

HDTV RECEIVER

USER GUIDE

Safety Instruction

- Be sure to read this User's Manual before starting the operation of the receiver.
- Never open the cover. It is dangerous to touch the inside of the receiver due to possible electric hazard.
- When the receiver is unused for a long time, unplug the power cord.
- Do not use a damaged power cord that may cause a fire or an electric shock.
- Place the HD receiver in well ventilated and no-heat environment.
- When connecting cables, the receiver must have been powered off.

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CHAPTER

1

INTRODUCTION

1.1. INTRODUCTION

Your HD receiver is capable of receive three types of signals : analog terrestrial (NTSC format - National Television Systems Committee), digital terrestrial (ATSC format - Advanced Television Systems Committee), and analog cable (NTSC format), and it supports two types of display formats : ATSC and NTSC format. Also, it can decode ATSC compliant MPEG video stream and Dolby – AC3 audio stream.

Your HD receiver allows you to select the format of the output video signal among 1080i, 720p, 480p, and 480i. Any digital/analog video input source can be converted to the user-defined format using up/down conversion functions.

CHAPTER**2****SETUP AND CONNECTION****2.3. CONNECTING TO TV OR MONITOR****Step 1. Unpack The System**

Make sure to locate the remote control and the other cables and jacks that are included with HD receiver.

Step 2. Connect Your HD Receiver To Other Component***HD Receiver and Multimedia or HD Monitor*****1. Connect Video cables**

- Using the VGA cable

Connect a VGA cable from your HD receiver's VGA jack to the Multimedia or HD monitor's VGA input jack, usually labeled DIGITAL TV INPUT VGA.

- Using the three RCA cables for YPbPr

Connect three RCA cables from your HD receiver's YPbPr jack to the Multimedia or HD monitor's YPbPr input jack, usually labeled HD YPbPr.

- Using the five RCA cables for RGBHV

Connect five RCA cables from your HD receiver's RGBHV jack to the Multimedia or HD monitor's RGBHV input jack, usually labeled HD RGBHV.

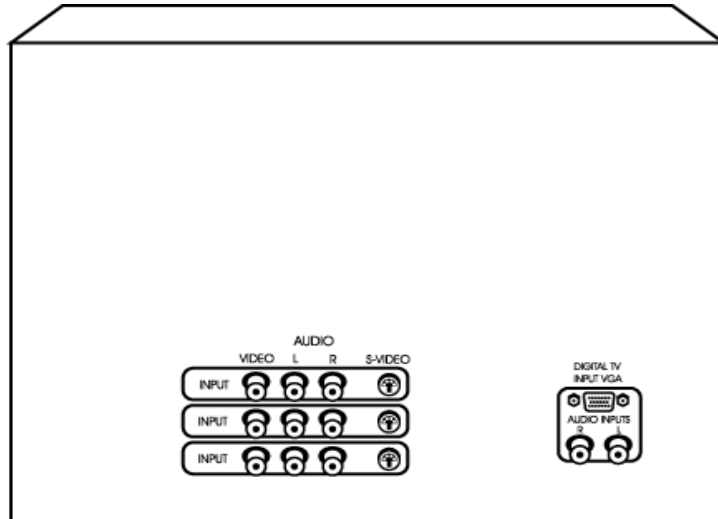
2. Connect Audio cables

- Using two RCA cables

Connect two RCA cables from the HD receiver's AUDIO OUT Left (white color) and Right (red color) jacks to the AUDIO IN Left, Right on the back of the Multimedia or HD monitor.

- Using Toslink cable (optional)

If you own a Dolby Digital receiver that uses a Toslink cable-type input, connect the HD receiver to that receiver using a Toslink cable. it will operate on only digital channel.



Back of Multimedia or HD monitor

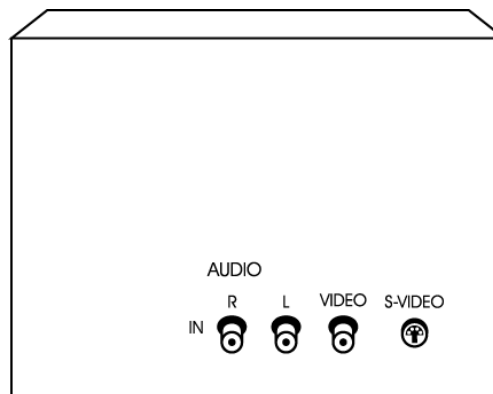
3. Connect coaxial cables

- Connect a coaxial cable from the VSB ANT IN jack on the back of your HD receiver to terrestrial RF signal from antenna.
- Connect another coaxial cable from CABLE jack on the back of your HD receiver to cable signal from cable outlet.

HD Receiver and Regular TV (or monitor)

1. Connect Video/Audio and S-Video cables (optional)

- Connect an Video/Audio cable from the HD receiver's VIDEO OUT (yellow color), AUDIO OUT Left (white color) and Right (red color) jacks to the VIDEO IN, AUDIO IN Left, Right on the back of the regular TV (or monitor).
- Connect an S-Video cable from the HD receiver's S-Video OUT jack to the TV's S-VIDEO IN jack.



Back of regular TV or monitor

2. Connect coaxial cables

- Connect a coaxial cable from the VSB ANT IN jack on the back of your HD receiver to terrestrial RF signal from antenna.
- Connect another coaxial cable from CABLE jack on the back of your HD receiver to cable signal from cable outlet.

Step 3. Place Batteries In The Remote Control

1. Remove the cover from the battery compartment.
2. Insert two batteries into the battery compartment, matching the + and – end of each battery.
3. Replace the cover.

Step 4. Plug In And Turn On The System

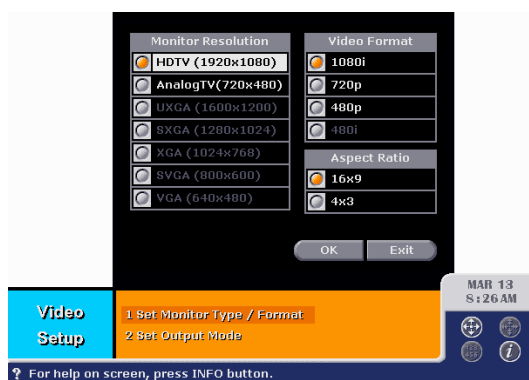
1. Plug the power cord into a wall outlet.
2. Wait for a few seconds.
3. Turn on the your TV or monitor.
4. To turn on your HD receiver, press the HD STB button on the top of remote control.
5. Press POWER button on the remote control or the front panel.

2.3. VIDEO SETUP

Setup Your Monitor Type And Video Format.

To select a video format :

1. Press MENU button on the remote control.
2. Select Setup from main menu.
3. Then, select Video Setup from Setup menu.
4. Then, select Set Monitor Type/Format menu from Video Setup menu.

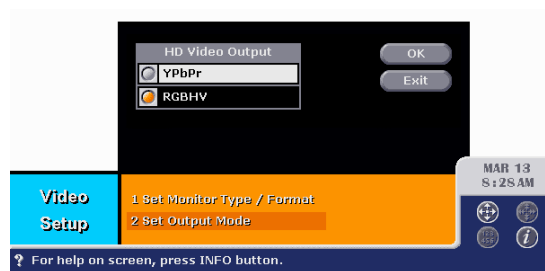


5. Use the arrow buttons and SELECT button on the remote control to specify the monitor type, video resolution, and aspect ratio of the TV or monitor you are using with the HD receiver.
6. If you have HDTV, Multimedia monitor or HD monitor, select HDTV (1920X1080) from Monitor Resolution, 1080i from Video Format, and 16X9 from Aspect Ratio. If you have regular TV (including analog TV), select Analog TV (720X480) from Monitor Resolution, 480i from Video Format, and 4X3 from Aspect Ratio. However, if you have wide TV (16X9), set aspect ratio to 16X9 mode.

Setup Your HD Video Output Format.

To select a HD video format :

1. Press MENU button on the remote control.
2. Select Setup from main menu.
3. Then, select Video Setup from Setup menu.
4. Then, select Set Output Mode menu from Video Setup menu.



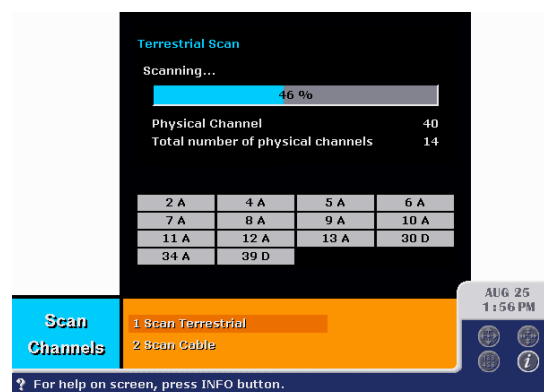
5. Use the arrow buttons and SELECT button on the remote control to specify the HD video output format from the HD receiver.
6. If you connect YPbPr jack from your HD receiver to Multimedia or HD monitor, select YPbPr mode from the menu. However, if you use RGBHV or VGA jack, select RGBHV mode.

2.3. CHANNEL SETUP

Scan Digital and Analog Terrestrial Channels

To scan terrestrial channels

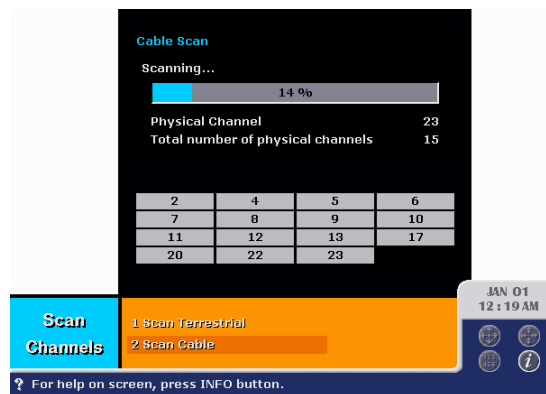
1. Press MENU button on the remote control.
2. Select Setup from main menu.
3. Then, select Channel Setup from Setup menu.
4. Then, select Scan Channels menu from Channel Setup menu.
5. Then, select Scan Terrestrial menu from Scan Channels menu.
6. If you select OK button, HD receiver will search all available terrestrial channels. it scans from channel 2 to 83 and builds the channel map.



Scan Analog Cable Channels

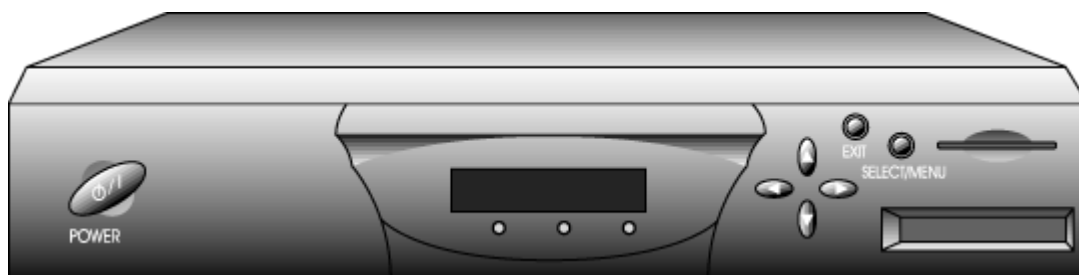
To scan cable channels

1. Press MENU button on the remote control.
2. Select Setup from main menu.
3. Then, select Channel Setup from Setup menu.
4. Then, select Scan Channels menu from Channel Setup menu.
5. Then, select Scan Cable menu from Scan Channels menu.
6. Select your cable mode among STD, HRC and IRC.
7. If you select OK button, HD receiver will search all available cable channels and modify the channel map.



2.4. FRONT AND REAR PANEL

Front Of The HD Receiver

**POWER**

Turn s the HD receiver on and off.

SELECT

Selects highlighted items in the menu system. When in the normal viewing state, if pressing this key, channel map (channel station) will be displayed.

