

Two Tuner PVR Digital Satellite Receiver

User's Manual

Model No.: SV-360 Elite PVR



Important Safety Instructions

- ① Read these instructions.
- ② Keep these instructions.
- ③ Heed all warnings.
- ④ Follow all instructions.
- ⑤ Do not use this apparatus near water.
- ⑥ Clean only with dry cloth.
- ⑦ Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- ⑧ Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus(including amplifiers) that produce heat.
- ⑨ Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- ⑩ Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- ⑪ Only use attachments/accessories specified by the manufacturer.
- ⑫ Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
- ⑬ Unplug this apparatus during lightning storms or when unused for long periods of time.
- ⑭ Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



Caution - These servicing instructions are for use by qualified service personnel only. To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

WARNING : To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

Precautions



TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE THE COVER(OR BACK). NO USER-SERVICEABLE PARTS ARE INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



This symbol indicates "dangerous voltage" inside the product that presents a risk of electric shock or personal injury.



This symbol indicates important instructions accompanying the product.

Do not install this equipment in a confined space such as a bookcase or similar unit.

WARNING : To prevent damage which may result in fire or electric shock hazard, do not expose this appliance to rain or moisture.

- **Water Proof:** Do not expose the receiver to the water or any liquids.
- **Grounding:** The ground of the LNB cable must be directly connected to the system ground for the satellite dish. The grounding system must comply with local regulations. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

Service

Do not attempt to service the receiver by yourself as opening or removing cover may expose you to the dangerous voltage and will void warranty.

Refer all servicing to qualified service personnel. Servicing is required when the receiver has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the receiver, the receiver has been exposed to rain or moisture, does not operate normally, or has been dropped. To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

Please contact the authorized service center and personnel.

Caution & Note for FCC Regulation

Caution: Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limit for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures.

Contents

| | | | |
|---|-----------|--|-----------|
| Chapter 1. Basic Information | 4 | 3.3 PVR(Personal Video Recorder) ... | 41 |
| 1.1 Features | 4 | A. USB Drives | 41 |
| 1.2 Package Contents | 6 | B. PVR Settings | 42 |
| 1.3 Front Panel | 7 | C. MP3 | 42 |
| 1.4 Rear Panel | 8 | D. JPEG | 43 |
| 1.5 Universal Remote Control | 10 | E. Play List | 44 |
| 1.6 Connection Configuration | 12 | 3.4 Advanced Settings | 45 |
| | | A. Event Timers | 45 |
| Chapter 2. Set-Up Procedure | 14 | B. Remind Timers | 46 |
| 2.1 Menu Tree | 14 | Chapter 4. How to Enjoy PVR Function ... | 48 |
| 2.2 Set-Up Procedure | 15 | 4.1 Recording | 48 |
| 2.3 Channel Information Bar | 21 | A. Recording | 48 |
| 2.4 Channel List | 24 | B. Dual Recording | 48 |
| 2.5 Channel Guide: EPG | 25 | C. Stop the Recording | 49 |
| (Electronic Program Guide) | | 4.2 Playback | 49 |
| 2.6 Audio | 26 | A. Play | 50 |
| 2.7 Zoom | 27 | B. Rewind & fast forward | 50 |
| 2.8 Multi-Picture | 28 | C. Slow | 51 |
| 2.9 Find | 29 | D. Bookmark & Repeat | 51 |
| 2.10 Satellite Selection | 31 | 4.3 Recording Reservation | 52 |
| 2.11 Signal | 31 | 4.4 Time Shift | 52 |
| 2.12 Sleep | 32 | | |
| 2.13 PIP | 32 | Chapter 5. Technical Specification | 53 |
| 2.14 Capture | 33 | Chapter 6. Universal Remote Control Setting | 55 |
| 2.15 Other Useful Function | 34 | & Key List | 55 |
| Chapter 3. Main Menu | 35 | | |
| 3.1 Installation | 35 | | |
| A. Dish Setting | 35 | | |
| B. Channel Edit | 35 | | |
| C. Factory Reset | 37 | | |
| D. Version Information | 37 | | |
| 3.2 System Settings | 37 | | |
| A. User Settings | 37 | | |
| B. A/V Settings | 38 | | |
| C. Time Settings | 39 | | |
| D. Parental Control | 40 | | |

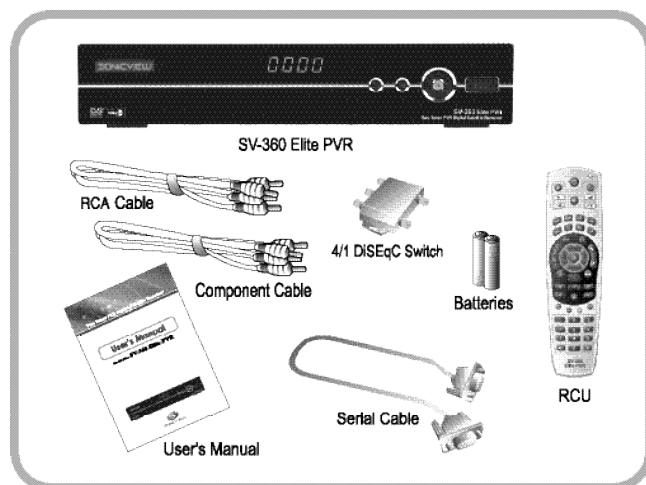
Chapter 1. Basic Information

1.1 Features

- MPEG 2 Digital & Fully DVB Compliant
- 2 Tuners: Blind Scan Supported
- EPG Supported
- 256 Colors & User Friendly GUI for Easy Control
- The Fastest Booting & Scan Speed
 - Single & Multi-Satellite Auto Scan
 - Manual Scan Supported
- Highly Speedy Channel Changing Time
- 6,000 Channels Memory Capacity for TV & Radio Programs
- 8 Favorite Channel List Group Programmable
- Channel Sorting by FTA, CAS, Satellite, Alphabetic Order & Network
- PIG (Picture-In- Graphic) Available
- Multi-Picture Flame Screen Available
 - 4, 9, 16 Flame Screen & Thumbnail View Selectable
- Zoom In-Out Function for Watching Screen
- Various Aspect Ratio with 4:3, Letter Box, Full Screen & 16:9
- Background Graphic Display for Radio Program Channels
- Parental Lock Function using Master PIN Code
- Automatic NTSC / PAL Detection and Simple Video Converter (NTSC <-> PAL)
- IR Universal Remote Control Unit
- DiSEqC 1.0, 1.1, 1.2 & USALS / 22KHz Switching Control Supported
- S/PDIF for Digital Audio / Dolby AC-3 Bitstream Output
- Component Output : 3 RCA (Y, Pb, Pr)
- RS232C 9-PIN Connector : RS232C cross serial cable
 - PC to Set S/W Downloading using Window based Specific Program
 - Set to Set S/W Downloading (Main Program & Channel List Data File)
- S-VHS Output Connector
- USB 2.0 Supported : 3 Embedded host ports
- Dual Recording & Playback Simultaneously
- Picture-In-Picture (PIP) Supported
- Recording Capacity depending on external HDD Size
 - 80GB -> 40 Hours, 160GB-> 80Hours, 200GB-> 100Hours
- Powerful Trick Mode Supported
- Playback of the Selected Section Repeatedly
- Timeshift mode supported

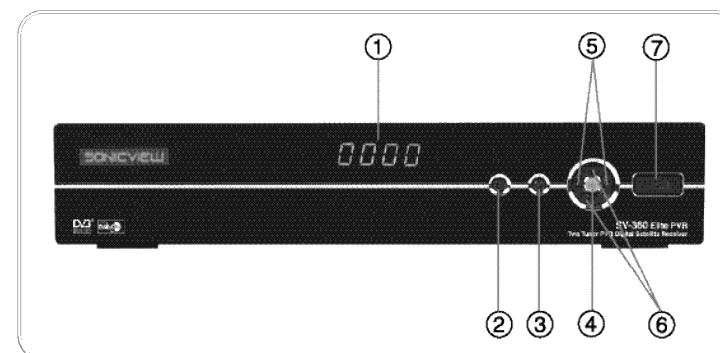
1.2 Package Contents

Please check to make sure the following contents are in the product package.



