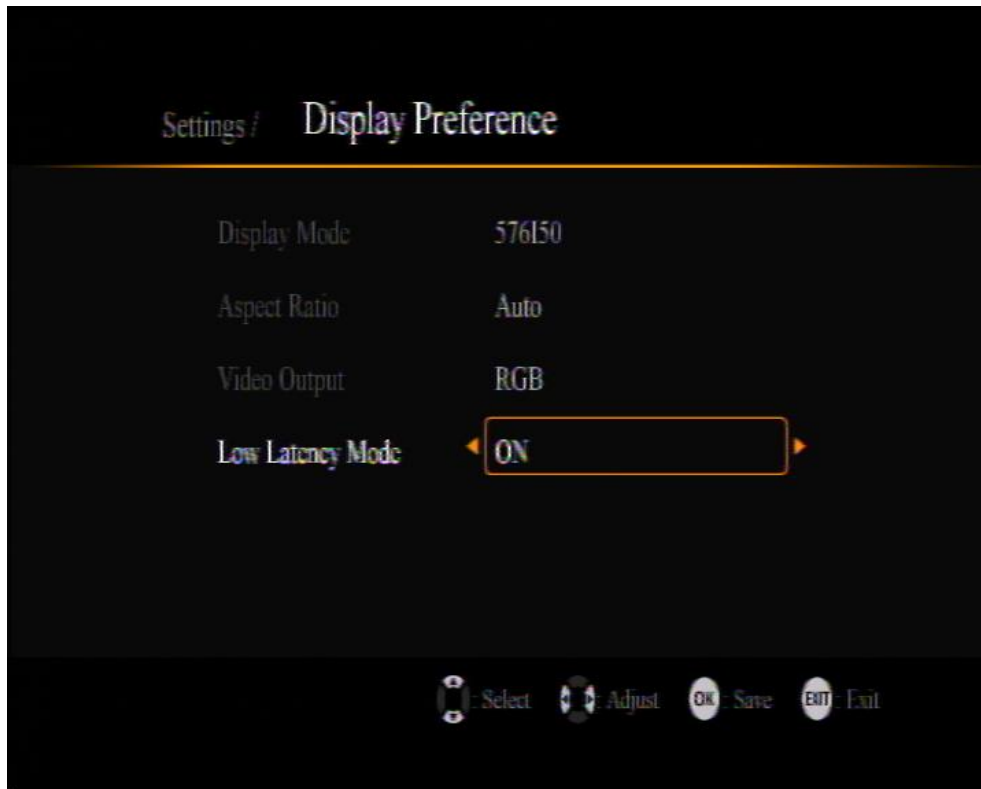
Special low latency firmware for receiving HV-310 Tx box

If you are testing HV-310 Tx latency with HV-110 Rx, you may use a special firmware in the folder “\Firmware\Low Latency Firmware for HV310”.

The special firmware for HV-110 Rx can further decrease the receiver latency very much.

However, with the special low latency firmware, HV-110 can only decode HD video from HV-310, and cannot decode video from other Tx sources, like HV-100/HV-102 or live TV stations.

When you try this firmware, please enable “Low Latency Mode” in menu “Settings”->”Display Preference”. The latency should be less than 300ms if enabled, while 600ms if disabled.



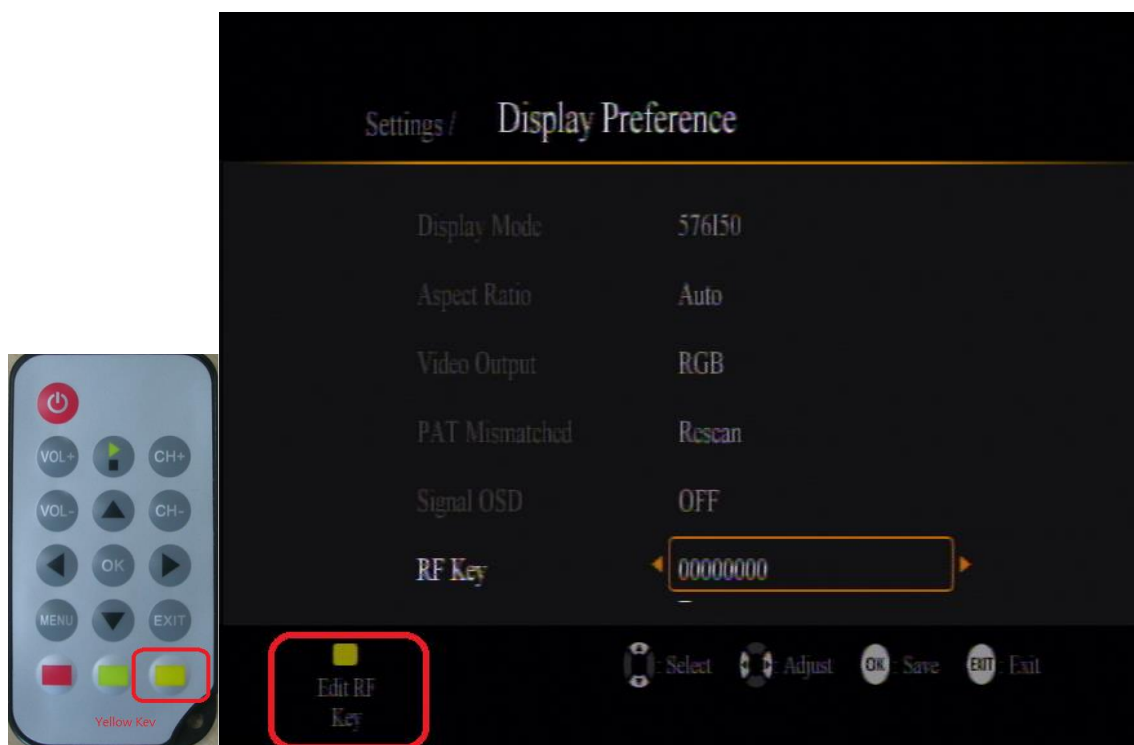
Tuning Encrypted RF Signal from HV-310 Tx box

If you are tuning HV-310 Tx with RF encryption, you should specify the RF decrypt key.

You may edit RF key in menu "Settings"->"Display Preference".

The RF key is a 8-digit HEX number.

Move to the item "RF Key" and click on the "Yellow" key to start editing.



Then, use arrow keys to change the key.