MENU / EXIT

Brings up the main menu. When in the menu system, this key operates as EXIT key.



Moves the highlight (cursor) up in the menu system. When in the normal viewing state, scroll up through the current channel list.



Moves the highlight (cursor) down in the menu system. When in the normal viewing state, scroll down through the current channel list.

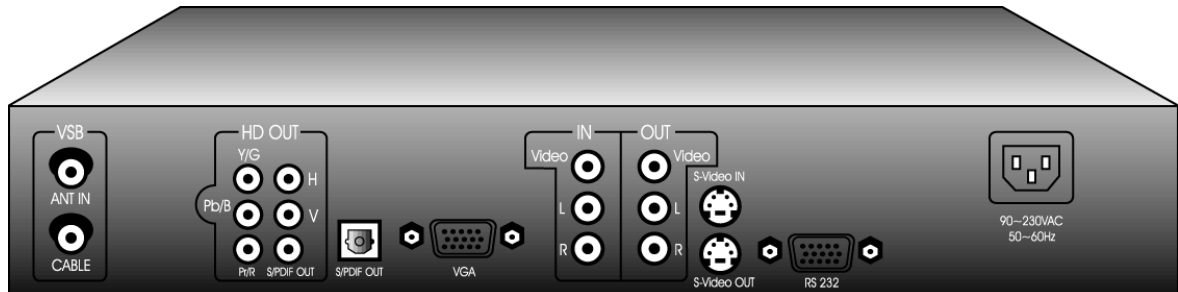


Moves the highlight (cursor) left in the menu system. When in the normal viewing state, scroll down through the favorite channel list.



Moves the highlight (cursor) right in the menu system. When in the normal viewing state, scroll up through the favorite channel list.

Back Of The HD Receiver

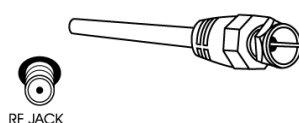


ANT IN	Used to connect a terrestrial (off-air) antenna to the HD receiver.
CABLE	Used to connect a cable signal to the HD receiver.
HD OUT	Used to connect a YPbPr-compatible HD TV or monitor to the HD receiver. Also, this can be used to connect a RGBHV-compatible HD TV or monitor. These provide high definition picture quality when HD programs in HD format are viewed.
S/PDIF OUT	Used to connect a Dolby Digital decoder to your HD receiver using a Toslink cable (or RCA cable). Dolby Digital provides good sound quality.
VGA	Used to connect a RGB-compatible HD TV or monitor to your HD receiver. These provide high definition picture quality when HD programs in HD format are viewed.
VIDEO IN/OUT	If you use general TV (analog TV) but HD monitor, connect the TV to VIDEO OUT of your HD receiver using a RCA cable. Also, if you have VCR or DVD player, connect the VCR or DVD player to VIDEO IN of your HD receiver using a RCA cable. Then, you can view the VCR or DVD program.
S-VIDEO IN/OUT	Provide better picture quality than above VIDEO IN/OUT. If your general TV (analog TV) has S-Video capability, use this jack along with the Audio jack to connect the HD receiver to your TV (or monitor).

2.5. JACKS AND CABLES

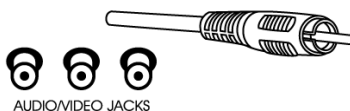
RF Jacks and Coaxial F-typed Cables

The RF jacks and coaxial cables are necessary for reception of terrestrial (digital and analog) and cable signals. The RF jacks on the HD receiver are labeled ANT IN and CABLE. ANT IN is used for terrestrial signal and CABLE for cable signal.



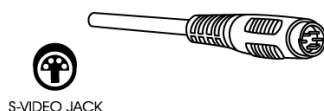
Video/Audio Jacks and RCA-typed Cables

The Video/Audio jacks provide very good picture and stereo sound quality. If using NTSC TV, three RCA-typed cables are required for one composite video signal and two audio signals. If using Multimedia or HD monitor, five (or three) cables are required for RGBHV video (or YPbPr video) and two (or one) cables for stereo sound (or S/PDIF out).



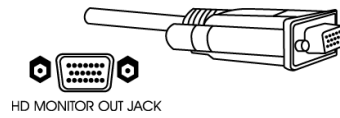
S-Video Jacks and Cables

S-Video Jack provide only the picture signal for NTSC TV. So it is used in conjunction with audio cables (RCA-type).



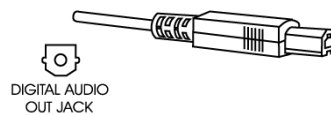
VGA Out Jack and VGA Cable

A VGA cable connects the HD receiver to RGB-compatible monitor via VGA Out jack.



S/PDIF Jack and Toslink Cable

The Toslink cable and S/PDIF OUT jack are used for connecting a Dolby Digital receiver. If you own a Dolby Digital receiver that uses a Toslink cable-type input, connect the HD receiver to that receiver using a Toslink cable.



CHAPTER

3

USING THE REMOTE

3.1. REMOTE CONTROL BUTTONS

**POWER**

Turns the HD receiver on or off. If the remote is in other component (VCR, CABLE, DVD) and programmed, POWER can turn other component on or off.

HD STB

tells the remote to control the HD receiver.

TV

If programmed, tells the remote to control your TV

VCR

If programmed, tells the remote to control your VCR.

CABLE

If programmed, tells the remote to control your CABLE BOX.

DVD

If programmed, tells the remote to control your DVD player.

CH +/-

Scroll up/down through the current channel list. When in the menu system, used to scroll page up/down through item list on the correspond menu.

INFO

Brings up program information of current channel via channel banner. If pressing one more, channel banner will be removed. If pressing when in the menu system, direct help message will be displayed.

NIM

Used to selecting NIM (Network Interface Module), terrestrial or cable along with entering channel numbers directly.

VOL +/-	Control audio volume level. When programmed, adjusts the TV, VCR, CABLE, or DVD's audio volume. When in the grid program guide, used to scroll page right/left on the time axis.
MENU	Brings up the main menu wherever you are on the menu system.
GUIDE	Brings up the program guide where you are on the menu system. If pressing one more, guide mode will be toggled grid or list. Default value is grid.
PREV	Moves to the previous channel when pressing in the normal viewing. When in the menu system, moves to the previous stage.
CLEAR	Removes OSD (on screen display) on menu system and return to normal viewing.
ARROWS UP/DOWN	Scroll up/down through the current channel list. When in the menu system, used to scroll up/down through item list on the correspond menu.
ARROWS LEFT/RIGHT	Scroll up/down through the favorite channel list. When in the menu system, used to scroll left/right through item list on the correspond menu.
SELECT	Displays the channel station (current channel list) in the normal viewing. When in the menu system, selects highlighted item.
FETCH	Jumps to your favorite menu from normal viewing. If pressing when in the menu system, save or delete correspond menu from favorite menu list.
AUDIO	Selects alternate audio or SAP (secondary audio program) of current channel. If there is no response, current channel has no alternate audio.
INPUT	Select the input source among NIM (VSB), VIDEO IN (CVBS), and S-VIDEO IN (SVHS).
DIGIT BUTTONS	Enter channel numbers directly to change channel.
PLAY, STOP, REC, PAUSE, REW, F.F	Control VCR, DVD player if programmed.

3.2. PROGRAMMING THE REMOTE CONTROL

Your remote control is universal, so it controls most brands of remote controllable component, such as TVs, VCRs, Cable boxes, and DVD players if programmed.

Program Your Component

1. Press/hold correspond button (TV, VCR, CABLE, DVD) on the remote control to program your component.
2. Press your three digit remote control code of brand.
3. Release the button.
4. Check if the remote is working correctly.

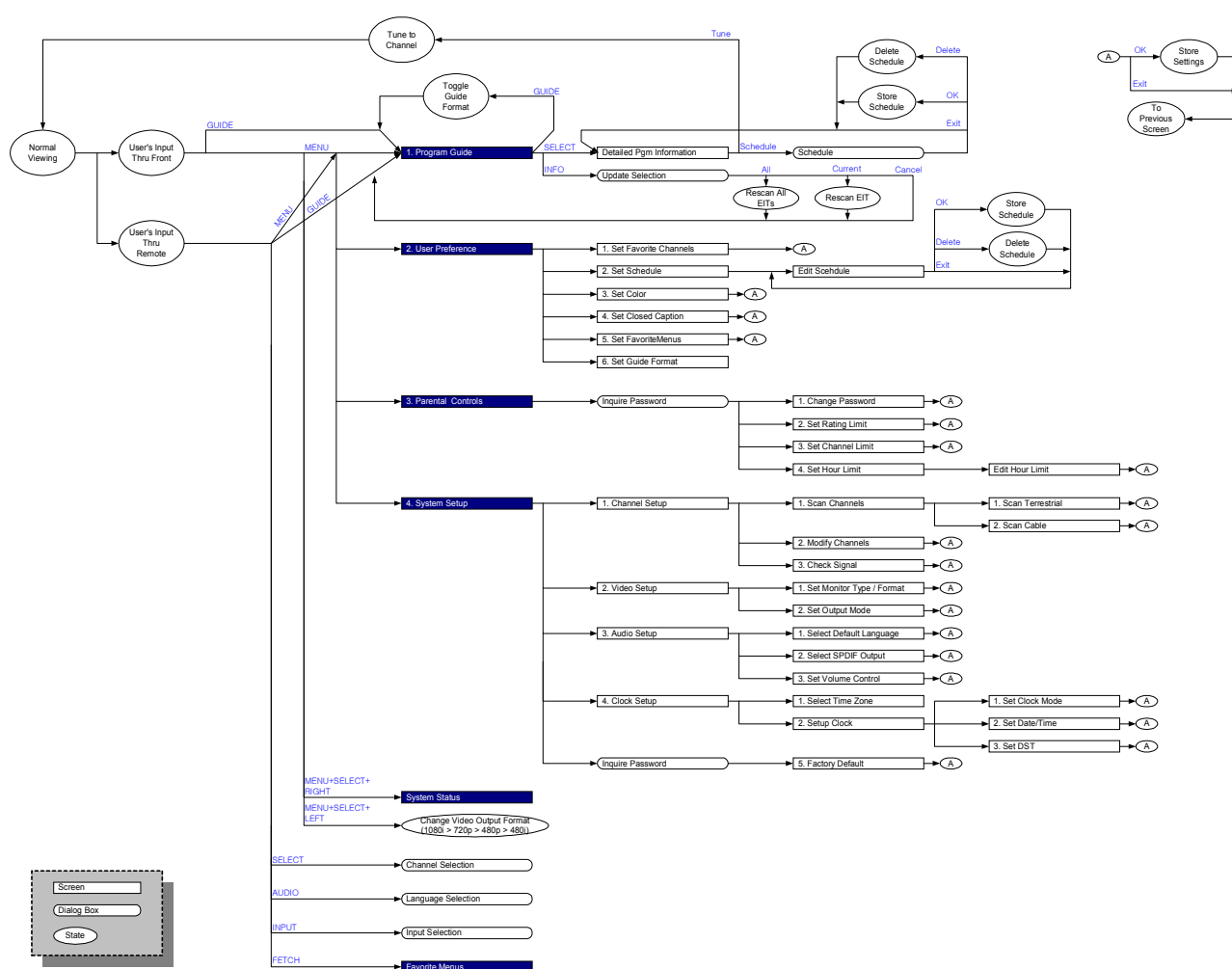
Once the remote has been programmed successfully, you are ready to use it to control your TV, VCR, Cable box, or DVD player.