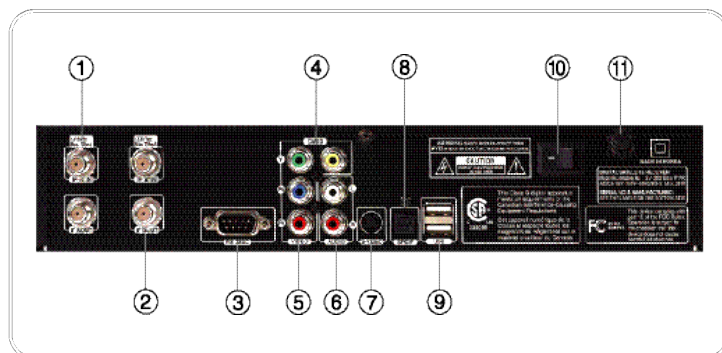
- Package contents may be subject to change.
- The other accessories must be purchased individually.

1.3 Front Panel



- 1) Display
4 Characters 7 segment LED
- 2) Power Key
Switch the receiver ON/OFF
- 3) MENU
Display the main menu
- 4) OK
Select the menu or its parameters
- 5) VOL Up/Down
Volume Up/Down or direction key
- 6) CH Up/Down
Change the channel Up/Down or direction key
- 7) USB(1 Host)
Connect a USB device.

1.4 Rear Panel



1) LNB 1 IN & IF 1 OUT(TUNER 1)

Connect the satellite antenna cable and use IF 1 OUT to connect it to another receiver or LNB 2 IN

2) LNB 2 IN & IF 2 OUT(TUNER 2)

Connect the satellite antenna cable and use IF 2 OUT to connect it to another receiver

3) RS-232C

Serial port for software download & upload

4) VIDEO

Video output for TV or other

5) Component (Y, Pb, Pr)

Y, Pb, Pr video output for the enhanced video signal

6) AUDIO L/R

Audio output for TV or other

7) S-VIDEO

S-video output to connect to TV's S-video input

8) S/PDIF

Digital audio output for external stereo system

9) USB (2 Host)

Connect USB devices

10) Main Power Switch

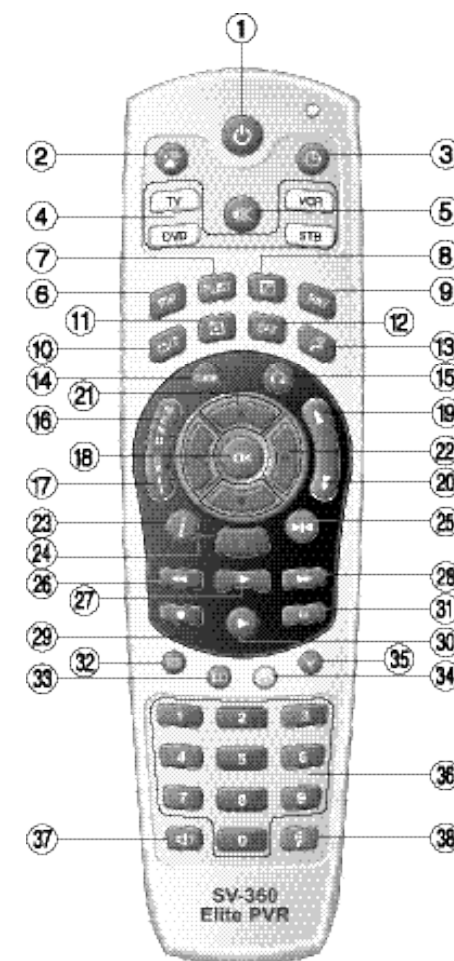
Turn ON/OFF of main power

11) Power Cord

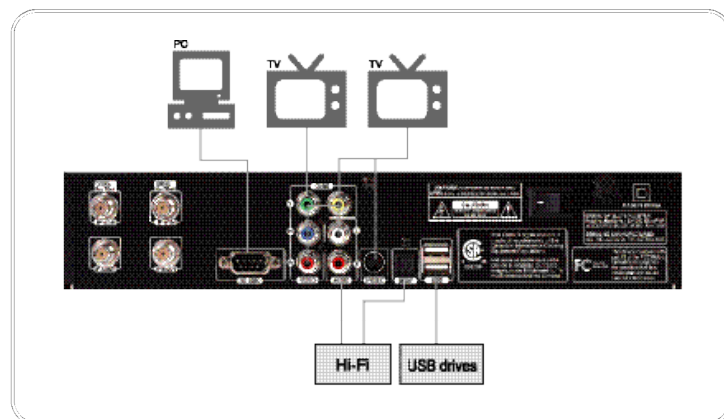
95~250Vac, 50~60Hz

1.5 Universal Remote Control

- | | |
|--|---------------------------------|
| 1) POWER () | 25) Repeat () |
| Power on/off | Repeat the AV file |
| 2) Signal () | 26) Rewind () |
| Monitor the signal status | Rewind the AV file |
| 3) SLEEP () | 27) Slow () |
| Sleep timer | Play the AV file slowly |
| 4) Universal Mode | 28) Fast forward () |
| Select mode of TV, DVD, VCR, STB | Play the AV file fast forward |
| 5) Mute () | 29) STOP () |
| Mute the audio | Stop the AV file |
| 6) PIP(Picture-In-Picture)() | 30) Playback () |
| Turn to PIP mode | Play the AV file |
| 7) P.List () | 31) Pause () |
| Display sub-screen channel list | Pause the AV file |
| 8) PIP Picture Exchange () | 32) AV file list () |
| Exchange main screen with sub-screen in PIP-Mode | Show the AV file list |
| 9) FAV () | 33) Bookmark () |
| Display the favorite channel group list | Bookmark the AV file |
| 10) TV/RADIO () | 34) Bookmark Repeat () |
| Select TV/Radio channel mode | Repeat the bookmark the AV file |
| 11) Capture () | 35) Time-Shift () |
| Capture the screen shot | Start manual time-shift |
| 12) SAT () | 36) Numeric Key |
| Select satellite name | 37) Audio () |
| 13) FIND () | Select audio mode |
| Find the channel name | 38) ZOOM () |
| 14) GUIDE () | Zoom in/out the screen |
| Call the EPG | |
| 15) LAST () | |
| Return to the previous channels | |
| 16) MENU () | |
| Turn to main menu | |
| 17) EXIT () | |
| Exit the menu | |
| 18) OK () | |
| Confirm the selection | |
| 19) Page Up () | |
| Up the page | |
| 20) Page Down () | |
| Down the page | |
| 21) Channel Up/Down () | |
| Up/Down the channel & move Up/Down | |
| 22) Volume Up/Down () | |
| Up/Down the volume & move Left/Right | |
| 23) Information () | |
| Show the channel information | |
| 24) Record () | |
| Record the channel | |



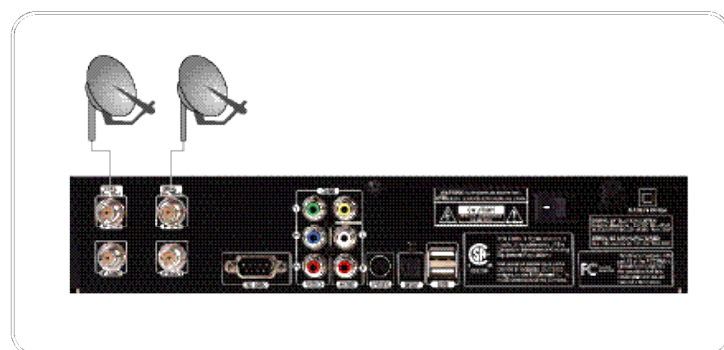
1.6 Connection Configuration



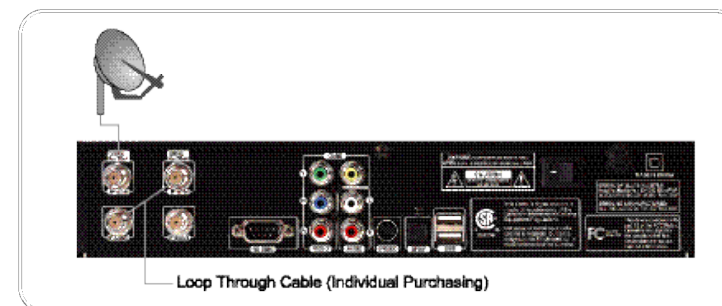
1) Connection to TV, Hi-Fi & PC and External USB drives.

2) Connection to Antenna

A. Two separated antennas.



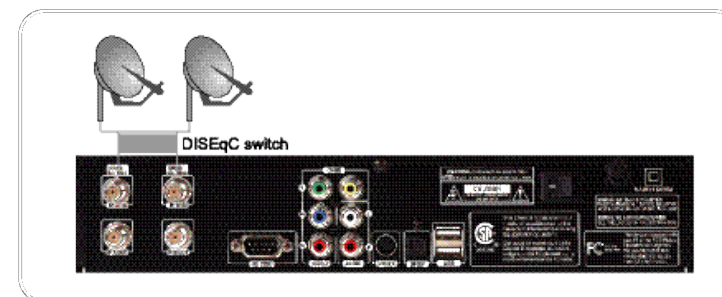
B. One antenna



C. One antenna with twin LNB



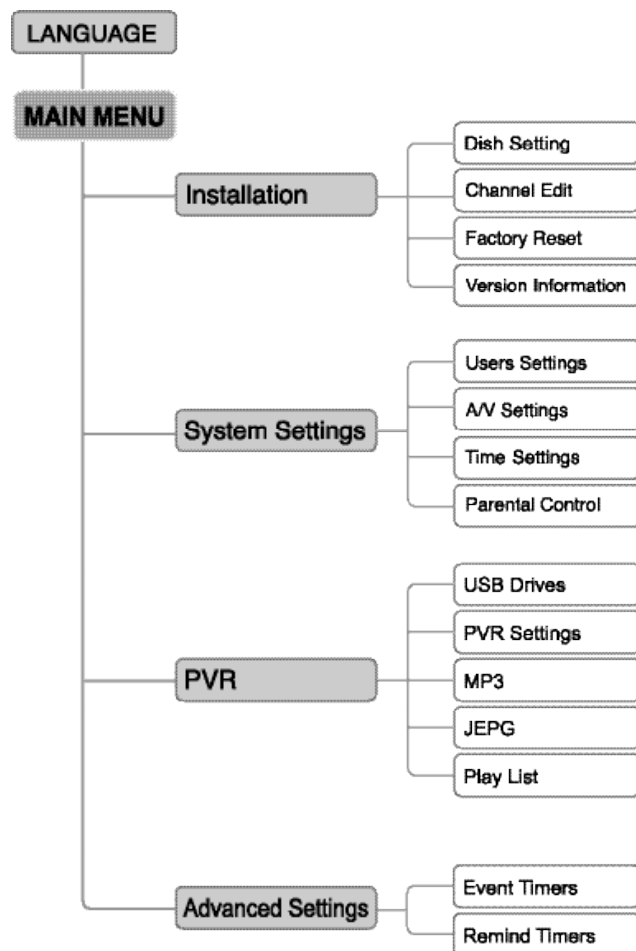
D. Two separated with twin LNB & DiSEqC switches.



Chapter 2. Set-Up Procedure

2.1 Menu Tree

Menu Tree helps you to understand the STB operation structure.



2.2 Set Up Procedure

Set up procedure is completed by the following process.

Main Menu => Installation Menu => Dish Setting

1. Language Selection

When you plug in the receiver, you can see the **Select Language** menu on the screen. You can select the GUI language you want using the RCU direction keys and press the **OK** key. Only when the factory default is done, this menu appears.

After language selection, you see the black screen with the channel information bar that mentions "No TV Channel". Then, press the **MENU** key on the RCU and the **Main Menu** appears on the screen.

In case channel list is preset in the factory, you can see the **No. 1 channel** of the channel list after language selection. In this case you can change the channel list, if you want, using the **Dish Setting** menu.

2. Channel Search

In the **Main Menu**, move to **Installation** menu and choose its sub-menu, **Dish Setting** menu, pressing **OK**.



(1) Tuner I.D

You can choose one of Tuner A, B using **Vol up/down** keys on the RCU.



(2) Satellite

You can choose the satellite you want to search pressing **Vol Up/Down** keys on the RCU.

Or press **OK** key and you can see all the preset satellite list with alphabetic-order.

Multi-selection is available using **Blue** function key.

- Red** function key : Add new satellite
- Green** function key : Delete the satellite
- Yellow** function key : Rename satellite
- Blue** function key : Add this satellite to multi selection
- SORT** key : Sort satellite list by name or location



(3) Connection

There are 3 types of connection .



-**Loop through** : Same satellite for Tuner 1 & Tuner 2 with Loop through.

-**Seperate** : Different satellite for Tuner 1 & Tuner 2 with direct connection each other.

(4) LNB Type/Frequency

You should choose your LNB frequency or enter its frequency directly using RCU.



-**22KHz** : ON/OFF

-**LNB Power** : ON/OFF

(5) Transponder

You can choose the Transponder frequency you want to search pressing **Vol Up/Down** keys on the RCU.



Or press the **OK** key and you can see all the preset transponder list with alphabetic-order.

- Red** function key : Add new transponder
- Green** function key : Delete the transponder
- Yellow** function key : Edit current transponder parameters
- Blue** function key : Add user channel to this transponder

(6) Search Option

3 modes are available.

- All** : FTA + Scrambled channels
- FTA** : FTA channels
- CAS** : Scrambled channels
- Network Search** : On / Off
- DiSEqC** : Off / Mini-A, Mini-B, Port 1,2,3,4

(7) Motor

This is for motorized antenna system and 3 modes are available.

- Disable** : Not to use
- motor** : move the antenna system
- USALS** : set up the antenna system with USALS

(8) Channel Scan Start

4 modes are available.

- Red** function key : Start Satellite Scan
- Green** function key : Start Transponder Scan
- Yellow** function key : Start Multi-Satellite Scan
- Blue** function key : Start blind Scan

Before channel scan start, you can check the signal's strength and quality with Signal Meter and Strength & Quality Bar on the screen of Channel Search menu.

(9) Channel Scanning

After channel scan start, **Channel Scanning** menu appears.

During the channel scanning, you can see the parameters related to the scanning.



- Satellite name
- Scanning percentage bar
- Scanned TV channel name & quantity
- Scanned Radio channel name & quantity
- Data channel quantity
- Scanning time

After Channel Scanning is completed, “Do you want to save?” pop-up menu appears. If you select Yes, the scanned channel list is saved.