CHAPTER

4

BASIC OPERATION

4.1. MENU TREE



4.2. HOW TO USE THE MENU

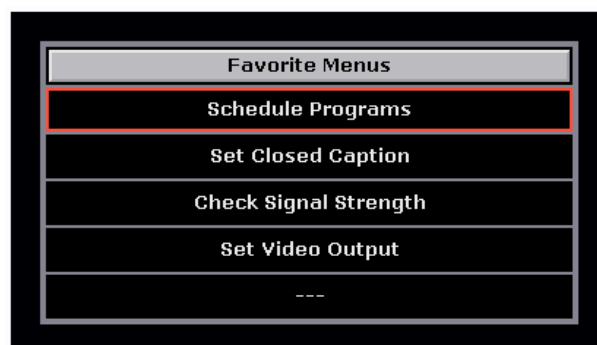
You can enter the main menu by pressing MENU key. Use arrow keys to move the cursor and press SELECT key to select a menu. More detailed key operation is described in Section 4.3.



HD receiver provide fast ways to access the Program Guide and other menus.

If you want to go directly to the Program Guide menu, press GUIDE key. HD receiver responds to GUIDE key wherever you are in the menu tree.

If you have set some frequently accessed menus as the favorite menu, the access to one of the favorite menus is just two steps away. Press FETCH and select wanted menu. More details on how to set the favorite menu can be found in Section 6.5.



4.3. NAVIGATION KEYS AND ICONS

While you are navigating menus, you can see four icons in the right-bottom of the screen. Each icon shows what remote key set you can use to navigate the current menu.

Depending on what menu you have selected, some icons in the menu may turn to grey, not high-lighted. That means relevant remote keys do not work in the menu.



Four arrow keys, up, down, left, and right.



Four page keys, page up, page down, page left, and page right.



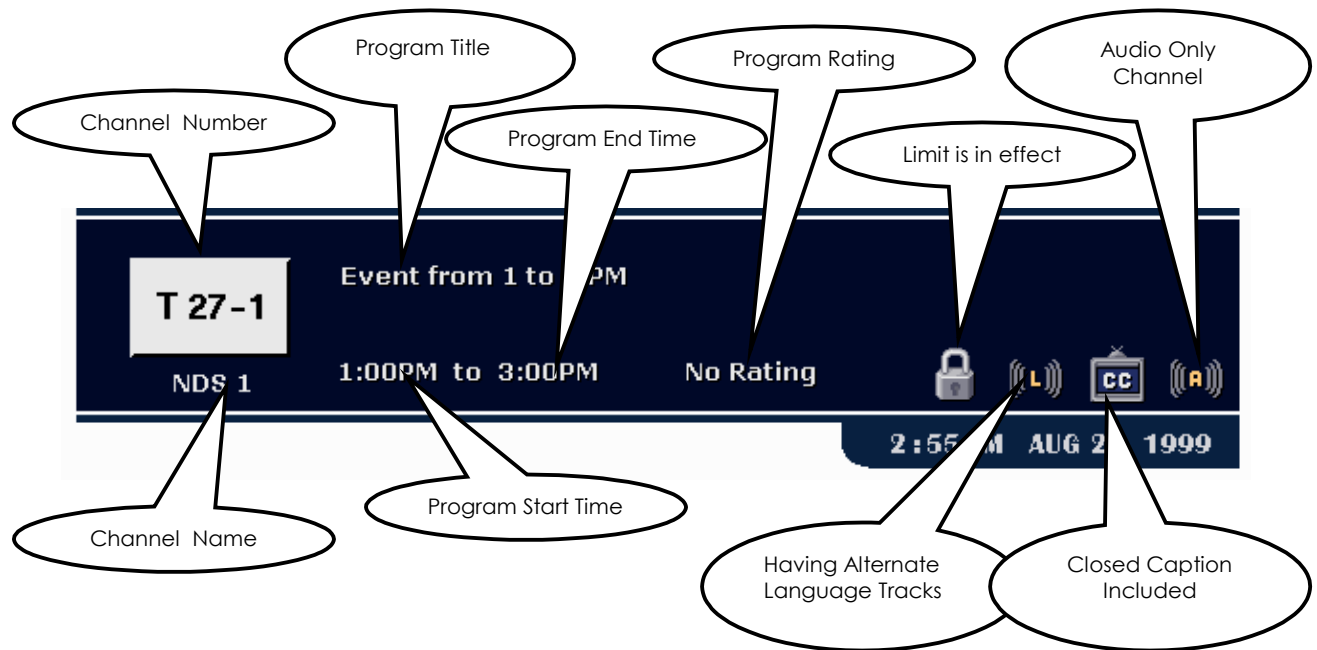
Ten numeric keys, from zero to nine.



INFO key.

4.4. CHANNEL BANNER AND ICONS

When turning on power and changing channels, HD receiver displays the Channel Banner in which shows information on the current program.



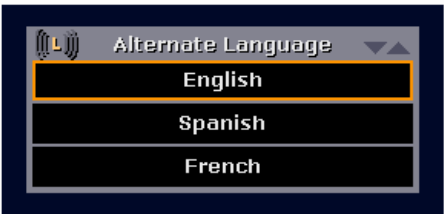
The information in the Channel Banner includes channel number, channel name (call-sign), program title, broadcasting time, rate information, lock status, alternate language availability, closed caption availability, audio channel information, and current time. Some information is depicted as icons as shown in the above figure. The meaning of the each field in the Channel Banner must be self-explaining, but the lock icon needs more explanation.

4.5. CHANNEL STATION AND ALTERNATE LANGUAGE

When pressing SELECT button in normal viewing, HD receiver displays channel station including all channels in the channel map, analog or digital.



Also, when pressing AUDIO button in normal viewing, HD receiver displays alternate language (or SAP) box including alternate audio programs in current channel. If there is no response, current channel has no alternate audio.

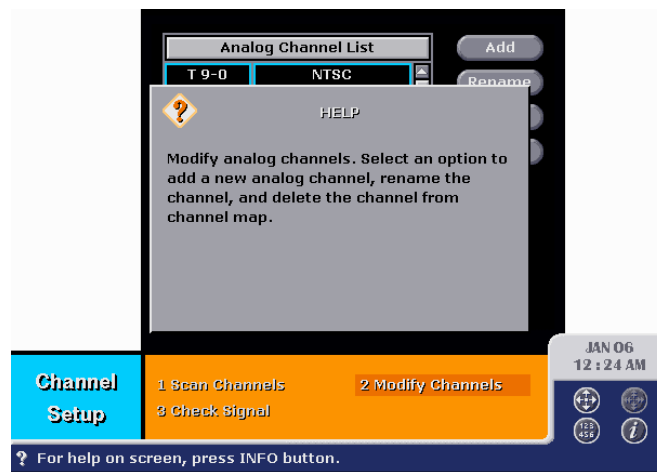


4.6. MULTIPLE FUNCTIONS OF INFO KEY

While you are navigating the menus, you can use INFO key to get a brief help message for a menu.

Pressing INFO key in normal viewing functions differently. By pressing INFO key, you can turn on and off the Channel Banner that is described in Section 4.4.

In the Program Guide the INFO key is used to update PSIP table and refresh the Program Guide contents. Details are in Chapter 5.



CHAPTER

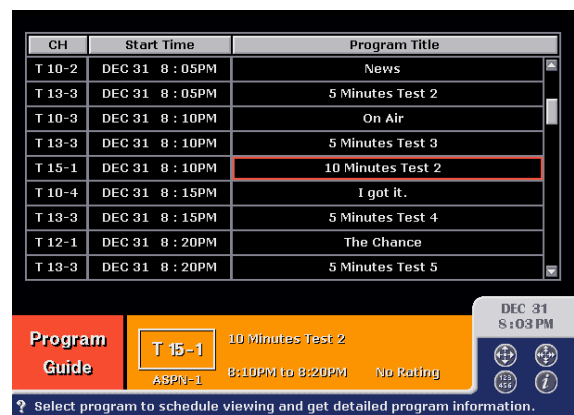
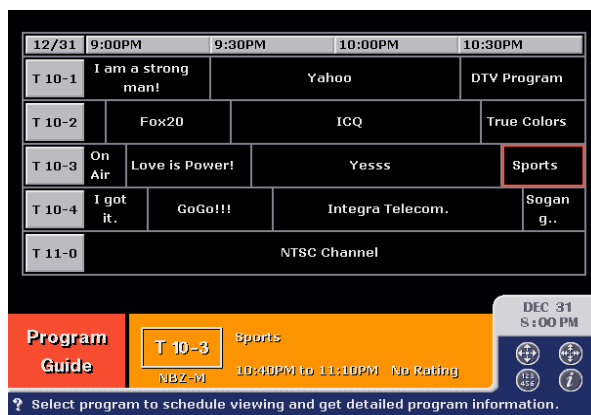
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USING THE PROGRAM GUIDES

5.1. GRID GUIDE AND LIST GUIDE

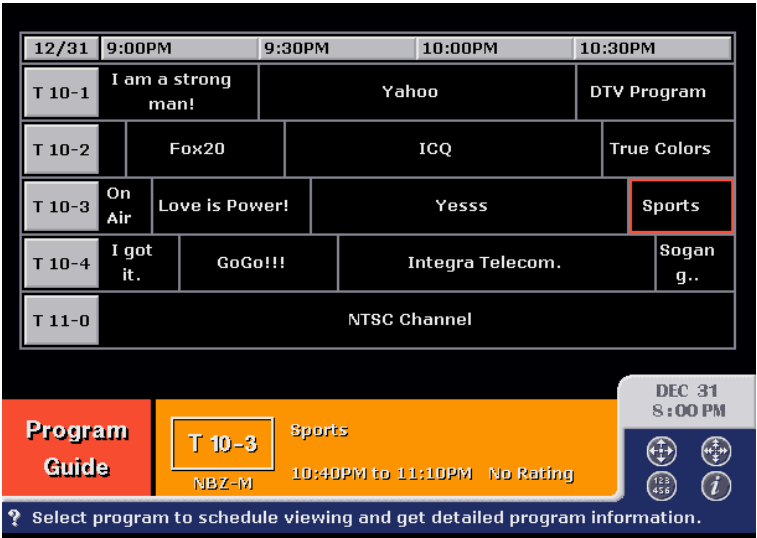
In the Program Guide, you can navigate all available channels and see what's on the channels. You can get general information on the programs and, where available, can get detailed information such as actors, story, category and so on. While navigating the Program Guide, you can tune to an attractive program or book it for future watching, using the Set Schedule menu called from the Program Guide.

The Program Guide is organized in two different way, in grid format and list format. The Grid Guide looks like the TV guide you can see in newspaper. The List Guide is a time-sorted version of the Grid Guide. You can search for a program one by one in starting time order to see what is the nearest program in time.