Then, press **EXIT** key and Channel Search is completed to move to the no.1 channel.

2.3 Channel Information Bar

Once Channel Search is finished, you can enjoy the scanned channels.

During enjoying the TV & Radio programs, you can manage several functions with Channel Information Bar.



Whenever you change the channels, **Channel Information Bar** appears for a while at the bottom of screen and disappears. The program information is shown through this **Channel Information Bar**.

The Channel Information Bar consists of various icons and functions.

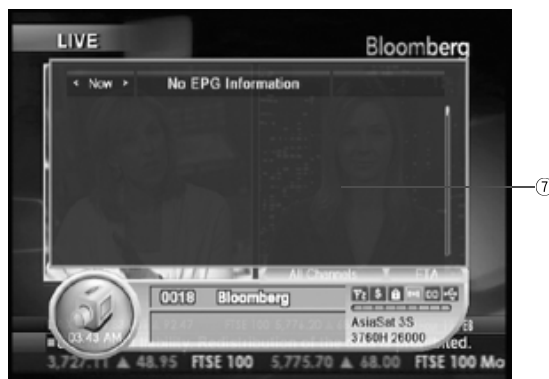
- ① TV / Radio program
This shows that the current channel is either TV program or Radio program. When you press **TV / RADIO** key on the RCU and it converts between TV & Radio program.
- ② Current Time
Current time is shown.
- ③ Channel No. & Name
This is the channel no. and name that you are watching. The channel no. is decided during the channel scanning.
- ④ Program Information
The program information is described in this area.

⑤ Favorite channel group

You can make favorite channel group in the **Channel Edit** menu. If you press **FAV** key, the list of all favorite groups is appeared, so you can select the group you want.

⑥ FTA / CAS Indicator

This indicates FTA / CAS channel.



⑦ Program Information

- a. During the **Channel Information Bar** is appearing, you can press **INFO** key on the RCU.

Then, EPG (Electronic Program Guide) Information of the current channel is popped up above the **Channel Information Bar**.

- b. When the Channel Information Bar disappears, You can press **INFO** key to recall the Channel Information Bar and press **INFO** key one more time to hide the Channel Information Bar.



8 favorite channel groups are available in total. You can add current channel to the selected favorite list directly by pressing **Red** function key.

⑧ Signal Quality Bar

This indicator the current channel's signal quality.

⑨ Icons of Channel Features

These icons show the specialty of the current channel.

- \$ icon(\$): Scrambled (CAS) channel
- Lock icon(): Channel is locked
- Audio icon(): Channel contains multiple audio.
- Dolby icon(): Channel contains Dolby digital audio.
- Antenna icon(): Antenna 1(Tuner1) / Antenna 2(Tuner2)
- USB icon(): USB Device is connected.

When the channel has above specialties , the icons are on,

⑩ Channel Data

These indicate satellite name, channel frequency, symbol rate, polarity & FEC of the current channel.

2.4 Channel List

During watching the channels, Channel List menu helps you to select easily the channel you want to see. Also, you can see the channel list that you have searched before group by group.



1. During watching the channel, press **OK** key to move to the **Channel List** menu.
2. You can change the **Channel List** using **Red** key on the RCU channel group by channel group and its 8 favorite channel group can be listed by **FAV** key on the RCU.
3. The selected channel's video & audio are shown on screen.
4. Pressing **OK** or **EXIT** key, the channel list is disappeared.

You can sort the channel list using **Yellow** key on the RCU.

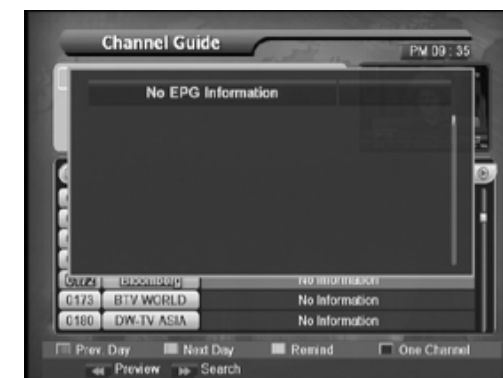
1. Press **Yellow** key on the RCU.
2. Then, the **Sort Channel List** window pops-up.
3. You can select 3 sort types.
Alphabetical / Satellite / Default, and press **OK** key.

Also, You can choose the channel list of Tuner 1 / Tuner 2 using **Green** key on the RCU.

In the Channel List, you can change TV Channel List to Radio Channel List to press the TV/RADIO key on the RCU.

2.5 EPG (Electronic Program Guide)

You can view program guide information in EPG menu.



1. During watching the channel, press **Guide** key to enter the **Channel Guide** menu.
2. In **EPG** menu, press **CH Up/Down** key to change channel. You can also enter channel number directly by number key. The **FIND** key is also available.
You can select specific event by **VOL Up/Down** key. If you want to view information about the selected event, press **OK** key.

You can also view the information about the current event immediately from channel information bar by pressing INFO key.

1. During watching the channel, press **Guide** key to enter the channel guide menu.
2. In Channel Guide Menu, you can see the current EPG information and next coming program information of the channel that you are watching.

- Previous Day:** You can see the event of previous day.
- Next Day:** You can see the event of next day.
- Remind:** You can see remind & event recording menu.
- One Channel:** You can change to one channel guide mode.

You can navigate the channel's EPG information using RCU.
Specially you can see the selected EPG information by hot keys.

2.6 Audio

Some channel contains multiple audio data.



1. When the current channel contains multiple audio data, the audio icon in the channel information bar is activated. Pressing **Audio** key, the audio selection window pops up.
2. Initially the default audio language in **User settings** menu is automatically selected. You can change audio language for the current channel. Once changed, it remains as selected by user for this channel.
3. You can change audio mode such as **Stereo**, **Mono**, **Left** and **Right** in this menu also.

The audio settings are channel specific, which means you can select different audio settings per channel.

2.7 Zoom

This function enables you to watch the part of screen in larger scale.



1. During watching TV program, press **Zoom** key on the RCU.
Then, the zoom cursor appears.
2. Using **CH Up/Down** & **VOL Up/Down**, you can move the cursor where you want to enlarge.
3. When you want to resize the scale, please use **Page UP/Down** key on the RCU.
4. After moving the cursor, please press **OK** key and the zoom is active and press **EXIT** key to return to the main frame.

5. In the zoom mode, you can see the zoom indicator on the corner and can move the zoomed spot directly.

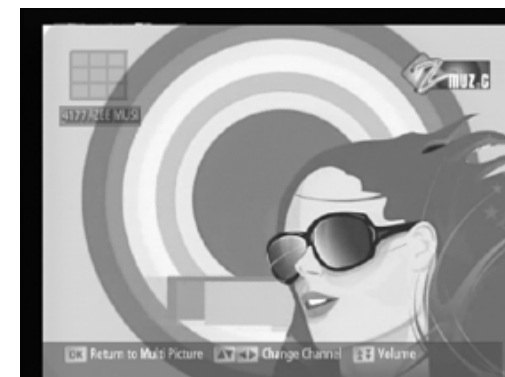
Zoom function is also workable in the Pause mode.

2.8 Multi-Picture

This function is to show multi-channels of Channel Group at the same time in one main frame.



1. During watching TV program, press **OK** key on the RCU. Then, the **Channel List** menu window pops up and press **Blue Key** for Multi Picture Menu.
2. You can select how many picture you want to see among 4, 9, 16 pictures and press **OK** key.
3. In the multi-picture mode, the selected channel no. & name is highlighted.
4. After multi-pictures are shown, only one channel is activated and others are in the still picture.
5. You can move the yellow frame cursor to select the TV program using **CH Up/Down** & **VOL Up/Down** key and press **OK** key to activate the TV program.



6. After activating the channel, press **OK** key and the channel becomes main frame.
7. In the main frame mode, you can see the multi-picture indicator on the upper left side. Using the indicator's cursor, you can change the channel directly in the main frame mode by **CH Up/Down** and **VOL Up/Down** key.

2.9 Find

This function enables you to find easily the channel you want by its name.



1. During watching TV program, press **FIND** key on the RCU if you want to search channel by its name.
2. Using **CH Up/Down**, **VOL Up/Down** and **OK** button, enter the name of the channel you are looking for.
Every time you enter the character, all the channels whose name contains the characters are listed in the right window.



3. You can move to the **Channel List** window in the right side at any time by press **Green** button and select channel by pressing **OK** key.

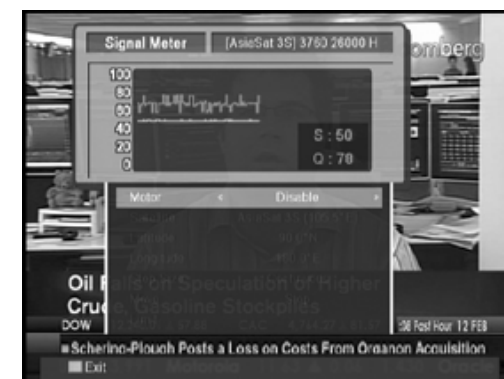
2.10 Satellite Selection



Press **SAT** key on the RCU and you can select the Tuner 1/ Tuner 2.
After selecting the Tuner you can also choose the satellite you want to see.

2.11 Signal

This function shows the signal status of the current channel with a larger view.



1. During watching TV program, press the **Signal** key (📶) on the RCU to view signal status such as signal strength and quality.
2. You can control DiSEqC or USALS setting here.

2.12 Sleep



1. Press the **SLEEP** (⏸) key on the RCU to set time the receiver will be turned off.
2. You can select time by **VOL Up/Down** and **OK** button.
3. Once sleep timer set, a small icon appears on the left top corner of the screen.

2.13 PIP(Picture-in-Picture)



You can see the 2 channels at the same time using **PIP** key on the RCU. Sub-screen channel & main screen channel are shown at the same time. Also, you can call the PIP List using **P.List** key and change the screen channel each other.



If you press (PIP) key on the RCU, Sub-screen channel is switched to the Main-screen channel.

When you want to move the position of the small screen channel, press the **FAV** key for 4 position moving.

2.14 Capture



You can capture the screen shot using capture (📷) key and save it to file into the USB drives. Please read the PVR section for move details.

2.15 Other Useful Function

• MUTE (M)

When you press **MUTE** key, the audio is changed between mute and un-mute state.

• TV/RADIO (TV/R)

When you press **TV/RADIO** key, the current channel list is switched between TV channels and Radio channels.

• LAST (L)

The receiver remembers up to 8 recent channels. When press **LAST** key the 8 recent channels are listed, and you can select one of those channels. You can also erase this list by pressing **RED** key in the list.

• FAV

Once the favorite group is made in **Channel Edit** menu, you can select one of the favorite list by pressing **FAV** key.

Chapter 3. Main Menu

This section describes each item in the main menu. Please note that some items in the menu are protected by PIN code to prohibit unauthorized modification. You can change PIN code in Parental Control menu.

3.1 Installation

A. Dish Setting

You can scan channels from connected signal feeds in this menu. You can also add, delete or modify satellite and transponder information here. (Please refer to the previous section for more information.)

B. Channel Edit

You can delete, rename, lock or unlock the scanned channels in this menu.



-Delete Channel: Press **Green** button.

-Rename Channel: Press **Yellow** button.

-Lock/Unlock Channel : Press **Blue** button.

-Move Channel: Press **INFO** key after selecting the channel to be moved and press **CH Up/Down** key to move. After moving the channel, press **OK** button to place the channel at new location. Multiple channels can be moved at a time.

You can also make, edit or delete favorite channel groups in this menu.

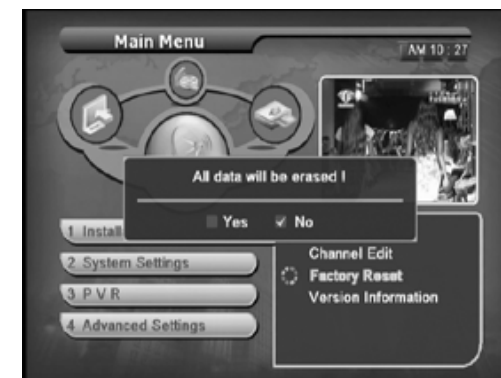


- Change current favorite group:** Whenever press **FAV** key, current favorite group changes in rotation.
- Add favorite channel:** Press **FAV** key to select the favorite group you want to add new channel. And press **OK** button to add selected channel to this group.
- Delete favorite channel:** After select channel in the left window, press **Green** button to remove this channel from any favorite group. Or press **Green** button in the right favorite group window.
- Rename favorite channel:** Move cursor the favorite group window, and press **Yellow** button.

Also, please refer to the help bar for more function

C. Factory Reset

You can delete all the data using this function, if you select yes, all the data will be erased to the factory default status.



D. Version Information

You can check the current Model No. and software version of the STB in this menu.

3.2 System Settings

A. User Settings

You can modify various properties of your receiver in this menu.



- Menu Language** : The language displayed in menu.
- Audio Language** : The default language for audio. If there are multiple audio in the current channel, this default language will be automatically selected initially. When the user selects other language in some channel, it remains till user change it again.
- Information Timeout** : It specifies the displaying time of channel info bar.
- Channel Change Mode** : It specifies the mode for changing channel. There are three types of channel changing as followings.

Black Out : Video goes black during shifting channel.

Freeze : Video remains still during shifting channel.

Fade In/Out : Video fades out slowly, and fades in again with new channel.

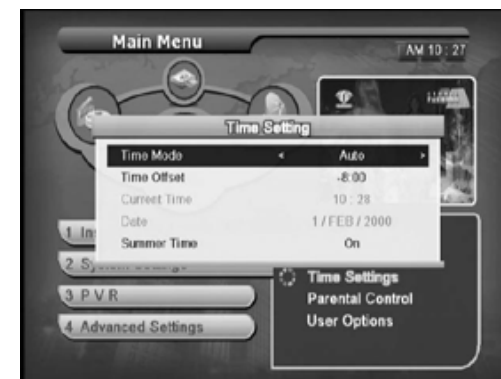
B. A/V Settings

The settings related audio and video outputs can be modified in this menu.



- TV Type** : You can select the type of your TV set such as NTSC, PAL and AUTO.
- Screen Type** : You can select the type of your TV set such as 4 : 3 or 16 : 9.

C. Time Settings



- Time mode**: There are two time modes.

- Auto
- Manual

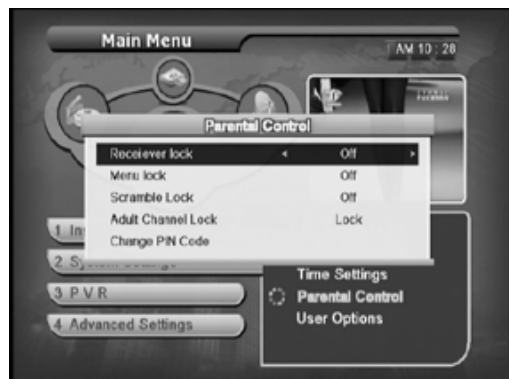
- Time offset**: In automatic time mode, you can set the time offset from GMT for your location.