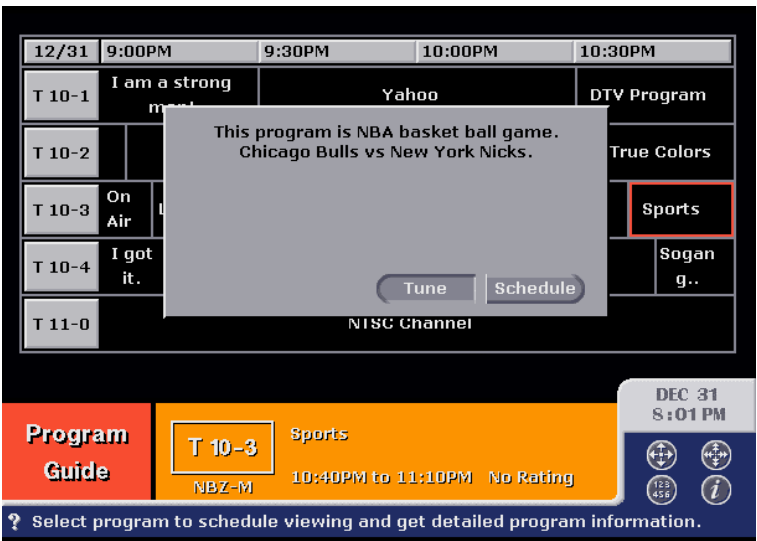


5.2. WHAT CAN YOU GET IN THE PROGRAM GUIDE

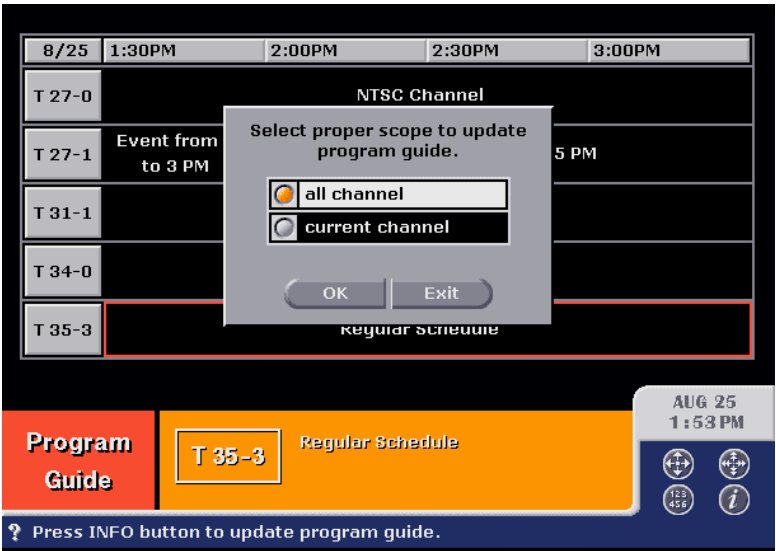
The Program Guide menu has the Guide Banner at bottom of the screen. The Guide Banner shows information on the program selected under the cursor. As from the Channel Banner, you can get channel number, channel name (call-sign), program title, broadcasting time, and rating information.



If you want more detailed information, press SELECT key. Then, HD receiver acquires ETT table and displays the detailed information. For example, if you place cursor on program titled "Sports", the Program Guide tells you the program is an NBA match, Bulls vs. Nicks.



If you want to update PSIP table and refresh the Program Guide contents, press INFO key. Then, HD receiver will acquire EIT tables and refresh program guide. Other example is shown below.



In the Detailed Information you can see two buttons, Tune and Schedule. Select Tune button to tune to the channel, T10-3 in the above example.

CH	Start Time	Program Title



CHAPTER

6

USER PREFERENCE

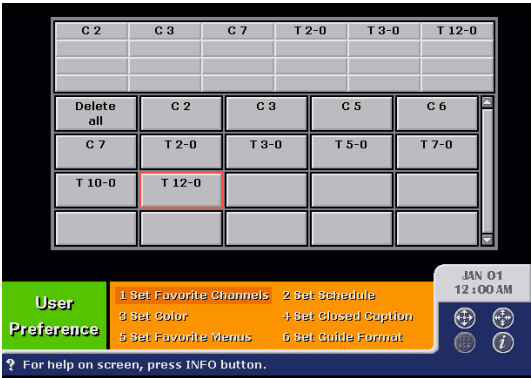
6.1. SET FAVORITE CHANNELS

How to Get There

Main Menu ⇒ User Preference [2] ⇒ Set Favorite Channels [1]

The Set Favorite Channels menu allows you to select your favorite channels from many ones provided by HD receiver. You can navigate the favorite channels by pressing left or right arrow key in normal viewing.

- In the Set Favorite Channels menu, you can see the favorite channel list that shows you which channels are selected as favorite channels. If you have not selected any channel so far, the list shall be empty.
- Below the list are the available channels. User can move the cursor and select to add or delete a favorite channel. To delete the full list of the favorite channel, select Delete All button.



6.2. SET SCHEDULE

How to Get There

Main Menu ⇒ User Preference [2] ⇒ Set Schedule [2]

The Set Schedule Menu displays reserved future programs you have selected in the Program Guide or in this menu. When it's time for any reserved programs to be on-air, the HD receiver tunes to the program or displays a notifying dialog box depending on the Play/Remind radio box selection.

- If you select the Set Schedule menu, HD receiver displays the list of reserved channels. You can select any empty slot to add a new reservation. Selecting a non-empty slot lead you to the edit menu of the reserved program.



- By selecting any slot in the Set Schedule menu, you can add or edit a program schedule. You shall decide the start date and time of the program, and the channel.

- The Daily/Weekly/Monthly radio box decide if the schedule is valid once or periodically on the weekly/monthly basis.

- The Play/Remind radio box allows you to select the HD STB operation when the program starts. Selecting Play allows HD STB to tune to the program without your intervention while your watching other program. Selecting Remind makes HD STB to display a dialog box that notify you of the start of the program.

- If you want to cancel the selected schedule, choose Delete button.



6.3. SET COLOR

How to Get There

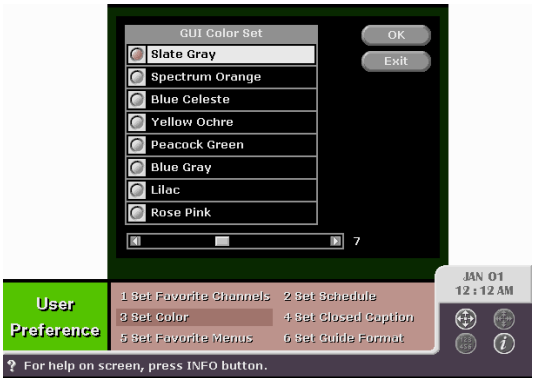
Main Menu ⇒ User Preference [2] ⇒ Set Color [3]

HD receiver has eight different color palettes for user's preference. The factory setting has Slate Gray as a default palette. If you prefer any other color set, you can change the palette in this menu. Adding to the palette selection, you can also choose the transparency level of the OSD background.

- Choose any palette you want using the radio box.
- To change the transparency level, move down the cursor to the scroll bar at the bottom of the menu, and move the thumb using left/right arrow key. Level 1 is most transparent and level 15 is most opaque.



- On your choosing a palette, the color change will be effective immediately as shown on the right figure. Select OK button to preserve the change permanently.



6.4. SET CLOSED CAPTION

How to Get There

Main Menu ⇒ User Preference [2] ⇒ Set Closed Caption [4]

While watching a digital TV program, you can see the digital closed caption, which is an enhanced form of the current closed caption you can see in analog TV. The digital closed caption can display caption in multiple languages in multiple windows on the screen.

HD receiver can acquire analog TV signal and support conventional analog close caption. The Set Closed Caption menu allows you to control digital and analog closed caption acquisition.

- Select preferred language for the closed caption in the Language radio box. This selection is effective to the digital closed caption only.
- Select closed caption type in the CC Type radio box. This selection is effective to the analog closed caption only.
- Enable/disable the closed caption display in the On/Off radio box. This selection is effective to both the analog closed caption and the digital closed caption.



6.5. SET FAVORITE MENUS

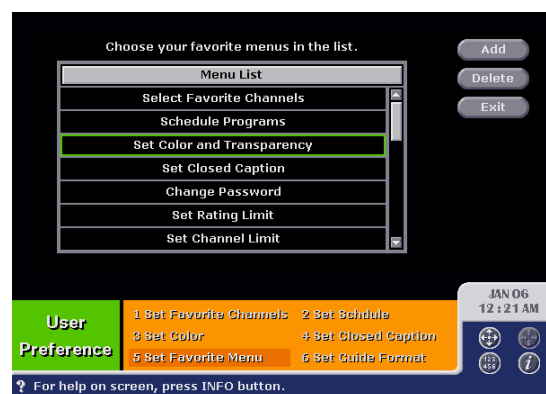
How to Get There

Main Menu ⇒ User Preference [2] ⇒ Set Favorite Menus [5]

HD receiver has many useful features that need your explicit configuration to use them. To support easy configuration, the GUI system of HD receiver provides you more than 40 graphical menu screens, some of which you access frequently and some of which you do less frequently, or even never.

The Set Favorite Menu allows you to select frequently accessed menu screens and to access them with much less key inputs. You can directly access the menu in the favorite menu list by pressing FETCH key on the remote and selecting a wanted menu. It's much easier than navigating the menu tree step by step.

- To add a menu to the favorite menu list, select a wanted menu in the list and select Add button.
- You can access the selected menu by pressing FETCH key while watching a program.
- To delete a menu from the favorite menu list, select a wanted menu in the list and select Delete button.
- You have alternative way to add/delete a menu to/from the favorite menu list. Press FETCH key in a menu screen you want to add/delete.



6.6. SET GUIDE FORMAT

How to Get There

Main Menu ⇒ User Preference [2] ⇒ Set Guide Format [6]

As described in Chapter 5, HD receiver supports two modes of the program guide, the grid format and the list format. You can toggle the guide format using the Set Guide Format menu. Selecting this menu is equivalent to pressing GUIDE button in the Program Guide screen.

CHAPTER

7

PARENTAL CONTROL

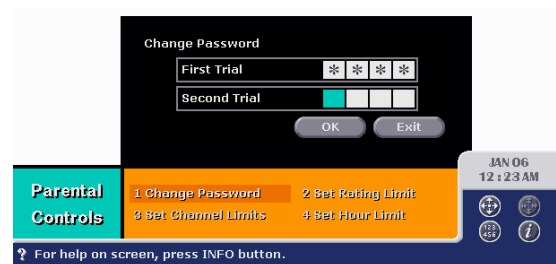
7.1. CHANGE PASSWORD

How to Get There

Main Menu ⇒ Parental Control [3] ⇒ Change Password [1]

The Change Password menu allows you to change the password that will be used for accessing Parent Control menu, overriding predefined limits, and resetting the system.

- Type a new password in the First Trial text box. You can change the digit by pressing arrow key upward or downward. After having typed a digit, press right arrow key to move the cursor to next digit.
- Type the password again in the Second Trial text box for confirmation.
- Select OK button. If the change is not successful, follow above sequence once again.



7.2. SET RATING LIMIT

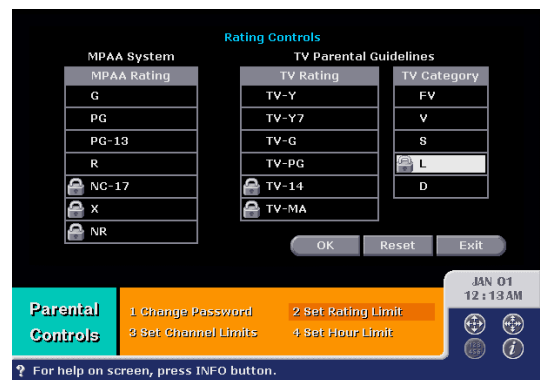
How to Get There

Main Menu ⇒ Parental Control [3] ⇒ Set Rating Limit [2]

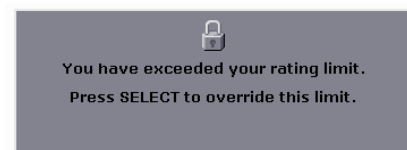
The Set Rating Limit allows you to prevent rated programs from being watched. The rating information of a program can be achieved from EIT and RRT table for a digital TV program, and from VCHIP information for an analog TV program. HD receiver is compliant with EIA-766 rating system for ATSC DTV.

If you want to watch any program whose rate is over the limit defined in the Set Rating Limit, you have to type correct password to override the rating limit.

- Select MPAA rating limit in the MPAA Rating radio box.
- Select TV rating limit in the TV Parental Guidelines radio box.
- Select OK button. If you want to clear current rating limit, select Reset button.



- When you are tuning to the program whose rating violates the user-defined rating limit, HD STB displays the Password Inquiry dialog box.
- Typing correct password overrides the limit and enables you to watch the program.