- Current Time**: In manual time mode, you can enter current time directly.

- Summer Time**: When enabled, the time is adjusted automatically during day light-saving season.

D. Parental control

When you enter this menu, you should enter PIN code. The default is '0000' and you can change it in this menu.



-Receiver Lock : To lock receiver

-Menu Lock : To lock menu

-Scramble Lock : To lock scrambled channel

-Adult Channel Lock : To lock known adult channels at a time

-Change PIN Code : To change PIN code, press **OK** button and enter new PIN code

3.3 PVR (Personal Video Recorder)

This section explains how to operate PVR functions in details.

A. USB Drives

In this menu, you can browse the files of the USB hard drives or thumb drives that are connected to the STB and also manage the files as follows.

1. Playback of recorded video files.
2. Rename or delete files.
3. Make new folder or move files.
4. Update the STB with new firmware or channel list.

You may format, scan and remove safely the selected USB drive.

Please note that all data of the drives are erased when you do format.

And also you should do **Safe Remove** before disconnecting USB drives from the STB. If you disconnect the drives without safe remove, the data can be lost or damaged.



-Drive menu : Change the current drive.

-Format : Remove all files in the external drive and format it.

-Scan Disk : Try to find and fix the drives when there is error in file system.

-Safe Remove : Remove external drive without data loss or damage.

B. PVR Settings



-Time Shift Start: Select whether time-shift starts automatically or manually.

-Default Record Time: Set the default duration of the recording.

C. MP3

You can enjoy MP3 stored in external drives in this menu.

In the MP3 menu, only folders and MP3 files are displayed in the file list. All other files are hidden.

So MP3 menu helps you to find easily the MP3 file you want to listen.



To enjoy MP3 files,

1. Select the file you want and press the **OK** button.
2. The detailed information (ID3 tag) of the file are shown in the small frame.
3. If you want to stop playback, press **STOP** button.
4. If you want to listen next or previous song during playback, press **FF** or **REW** key.

D. JPEG

You can enjoy JPEG stored in external drives in this menu.

In the JPEG menu, only folders and JPEG files are displayed in the file list. All other files are hidden.

So JPEG menu helps you to find easily the jpeg file you want to see.



To enjoy JPEG files,

1. Select the file you want and press the **OK** button.
2. If you want to stop display, press **STOP** button.
3. If you want to see next or previous picture, press **FF** or **REW** key.

E. Play List

You can enjoy the selected MP3 and JPEG at a time using the play list. Also you can make your own play list by grouping your favorite songs or pictures together, and watch them as slide show.



To make your play list,

1. Press the Add button to make new play list in play list menu.
2. Using **CH Up/Down**, **VOL Up/Down** and **OK** button, input the name of this play list.
3. Using Add button or **OK** button, add MP3/JPEG files you want in play list editor.
4. Press the **Menu** key or **Exit** key to save play list in extern drives.



To enjoy play list that you made,

1. Go to **My Playlist** folder from the root folder.
2. Find and select the play list you want to playback.
3. Press **OK** button to start slide show or MP3 play.
4. If you want to return to My Playlist folder during playback, press the Menu key.

Please note that you can edit the play list using the edit button also.

3.4 Advanced Settings

A. Event Timers

You can start recording or turn on/off the STB at the scheduled time.

To start recording at the scheduled time, RECORD field should be on, while it should be off when you want to just turn on/off the STB.

Once you enable the scheduled recording, it will start at the specified time even when the STB is in standby mode.

The video and audio of the selected channel are shown in the small frame, so that you can check the state and the information of channel you select.



- No:** Event item Number.
- Record:** On (timer Recording) / Off (turn on/off).
- Tuner ID/Satellite/Channel:** The channel parameters that you want to record or watch.
- Mode:** The period of the event - Once/Daily/Weekly/Weekday/Weekend.
- Date:** The date of the event.
- On time/Off time:** Turn on/off time.
- Start Time/End Time:** The start time/end time of the event recording.
- Duration:** The duration of the event recording.
- Lock:** The flag to select whether protect this program by PIN code.
- File Name:** The file name of event recording.
- Apply:** To save change and exit.

You can see the additional menu with color keys.

- Event list:** You can see the list of all scheduled events. You can edit or delete the scheduled event in this menu.
- Channel list:** You can select the event channel from the popup menu.
- Description:** You can see the current guide information of the selected channel.

You can schedule maximum 30 events at a time and also dual recording is possible.

Please refer to the chapter 4 for more information.

You can also schedule recording from the event information of the EPG menu.

Please refer to the explanation of EPG(Electronic Program Guide).

B. Remind Timers

During watching some channel, you can be informed of the scheduled channel at the specified time when it is about to start.

This feature enables you not to miss the channel you want to see.

The video and audio of the selected channel are shown in the small frame, so that you can check the state and the information of channel you select.



- No:** Remind item number.
- Tuner ID/Satellite/Channel:** The channel parameters that you want to be informed of.
- Date:** The date of the event.
- Start Time:** The start time of the event.
- Apply:** To save change and exit.

You can see the additional menu with color keys.

- Remind list:** You can see the list of all scheduled reminders. You can edit or delete the scheduled reminders in this menu.
- Channel list:** You can select the event channel from the popup menu.
- Description:** You can see the current guide information of the selected channel.

You can schedule maximum 8 reminders at a time.

You can also schedule the reminders from the event information of the EPG menu. Please refer to the explanation of EPG(Electronic Program Guide).

Chapter 4. How to Enjoy PVR Function

4.1 Recording

You should format your USB drive with EXT2 type for recording and playback.

A. Recording



Press the **Record** () key on the RCU to record the current channel.
When the recording started the record icon is displayed on the right-upper side.
Press the **STOP** () key to stop recording.

B. Dual Recording



If you change the channel while recording and press the **Record** () key, you can record Dual at the same time with the same process described in recording.
Then you can see two record icons on the right-upper side.

C. Stop the Recording



If you press **STOP** () key, stop recording pop-up appears.
Using **Up/Down** keys you can choose the channel to be stopped optionally.
If you stop the recording the record icon will be disappeared.
You may reconfigure the recording parameters such as Duration and End Time.

4.2 Playback

With this function you can manage the recorded files & directories in the external USB drives.

A. Play

You can select folder and the AV file which you want to manage.
Pressing the **OK** key, the AV file playbacks.

STOP (⏏) key : Stop the playback AV file and return it to the starting point or current live channel.

PAUSE (⏸) key : Pause the playback AV file. Press it again and the playback starts again.

B. Rewind & fast forward

During the playback, you can rewind it with 1, 2, 4, 8, 16, 32, 64 times speed using **Rewind** (⏮) key. With the same way, you can forward the playback channel with 2, 4, 8, 16, 32, 64 times speed using **Fast forward** (⏭) key.

C. Slow

During the playback in the USB drives, you can also watch the channel with slow speed using **Slow** (⏪) key.

D. Bookmarks & Repeat

To watch the AV file from the scene that you want, you can point the spot using **Bookmark** (📌) key.

You can bookmark at maximum 20 spots in one AV file.

When you want to repeat the AV file from the bookmark spot, press bookmark **Jump** (📌) key.

You can also playback the part of AV file repeatedly as you mark. When the AV file is played back, you can mark 2 point using **Repeat** (🔄) key.



4.3 Recording Reservation



You can reserve the channel that you want to record by time and event base. Refer to "3.4 Advanced Settings" for more information.

4.4 Time Shift

You may pause, rewind and go fast forward of the live program with time-shift function. This is accomplished by buffering the program you are watching to the external USB drives. So when you record two programs at a time, time-shift will be disabled as no more recording allowed. By default, approximately maximum of 2 hour buffering is supported.