7.3. SET CHANNEL LIMIT

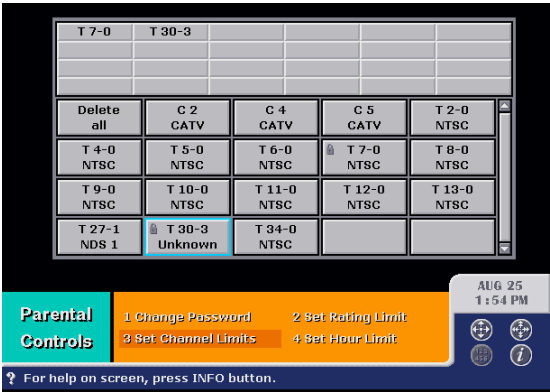
How to Get There

Main Menu ⇒ Parental Control [3] ⇒ Set Channel Limit [3]

The Set Channel Limit allows you to prevent programs from being watched on specific channels, such as adult channels.

If you want to watch program of the limited channel, you have to type correct password to override the channel limit.

- In the Set Channel Limit menu, you can see the limited channel list that shows you which channels are selected as limited channels. If you have not selected any channel so far, the list shall be empty.
- Below the list are the available channels. User can move the cursor and select to add or delete a limited channel. To delete the full list of the limited channels, select Delete All button.



7.4. SET HOUR LIMIT

How to Get There

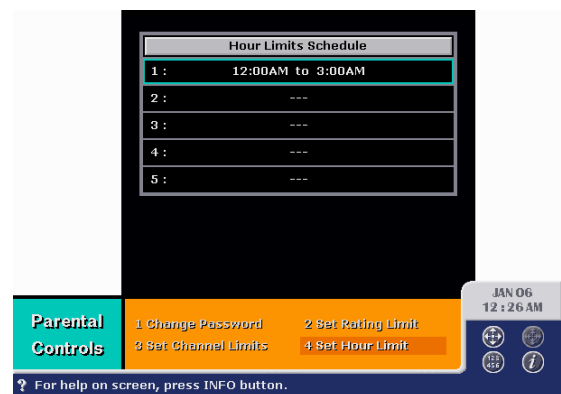
Main Menu ⇒ Parental Control [3] ⇒ Set Hour Limit [4]

The Set Hour Limit allows you to prevent programs from being watched during user-defined hours.

If you want to watch program during the limited time, you have to type correct password to override the hour limit.

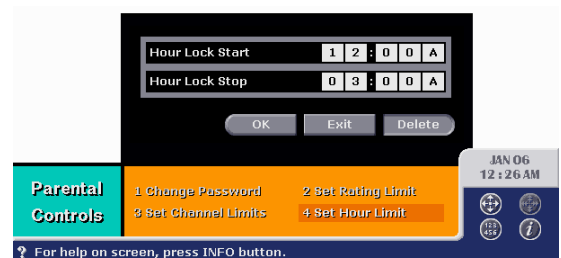
You can set up to five hour limits and these multiple limits can be useful if you want to prevent your children from watching TV during 6~9 o'clock in the morning, 8~11 o'clock and 12~3 o'clock at night, for example.

- Select any slot to edit the hour limit.



- Type the start and the end time of the limit.

- If you want to set multiple limits, select another slot and repeat the procedure.



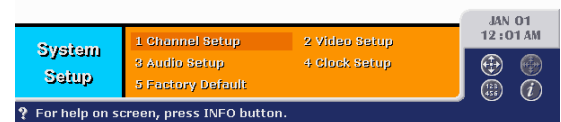
CHAPTER

8

SYSTEM SETUP

8.1. SYSTEM SETUP

The System Setup menu includes channel setup, video setup, audio setup, clock setup, and factory default.



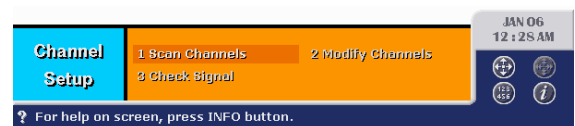
8.2. CHANNEL SETUP

How to Get There

Main Menu ⇒ System Setup [4] ⇒ Channel Setup [1]

The Channel Setup menu allows you to search available channels from the Network Interface Modules with which HD receiver is equipped. HD receiver has three NIMs for terrestrial and cable. You can search available channels in two different ways, full search and signal check.

- Select the Scan Channels menu for full search of signals from specific NIM.
- Select the Modify Channels menu to edit analog channels from terrestrial and cable.
- Select the Signal Check menu to search and check a signal from specific NIM.

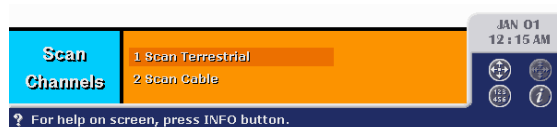


8.3. SCAN CHANNELS

How to Get There

Main Menu ⇒ System Setup [4] ⇒ Channel Setup [1] ⇒ Scan Channels [1]

- Select a NIM to scan.

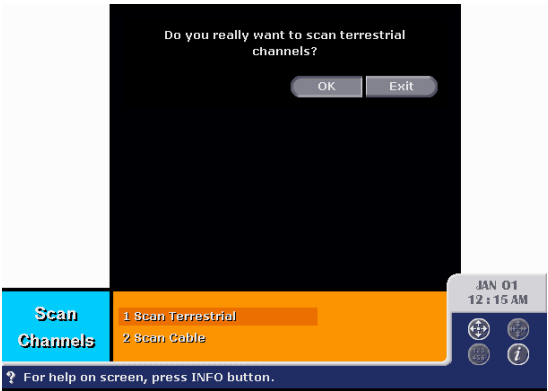


8.4. SCAN TERRESTRIAL

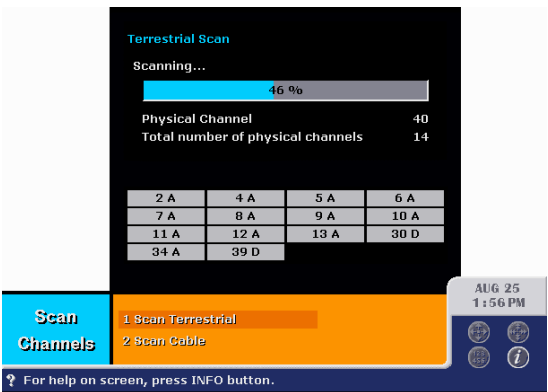
How to Get There **Main Menu ⇒ System Setup [4] ⇒ Channel Setup [1] ⇒ Scan Channels [1] ⇒ Scan Terrestrial [1]**

The Scan Terrestrial allows you to search available terrestrial channels. HD receiver scans from channel 2 to 83 and builds the channel map. You can navigate channels only after the channel map is built.

- Select OK button if you want to proceed. It will take couple of time to finish the scanning.



- While scanning, HD STB displays the progress bar and the number of channels acquired so far. The bottom of the screen shows the list of the acquired channels. 2A means analog channel 2, and 30D digital channel 30.
- You can skip or cancel the scanning by pressing PREV or CLEAR key on the remote. The channel map built so far is preserved.



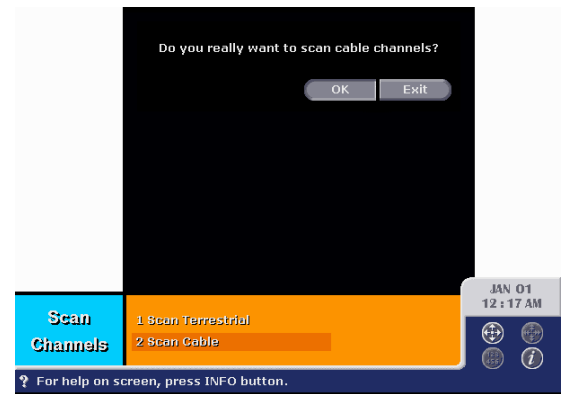
8.5. SCAN CABLE

How to Get There

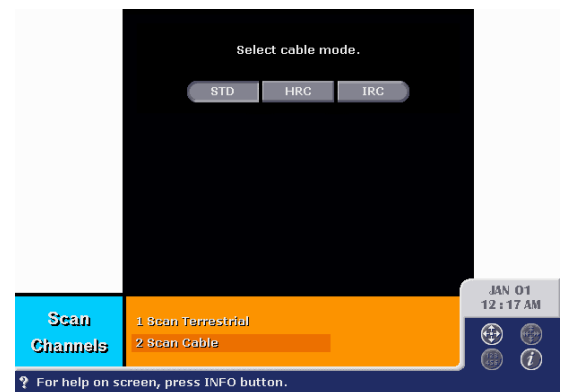
Main Menu ⇒ System Setup [4] ⇒ Channel Setup [1] ⇒ Scan Channels [1] ⇒ Scan Cable [2]

The Scan Cable allows you to search available analog cable channels. HD receiver supports three frequency modes, Standard, HRC and IRC. HD receiver scans from channel 1 to 156 and builds the channel map. You can navigate channels only after the channel map is built.

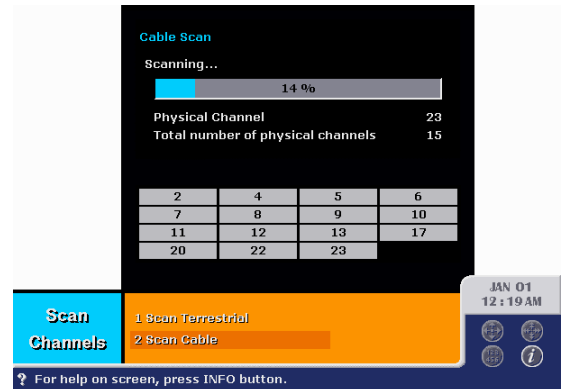
- Select OK button.



- Select cable frequency mode. It will take couple of time to finish the scanning.



- While scanning, HD STB displays the progress bar and the number of channels acquired so far. The bottom of the screen shows the list of the acquired channels.
- You can skip or cancel the scanning by pressing PREV or CLEAR key on the remote. The channel map built so far is preserved.



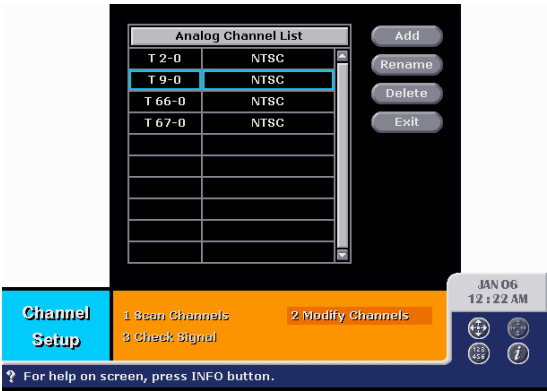
8.6. MODIFY CHANNELS

How to Get There

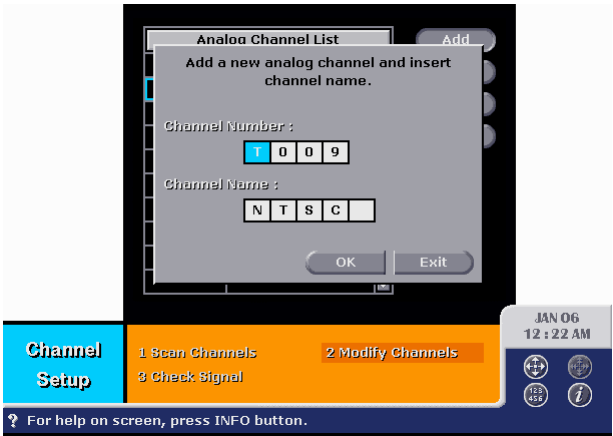
Main Menu ⇒ System Setup [4] ⇒ Channel Setup [1] ⇒ Modify Channels [2]

The bad or weak signal may result in the wrong scanning result especially for analog channels. You can add any missing analog channels and delete unwanted analog channels.