There are two modes to start time-shift function-**automatic** and **manual** mode. In **automatic mode**, time-shift starts to buffer program automatically whenever you turn on the receiver or change the channel. In **manual mode**, time-shift starts to buffer program when you press **Time-shift** (⏮) key(blue key).

Chapter 5. Technical Specification

Tuner & Service Decoder

| | |
|--------------------------------|---|
| • 2 Tuners | Decoding & recording(or decoding) |
| • Input/Loop through Connector | 75Ω, IEC 169-24, Female |
| • Frequency Range | 950 ~ 2150 MHz |
| • Signal Level Input | -65 ~ -25 dBm |
| • LNB Power & Polarisation | Vertical: +13.5VDC |
| | Horizontal: +18VDC |
| | Current: Max. 500mA with Overload Protection |
| • 22KHz Tone | Frequency: 22 ± 1KHz Amplitude: 0.6 ± 0.2V |
| • Modulation | QPSK |
| • Input Symbol Rate | 1~45 MS/s |
| • Code Rate | 1/2, 2/3, 3/4, 5/6 and 7/8 |

MPEG Transport Stream A/V Decoding

| | |
|--------------------|----------------------------------|
| • Transport Stream | ISO/IEC 13818-1 MPEG-2 |
| • Profile Level | 2 x MPEG-2 MP@ML(PIP) |
| • Aspect Ratio | 4:3, 16:9, Pan & scan, Letterbox |
| • Video Resolution | 720 x 576, 720 x 480 |
| • Audio Decoding | MPEG-1 Layer 1, 2 & 3 |

Main System

| | |
|------------------|---|
| • Main Processor | RISC CPU |
| • USB Host | 3 ports with embedded hub (DC5V, 500mA Max) |

Front Panel & RCU

| | |
|-----------------|--|
| • 7 Keys | CH-/+, VOL-/+, STANDBY, MENU, OK |
| • 7 Segment LED | Service name and other information display |
| • RCU | 52 Keys, Universal |

| A/V & Data In/Out | |
|------------------------|--|
| • S-VIDEO | Video S-VIDEO output |
| • RCA A/V | Video CVBS output |
| | Audio L/R output |
| • S/PDIF | Digital audio or Dolby AC-3 bitstream output |
| • RS-232C | 9 pin D-sub type |
| | Transfer rate 115.2Kbps |
| • USB | 3 USB 2.0 host |
| • Component | Y, P _b , P _r |
| Power Supply | |
| • Input Voltage | 95 ~ 250VAC, 50/60Hz |
| • Type | SMPS |
| • Power Consumption | Running: MAX.48W, Standby: 8W |
| • Protection | Separate internal fuse. |
| | The input shall have lightning protection. |
| Physical Specification | |
| • Size(W x H x D) | 300 x 60 x 210 mm |
| • Weight(Net) | 2.5 Kg |

* Specifications and functions may be changed for improvement without notice in advance.

Chapter 6. Universal Remote Control Setting & Key List

1. Set up-programming mode

1.1 Device Deault: STB

1.2 Mode Default

STB.....001 Only

TV001

VCR.....001

DVD.....001

2. DEVICE Buttons

The DEVICE(STB,TV,VCR,DVD)buttons are first used to select a device to be programmed, Ones programming is complete, press these keys to select the device you wish to operate before starting to use the relevant function buttons.

3. How to Program Your Remote Control

3.1 Basic programming by 3 digit code

3.1.1 Press both the DEVICE and OK buttons simultaneously for two seconds

The LED will turn on for approximately 20 seconds.

On set-up mode, if there is no input for 20 seconds, LED is off set-up mode is off.

Also, set-up mode is off if OK button pressed with LED off.

3.1.2 While the LED is still "ON", enter the three digit BRAND CODE NUMBER sequentially on the keys numbered 1 to 0. (LED Blink when key pressed)

If it is the correct BRAND CODE NUMBER, you can check to press Power On/Off on each devices with POWER Code output(LED on)

Unavallable buttons input, LED will turn-off for 1.5 seconds snd on again(stand-by)

No response when buttons input except OK, 0~9, CH+, CH- and Power buttons.

3.1.3 Finally, when you have found the correct BRANFd CODE NUMBER, and again whule the LED is still " ON" press and release the OK button. The LED will then blink twice to confirmt that the code has been stored.

3.2 Auto Search

- 3.2.1 Press both the DEVICE and OK buttons simultaneously for two seconds
The LED will turn on for approximately 20 seconds.
On set-up mode, if there is no input for 20 seconds, LED is off and set-up mode is off.

Also, set-up mode is off if OK button pressed while LED off.

- 3.2.2 Press UP/CH+ or DOWN/CH- button. The POWER code of the next set-number of the current set-number put on every button input (LED on)
No response when buttons input except OK, 0-9, CH+, CH- and Power buttons.
- 3.2.3 Finally, when you have found the correct BRAND CODE NUMBER, and again while the LED is still "ON", press and release the OK button. The LED will then blink twice to confirm that the code has been stored.

4. How to Identify Your Brand Code Number

- 4.1 Press both Device and the OK buttons simultaneously for seconds.
On set-up mode, if there is no input for 20 seconds, LED is off and set-up mode is off.
Also, set-up mode is off if OK button pressed with LED off.
- 4.2 Press INFO buttons
Set up code will blink hundred-position, ten-position, single-position one by one. If "0" will blink 10 times.
All set up code out, Set-up mode is off automatically.

5. Factory Reset Function

- 5.1 Press the TV and the SET buttons simultaneously for five seconds
5.2 LED blinks 3 times and off as following sequence TV → VCR → DVD.STB
5.3 Current Set-up code will change "Default"

Universal Remote Control Key List

| TV | |
|--------------------|---|
| MAKER (BRAND) NAME | CODE NUMBER (3 DIGIT) LIST |
| ADMIRAL | 072 081 160 161 036 |
| ADVENT | 247 |
| AIKO | 103 |
| AKAI | 006 146 248 |
| ALARON | 028 |
| AMARK | 112 143 |
| AMERICA ACTION | 043 |
| AMPRO | 073 |
| ANAM | 043 054 055 056 080 112 |
| AOC | 058 006 004 112 |
| APEX DIGITAL | 015 226 |
| AUDIOVOX | 076 103 043 |
| BAYSONIC | 043 |
| BELL & HOWELL | 072 |
| BRADFORD | 043 |
| BROKSONIC | 096 |
| CANDLE | 006 002 003 004 |
| CAPEHART | 058 |
| CARVER | 164 |
| CELEBRITY | 001 |
| CETRONIC | 043 |
| CINERAL | 103 120 |
| CITIZEN | 006 002 003 004 101 103 143 |
| CLASSIC | 043 |
| CONCERTO | 004 |
| CONTEC | 043 051 |
| CORONADO | 143 |
| CRAIG | 043 054 028 |
| CROSLEY | 164 |
| CROWN | 043 143 |
| CURTIS MATHES | 006 004 101 143 011 072 081 120 164 |
| CXC | 043 |
| DAEWOO | 076 103 055 004 127 143 016 043 044 125 120 |
| DAYTRON | 004 143 |
| DENON | 011 |
| DUMONT | 004 073 |
| DWIN | 161 |
| DYNASTY | 043 |
| DYNATECH | 062 |
| ELECTROBAND | 001 |
| ELECTROHOME | 024 076 143 |
| EMERSON | 005 028 043 048 076 096 155 004 051 143 151 153 154 |
| FISHER | 007 057 |
| FUJITSU | 164 028 198 246 |
| FUNAI | 028 043 052 249 |
| FUTURETECH | 043 |
| GATEWAY | 242 |
| GE | 006 073 144 160 161 004 008 009 034 056 074 091 155 081 120 |
| GIBRALTER | 004 073 |
| GOLDSTAR | 004 106 119 110 112 113 127 143 |
| GRUNPY | 028 043 |
| HALL MARK | 004 |
| HARLEY DAVIDSON | 028 |
| HARMAN KARDON | 164 |
| HARVARD | 043 |
| HITACHI | 163 004 007 009 011 072 010 012 023 075 143 158 |
| INFINITY | 164 |
| INKEL | 129 |
| INTEQ | 073 |