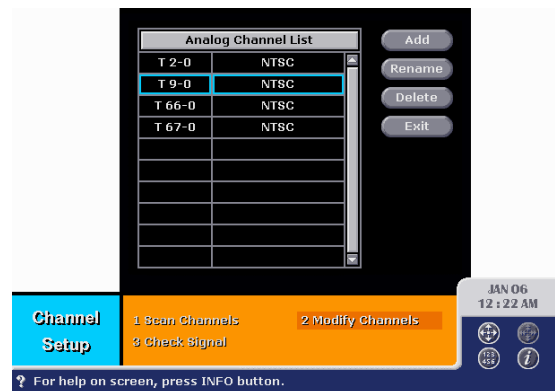
- To add a new analog channel, select Add button.



- Type the Channel Number. You can decide NIM type of the channel by select T for terrestrial and C for cable.
- Type the Channel Name. This channel name will be used as a call sign in the Banner and the Program Guide.
- Select OK button.



- To rename a channel, place cursor on the channel and select the Rename button.

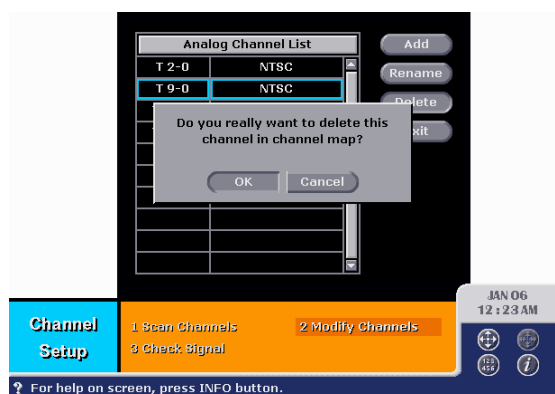


- Type new Channel Name. This channel name will be used as a call sign in the Banner and the Program Guide.

- Select OK button.



- To delete a channel, select Delete button. The channel will be delete of the channel map immediately.



8.7. CHECK SIGNAL

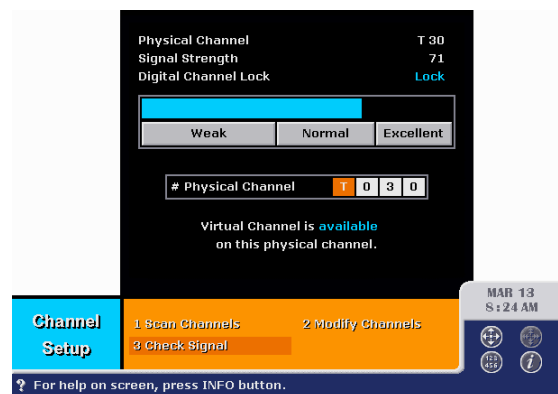
How to Get There

Main Menu ⇒ System Setup [4] ⇒ Channel Setup [1] ⇒ Check Signal [3]

The Check Signal allows you to check the signal strength and to acquire the signal. If the signal is available, the channel will be added to the channel map.

This menu is useful to pointing terrestrial antenna. If you know the physical channel number that is on-air, you can get the channel map in this menu without full scanning described in Section 8.3 to 8.4.

- Type the physical channel number to test and press SELECT key. You can decide NIM type of the channel by select T for terrestrial, C for cable.
- Change the direction of the antenna to get good quality if signal is weak.
- If signal is sufficiently strong, HD STB builds the channel map.



8.8. VIDEO SETUP

How to Get There

Main Menu ⇒ System Setup [4] ⇒ Video Setup [2]

- Set monitor type / format or HD output mode.



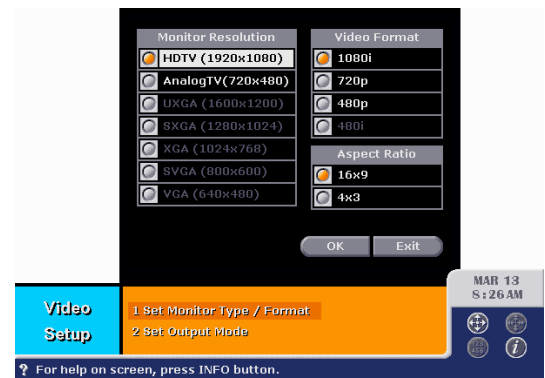
8.9. SET MONITOR TYPE / FORMAT

How to Get There

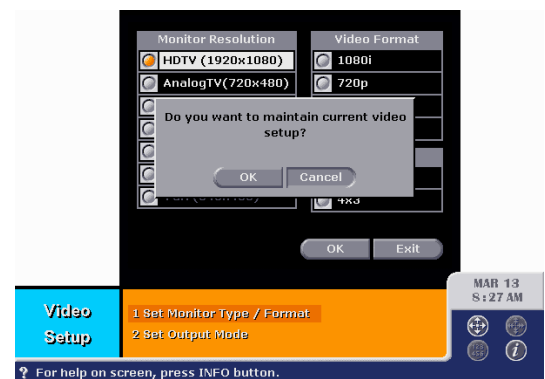
Main Menu ⇒ System Setup [4] ⇒ Video Setup [2] ⇒ Set Monitor Type/Format [1]

The Set Monitor Type/Format menu allows you to select the format of the output video signal. Any digital/analog video source will be converted to the user-defined format. HD receiver can support 1080I/720P/480P/480I video output formats.

- Select the monitor type in the Monitor Resolution radio box. The number in the parenthesis is the maximum resolution of your monitor. You should select actual output resolution in the Video Format radio box.
- Select the aspect ratio of your monitor in the Aspect Ratio radio box.
- Select OK button.



- If your monitor supports the selected video format and the cable connection is correct, you can see the confirmation dialog box. Select OK button.
- Select the aspect ratio of your monitor in the Aspect Ratio radio box.
- Select OK button.
- If your monitor does not display nothing, don't be embarrassed and just wait for seconds. The video will recover to its previous state.



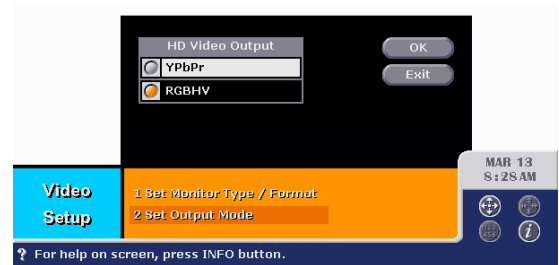
8.10. SET OUTPUT MODE

How to Get There

Main Menu ⇒ System Setup [4] ⇒ Video Setup [2] ⇒ Set Output Mode [2]

The Set Output Mode menu allows you to select the HD output mode, YPbPr or RGBHV.

- Select the output mode in the HD video output radio box.
- Select OK button.



8.11. AUDIO SETUP

How to Get There

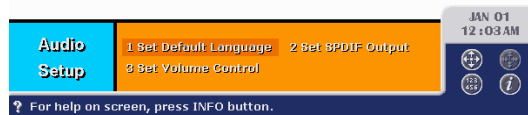
Main Menu ⇒ System Setup [4] ⇒ Audio Setup [3]

Digital TV channel can include multiple audio tracks for a program to support multiple language. If you set your preferred language, HD receiver searches the language in the audio tracks and, if found, decodes and display the audio. If not, it just decodes English audio track.

The audio you hear from the speaker can be feed forward to other equipment such as Dolby Pro Logic decoder, amplifier, external AC-3 decoder, etc. HD receiver supports SPDIF digital audio output for the feed-forward. You can select the audio output to be PCM or AC-3.

T910 support auto volume control. You can set audio of all channels to same value using auto audio level control.

- Select the Select Default Language menu to set your preferred audio language.
- Select the Set SPDIF Output to select digital output format.
- Select the Set Volume Control to enable or disable auto volume control.



8.12. SELECT DEFAULT LANGUAGE

How to Get There

Main Menu ⇒ System Setup [4] ⇒ Audio Setup [3] ⇒ Select Default Language [1]

- Select your preferred audio language in the Default Language radio box.
- Select OK button.

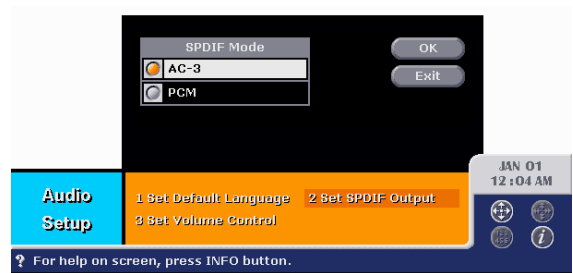


8.13. SELECT SPDIF OUTPUT

How to Get There

Main Menu ⇒ System Setup [4] ⇒ Audio Setup [3] ⇒ Select SPDIF Output [2]

- Select the SPDIF Mode radio box.
- Select OK button.

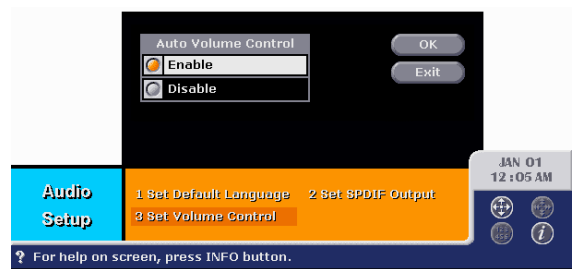


8.14. SET VOLUME CONTROL

How to Get There

Main Menu ⇒ System Setup [4] ⇒ Audio Setup [3] ⇒ Set Volume Control [3]

- Select the Auto Volume Control radio box.
- Select OK button.



8.15. CLOCK SETUP

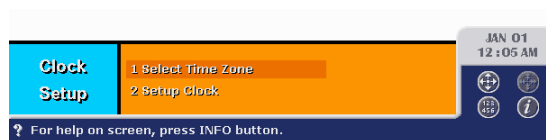
How to Get There

Main Menu ⇒ System Setup [4] ⇒ Clock Setup [4]

In digital TV system, broadcaster sends the time information, and the receiver is supposed to use it to display consistent Program Guide information. Some broadcasters, however, fail to send correct time information, and in this case you should set your clock for yourself.

Another important information you should tell HD receiver is where you live in the time zone. This information is used to calculate accurate local time.

- Select the Select Time Zone menu to set your time zone.
- Select the Setup Clock to set the clock mode, auto or manual, the current clock and the start and end time of the daylight saving time.

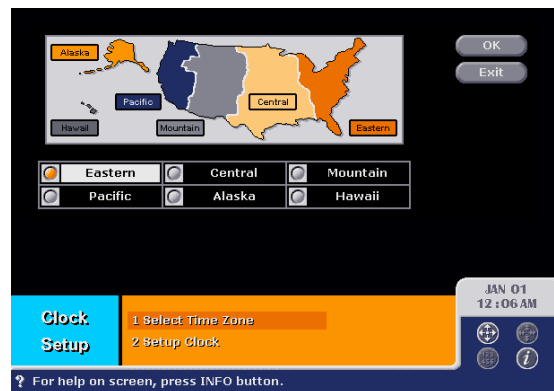


8.16. SELECT TIME ZONE

How to Get There

Main Menu ⇒ System Setup [4] ⇒ Clock Setup [4] ⇒ Select Time Zone [1]

- Select your time zone.
- Select OK button.

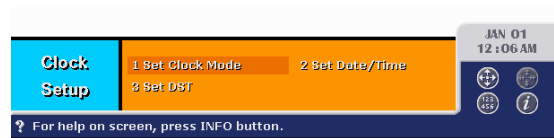


8.17. SETUP CLOCK

How to Get There

Main Menu ⇒ System Setup [4] ⇒ Clock Setup [4] ⇒ Setup Clock [2]

- Select the Set Clock Mode, Set Date/Time or Set DST.



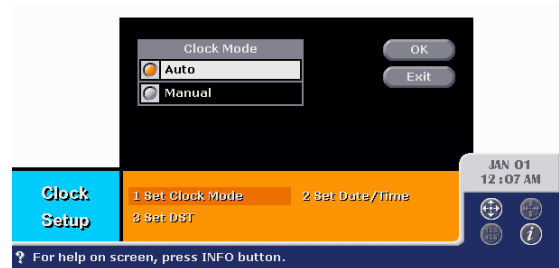
8.18. SET CLOCK MODE

How to Get There

Main Menu ⇒ System Setup [4] ⇒ Clock Setup [4] ⇒ Setup Clock [2] ⇒ Set Clock Mode [1]

If you set clock mode to auto, HD receiver will receive time information from broadcaster, however, if you set clock mode to manual, you should set your clock and daylight saving time for yourself in Set Date/Time and Set DST menu.

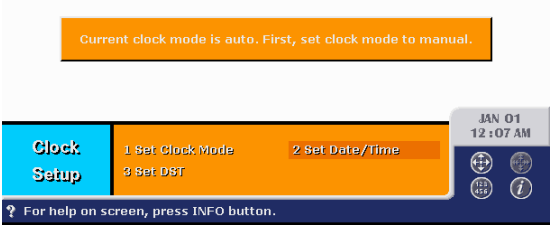
- Set clock mode, auto or manual.
- Select OK button



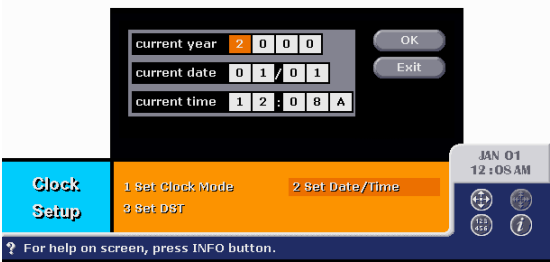
8.19. SET DATE/TIME

How to Get There **Main Menu ⇒ System Setup [4] ⇒ Clock Setup [4] ⇒ Setup Clock [2] ⇒ Set Date/Time [2]**

If you have set clock mode to auto, you can't enter Set Date/Time and Set DST menu. If you try to enter the menu, error message will be displayed as shown below.



- Set current time and date.
- Select OK button.

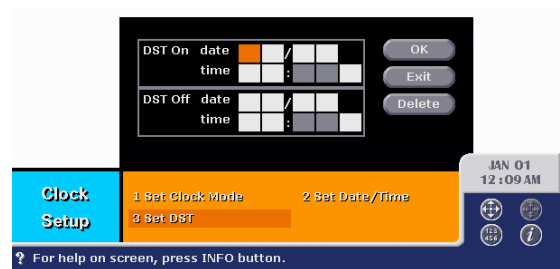


8.20. SET DST

How to Get There

Main Menu ⇒ System Setup [4] ⇒ Clock Setup [4] ⇒ Setup Clock [2] ⇒ Set DST [3]

- Set DST start and end time.
- Select OK button.



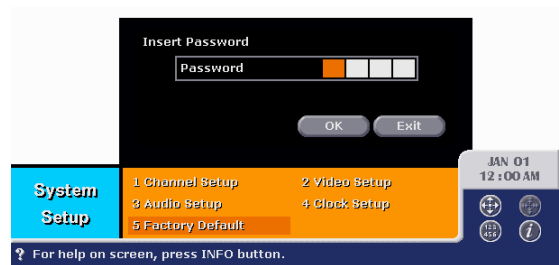
8.21. FACTORY DEFAULT

How to Get There

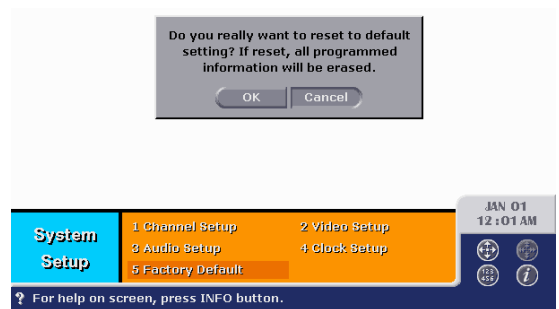
Main Menu ⇒ System Setup [4] ⇒ Factory Default [5]

The Factory Default menu allows you to reset all set-ups you made so far. Every menu setup will recover to its factory default, and the channel map will be removed.

- First, you should insert password to reset all set-ups.



- Select OK button if you want to proceed. Select Cancel button, if not.



CHAPTER**9****APPENDIX****9.1. TROUBLE SHOOTING**

There may be various reasons for the abnormal operation of the HD receiver. Check the receiver according to the procedure shown below.

If the HD receiver does not work properly after checking it, please contact the dealer. Don't open the receiver cover. It may cause a dangerous situation.

Symptom	Cause	Remedy
The display on front panel does not light up.	The power cord is not plugged in.	Check that power cord is plugged in to the wall outlet.
No picture or sound	Wrong connection of the Video/Audio output of the HD receiver to TV or monitor. Audio muting. TV power off.	Connect the Video/Audio output of the HD receiver to TV or monitor correctly. Press the MUTE button. Turn TV on.
No channel or signal	The HD receiver can't receive the signal	Check the antenna cable, or connect the cable to the HD receiver correctly.

Symptom	Cause	Remedy
The remote control does not working	The batteries of the remote control are not inserted or exhausted.	Check whether the batteries are inserted correctly in your remote control. Also, check the batteries whether they are exhausted, then, replace new ones.
	The remote control is not set correctly.	Press correspond button (TV, VCR, CABLE, DVD) of component to use. If it still does not working, program it again as described in Section 3.2
Sound okay, but picture poor	Signal is weak, or antenna connection is wrong.	Check the signal strength in the check signal menu. If the signal is weak, check antenna connection.
Blank screen	Wrong connection of the Video/Audio input or output of the HD receiver.	Connect the Video/Audio input or output of the HD receiver to other components correctly.
	There may not be any program on at that time.	Try another channel, or try current channel after.

9.2. SPECIFICATION

1. General Descriptions

ATSC Compliant Consumer HDTV STB

8VSB Digital/Analog Terrestrial Reception

STD/HRC/IRC Analog Cable Reception

MPEG2 [MP@HL](#) Video Decoding

Dolby AC-3/MPEG1 and MPEG2 Audio Decoding

1080i/720p/480p YUV/RGB Multiplexed Video Output (User Selectable)

480i CVBS/SVHS Video Output (User Selectable)

Down-mixed 2 Channel Audio Output for AC-3

5.1 Channel/PCM SPDIF Digital Audio Output for AC-3

External CVBS./VHS Video Input

External Stereo/SPDIF Audio Input

Full Support of EPG Compliant with ATSC PSIP Specification

Automatic Channel Scan and PSIP Update Algorithm

Parental Guidance and Rating Control

Program Scheduling

Favorite Channel Selection

Default Audio Language Selection

GUI Palette Selection

EIA608 Analog/Digital Closed Caption

2. Inputs and Outputs

HD receiver supports multiple NIM inputs and multiple baseband AV IO's as described in Table 1 below. Baseband AV IO's includes digital interfaces adding to analog ones, which is SPDIF. Future model will include IEEE1394 transport stream interface and DFP interface.

Adding to the AV signals IOs, HD receiver includes RS232 port for SW download and status monitoring and control.

Port	Type	Connected To/From
Digital/Analog Terrestrial RF Input	F Type Female	VSB NIM
Digital Satellite RF Input	F Type Female	QPSK NIM
Analog Cable RF Input	F Type Female	VSB NIM
External CVBS SD Video Input	RCA Female	NTSC Decoder
External SVHS SD Video Input	SVHS	NTSC Decoder
External Stereo Audio Input	2xRCA Female	Audio Input Switch
External SPDIF Audio Input	Toslink	SPDIF Decoder
YUVHV/RGBHV HD Video Multiplexed Output	5xRCA Female	Video DAC
VGA HD Video Output	VGA Female	Video DAC
CVBS SD Video Output	RCA Female	NTSC Encoder
SVHS SD Video Output	SVHS	NTSC Encoder
Stereo/Down Mixed Audio Output	2xRCA Female	Audio Output Switch
SPDIF Audio Output	Toslink	Audio Output Switch
RS232 Low Speed Data Port	9 Pin D-SUB Male	CPU

Table 1. Inputs and outputs

3. Electric Specification

Tuner & Channel	
Type	F-Type, IEC169-24 Female x 2
Frequency Range	50 MHz to 862 MHz
Input Range	-12 dBm to -80 dBm
SNR	15.4 dB TOV
Input Impedance	75 Ω Unbalanced
Digital IF Frequency	44 MHz
Analog IF Frequency	45.75 MHz
IF Bandwidth	6MHz
Demodulation	6 MHz
Input Symbol Rate	10.76 Ms/sec
FEC Decoder	Convolved Code Rate 1/2
Equalization Range	-4 to 44.6 μ sec

System & Memory	
Main Process	ST20-TP4 C2 Core
Flash Memory	2 MB
System RAM	4 MB
MPEG SDRAM	16 MB
EEPROM	8 KB
Front	7 Keys
Remote	47 Keys, Universal Type

MPEG Transport	
Standard	MPEG2 ISO/IEC 13818-1 Transport Stream
Rate	Up To 80 Mbps

Video Decoding	
Standard	MPEG2 ISO/IEC 13818-2
Capability	Up To MP@HL All 18 ATSC Formats
Output	1080i/720p/480p/480i
Aspect Ratio	4:3, 16:9 Pan & Scan

Audio Decoding	
Standard	Dolby Digital (AC-3) MPEG2 Later 2 MPEG1 Layer 1/2
Output	Down-mixed 2 Channel Analog Audio 5.1 Channel PCM/AC3 Digital Audio in SPDIF (Coaxial and Optical)
Sampling Rate	32/44.1/48 kHz
Frequency Response	20~20kHz < ± 2 dB 60~18kHz < ± 0.5 dB

Video Output Characteristics		
YPbPr	Y	1.0 Vpp (Picture 0.7 Vpp, Sync 0.3 Vpp)
	PbPr	± 0.35 Vpp (Positive Polarity)
	Impedance	75 Ω
RGBHV	RGB	0.7 Vpp (Positive Polarity)
	HV Sync	TTL (Negative)
	Impedance	75 Ω
VGA	RGB	0.7 Vpp (Positive Polarity)
	HV Sync	TTL (Negative)
	Impedance	75 Ω
Composite	1 Vpp 75 Ω	
SVHS	Y	1 Vpp 75 Ω
	C	0.286 Vpp 75 Ω

Power Supply	
Input Voltage	AC90 to 260 V (50/60 Hz)
Type	PWM Regulator
Power Consumption	Max 60 W
Standby Power	Max 10 W
Protection	Separate Internal Fuse The Input Shall Have Lightning Protection

Physical Specifications	
Size (W x H x D)	380 x 60 x 280 mm
Weight	3.5 kg

Environmental Condition

Operating Temperature	0 to 40 °C
Storage Temperature	-10 to 50 °C
Operating Humidity	10 to 85 % RH, Non-condensing
Storage humidity	5 to 90 % RH, Non-condensing

9.3. FIRMWARE DOWNLOAD

When HD receiver boots up, the boot loader in the Flash ROM waits for user's key input for firmware update. By sending any message to HD receiver through RS-232 port within five seconds after boot-up, you can activate the firmware update procedure. If you have serial cable and PC, you can download a new firmware using HyperTerminal in MS Windows.

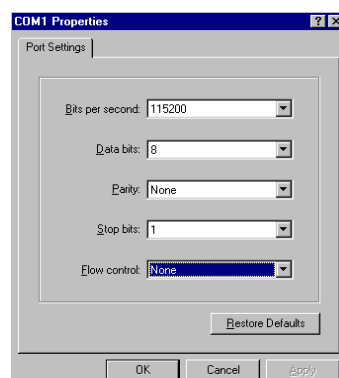
Step 1

Connect PC and HD receiver using a serial cable. Open HyperTerminal in Accessories Group and set communication port.



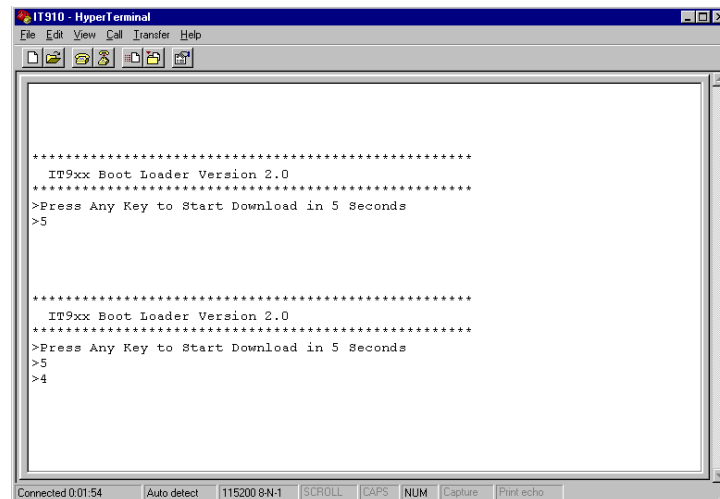
Step 2

Set port property as shown in figure below.



Step 3

If you plug out and on HD receiver, the boot loader starts and will count five seconds. Press any key within five seconds if you want to download a new firmware.



```
IT910 - HyperTerminal
File Edit View Call Transfer Help

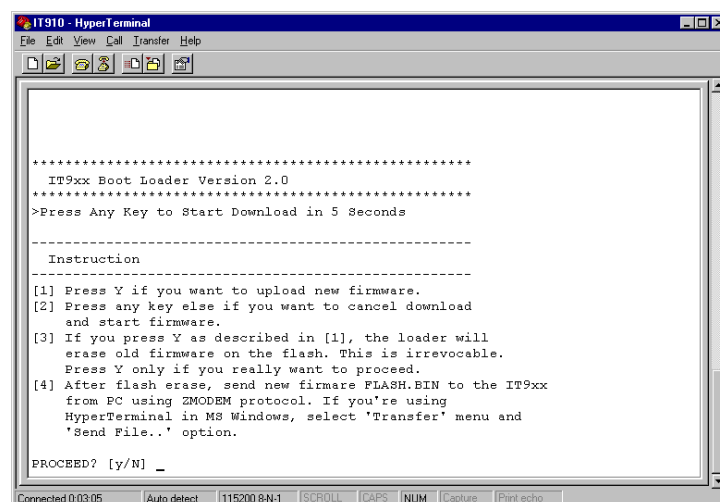
*****
IT9xx Boot Loader Version 2.0
*****
>Press Any Key to Start Download in 5 Seconds
>5

*****
IT9xx Boot Loader Version 2.0
*****
>Press Any Key to Start Download in 5 Seconds
>5
>4

Connected 0:01:54 Auto detect 115200 8N-1 SCROLL CAPS NUM Capture Print echo
```

Step 4

If you press any key, instruction message will be displayed as shown in figure below. Press y key if you want to proceed to download a new firmware.



```
IT910 - HyperTerminal
File Edit View Call Transfer Help

*****
IT9xx Boot Loader Version 2.0
*****
>Press Any Key to Start Download in 5 Seconds

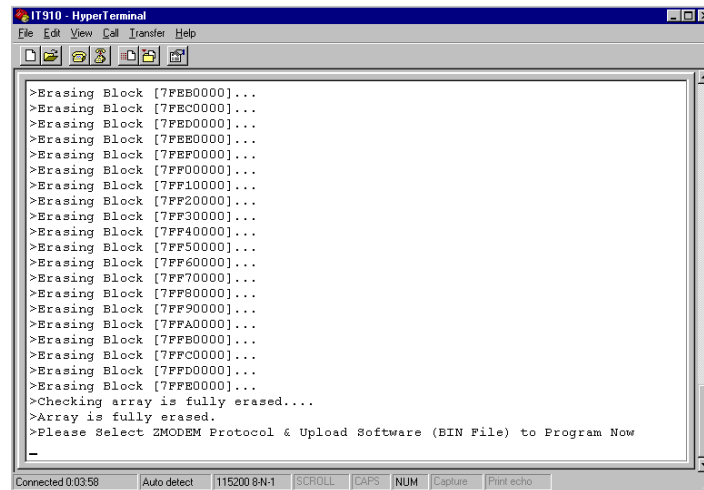
-----
Instruction
-----
[1] Press Y if you want to upload new firmware.
[2] Press any key else if you want to cancel download
and start firmware.
[3] If you press Y as described in [1], the loader will
erase old firmware on the flash. This is irrevocable.
Press Y only if you really want to proceed.
[4] After flash erase, send new firmware FLASH.BIN to the IT9xx
from PC using ZMODEM protocol. If you're using
HyperTerminal in MS Windows, select 'Transfer' menu and
'Send File..' option.

PROCEED? [y/N] _

Connected 0:03:05 Auto detect 115200 8N-1 SCROLL CAPS NUM Capture Print echo
```

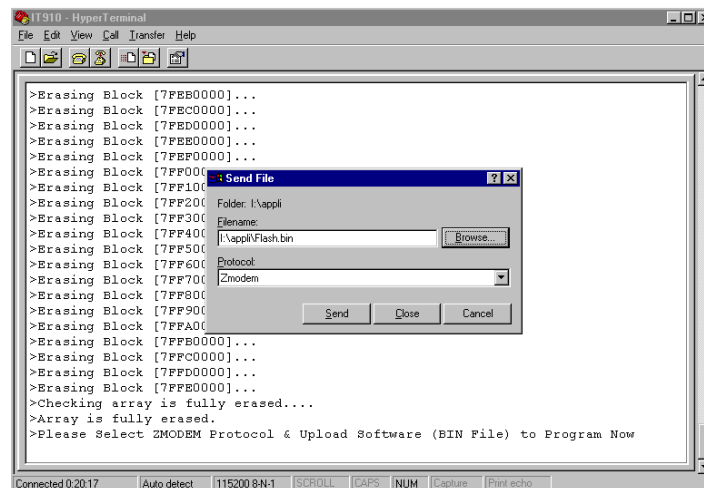
Step 5

Loader will erase old firmware on the flash and start to receive a new firmware FLASH.BIN from PC using ZMODEM protocol. If you're using HyperTerminal in MS Windows, select 'Transfer' menu and 'Send File...' option.



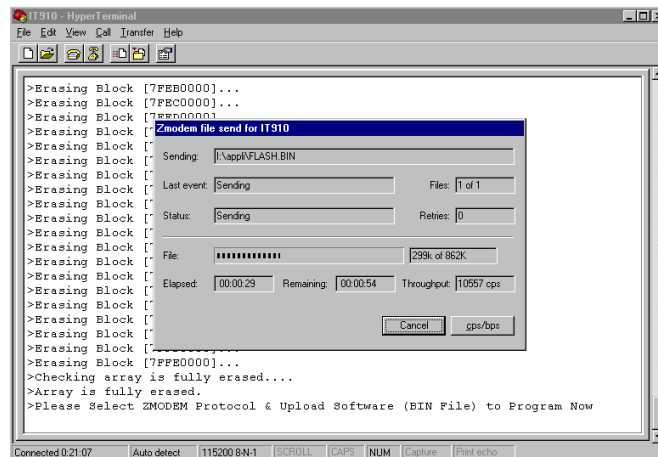
Step 6

Select Send button after typing path and FLASH.BIN in Filename box



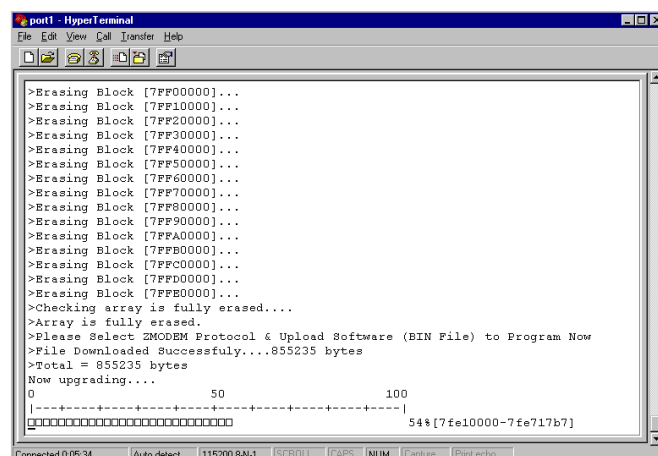
Step 7

A new firmware is transmitted from PC to HD receiver using ZMODEM protocol as shown in figure below.



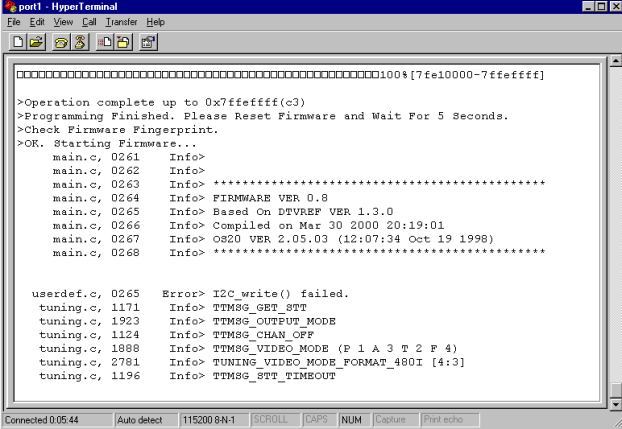
Step 8

If the download is successful, the boot loader will start to upgrade firmware automatically.



Step 9

After the update is finished, HD receiver will reboot itself automatically and start new firmware.



```
port1 - HyperTerminal
File Edit View Call Transfer Help

=====100%[7fe10000-7ffeffff]

>Operation complete up to 0x7ffeffff(c3)
>Programming Finished. Please Reset Firmware and Wait For 5 Seconds.
>Check Firmware Fingerprint.
>OK. Starting Firmware...
main.c, 0261 Info>
main.c, 0262 Info>
main.c, 0263 Info> *****
main.c, 0264 Info> FIRMWARE VER 0.8
main.c, 0265 Info> Based On DTVREF VER 1.3.0
main.c, 0266 Info> Compiled On Mar 30 2000 20:19:01
main.c, 0267 Info> OS20 VER 2.05.03 (12:07:34 Oct 19 1998)
main.c, 0268 Info> *****

userdef.c, 0265 Error> I2C_write() failed.
tuning.c, 1171 Info> TTM8G_SET_STT
tuning.c, 1923 Info> TTM8G_OUTPUT_MODE
tuning.c, 1124 Info> TTM8G_CHAN_OFF
tuning.c, 1888 Info> TTM8G_VIDEO_MODE (P 1 A 3 T 2 F 4)
tuning.c, 2781 Info> TUNING_VIDEO_MODE_FORMAT_480I [4:3]
tuning.c, 1196 Info> TTM8G_STT_TIMEOUT

Connected 0:05:44 Auto detect 115200 8N-1 SCROLL CAPS NUM Capture Print echo
```

GLOSSARY OF TERMS

Alternate Audio	Alternate Audio Program on the digital channel.
Auto Volume Control	Sets audio volume level of all channels to same value.
Clock Mode	Auto - clock by time information received from broadcaster. Manual – clock setting for yourself in Set Date/Time and Set DST menu.
DST	Daylight Saving Time.
DVD	Digital Video Disk.
Factory Default	Reset all-setup value to default.
Grid Guide	Program Guide formatted grid type.
GUI	Graphic User Interface.
HD	High Definition.
List Guide	Program Guide formatted list type.
NIM	Network Interface Module.
OSD	On Screen Display.
RGBHV	Video format including red, green, yellow, horizontal sync and vertical sync.
SAP	Secondary Audio Program on the analog channel.
STB	Set top Box.
Time Zone	Area where same standard time is used.
Toslink Cable	An optical cable used by Dolby Digital receiver.
YPbPr	Video format including Y (luminance), Pb and Pr (chrominance).