| TV | |
|--------------------|---|
| MAKER (BRAND) NAME | CODE NUMBER (3 DIGIT) LIST |
| JBL | 164 |
| JCB | 001 |
| JCPENNEY | 004 006 008 024 030 065 101 143 156 160 |
| JENSEN | 013 |
| JVC | 038 001 034 083 206 |
| KENWOOD | 006 001 |
| KLOSS | 002 069 |
| KTV | 006 043 143 154 |
| LG | 004 106 119 110 112 113 127 143 |
| LODGENET | 072 |
| LOEWE | 207 164 |
| LOGIK | 072 |
| LUXMAN | 004 |
| LXI | 007 015 052 081 160 164 |
| MAGNAVOX | 006 003 004 022 059 060 061 063 064 127 164 094 160 028 250 |
| MAJESTIC | 072 |
| MARANTZ | 164 006 |
| MATSUI | 164 |
| MATSUSHITA | 080 |
| MEGATRON | 004 |
| MEMOREX | 004 007 072 028 096 |
| METZ | 088 |
| MGA | 024 006 004 042 |
| MIDLAND | 073 |
| MINERVA | 088 |
| MINUTZ | 008 |
| MITSUBISHI | 109 024 042 004 040 146 028 081 225 |
| MOTOROLA | 081 |
| MTC | 006 004 062 101 |
| MULTITECH | 043 |
| NAD | 025 |
| NEC | 006 134 040 066 007 019 024 237 |
| NIKEI | 043 |
| NIKKO | 103 |
| NTC | 103 |
| ONKING | 043 |
| ONWA | 043 |
| OPTIMUS | 080 |
| OPTONICA | 019 081 |
| ORION | 096 201 202 203 204 205 028 |
| PANASONIC | 034 066 080 164 208 222 |
| PHILCO | 006 003 004 024 056 059 060 063 064 127 143 164 |
| PHILIPS | 164 006 038 083 127 006 003 004 059 210 |
| PIONEER | 023 025 135 176 004 018 006 209 234 |
| PORTLAND | 004 143 103 |
| PRISM | 034 |
| PROSCAN | 144 160 161 |
| PROTON | 004 068 143 171 173 112 |
| QUASAR | 034 066 |
| RADIO SHACK | 004 019 127 143 043 |
| RCA | 160 161 144 156 065 006 004 023 024 056 074 152 081 |
| REALISTIC | 007 019 |
| RUNCO | 072 073 |
| SAMPO | 006 004 058 242 |
| SAMSUNG | 004 101 127 133 143 160 089 105 211 228 229 |
| SANSEI | 120 |
| SANSUI | 096 |
| SANYO | 007 063 067 082 020 |
| SCOTCH | 004 |
| SCOTT | 004 006 028 043 048 143 |
| SEARS | 004 007 015 028 030 057 082 094 143 160 062 164 |
| SEMI VOX | 043 |
| SEMP | 015 |

| TV | |
|--------------------|---|
| MAKER (BRAND) NAME | CODE NUMBER (3 DIGIT) LIST |
| SHARP | 081 014 019 028 004 022 143 175 |
| SIGNATURE | 072 |
| SONY | 001 126 139 |
| SOUNDESIGN | 003 004 028 043 |
| SPECTRICON | 112 |
| SQUAREVIEW | 052 |
| SSS | 004 043 |
| STARLITE | 043 |
| SUPREMACY | 002 |
| SUPREME | 001 |
| SYLVANIA | 006 003 059 060 063 064 127 160 164 044 249 |
| SYMPHONIC | 062 249 |
| TANDY | 081 |
| TATUNG | 066 062 |
| TECHNICS | 034 080 |
| TECHNOLACE | 028 |
| TECHWOOD | 004 |
| TEKNIKA | 002 003 004 024 028 043 072 101 143 103 164 |
| TELERENT | 072 |
| TERA | 172 |
| TMK | 004 |
| TNCl | 073 |
| TOSHIBA | 015 030 007 040 062 101 |
| TOTEVISION | 143 |
| UNIVERSAL | 008 009 |
| VIDEO CONCEPTS | 146 |
| VIKRON | 174 188 164 |
| VIDTECH | 004 |
| WARDS | 004 064 164 008 009 019 028 060 061 063 072 074 143 |
| WESTING HOUSE | 076 |
| YAMAHA | 004 006 |
| YORK | 004 |
| YUPITERU | 043 |
| ZENITH | 072 073 095 103 011 096 |
| ZONDA | 112 |

| VCR | |
|--------------------|---------------------------------|
| MAKER (BRAND) NAME | CODE NUMBER (3 DIGIT) LIST |
| ADMIRAL | 025 053 |
| AIKO | 117 |
| AIWA | 034 161 101 |
| AKAI | 043 046 124 146 |
| AMERICA ACTION | 117 |
| AMERICAN HIGH | 031 |
| AMPRO | 072 |
| ANAM | 081 103 |
| ASHA | 040 |
| AUDIO DYNAMICS | 012 023 043 |
| AUDIOVOX | 101 |
| BEAUMARK | 040 |
| BROKSONIC | 035 037 129 025 |
| CALIX | 101 |
| CANON | 028 031 |
| CAPEHART | 108 |
| CCE | 024 117 |
| CINERAL | 117 |
| CITIZEN | 101 117 |
| COLT | 024 |
| CRAIG | 003 040 135 024 101 |
| CURTIS MATHES | 031 041 |
| CYBERNEX | 040 |
| DAEWOO | 005 108 111 117 017 065 007 010 |
| DAYTRON | 108 |
| DBX | 012 023 043 |

| VCR | |
|-------------------|--|
| MAKER(BRAND) NAME | CODE NUMBER (3 DIGIT) LIST |
| DYNATECH | 034 053 |
| ELECTROHOME | 059 101 |
| ELECTROPHONIC | 101 |
| EMERSON | 005 029 035 037 129 153 017 025 027 031 034 036 046 101 131 138 117 |
| FISHER | 003 010 008 009 |
| FUJI | 031 |
| FUNAI | 034 |
| GARRARD | 034 |
| GE | 031 072 144 147 053 107 109 040 053 |
| GO VIDEO | 132 155 040 135 |
| GOLDSTAR | 101 004 012 020 |
| HARLEY DAVIDSON | 034 |
| HARMAN KARDON | 012 045 |
| HARWOOD | 024 |
| HITACHI | 004 026 034 043 053 137 150 |
| HO | 034 |
| HUGHES | 004 |
| INSTANTREPLAY | 031 |
| JCL | 031 |
| JCPENNEY | 004 012 031 040 101 |
| JENSEN | 043 |
| JVC | 048 043 055 060 130 150 152 012 031 |
| KEC | 101 117 |
| KENWOOD | 034 150 014 048 |
| KLH | 024 |
| KODAK | 031 101 |
| LG | 101 004 012 020 |
| LLOYD | 034 |
| LOGIK | 024 |
| LXI | 003 009 017 034 101 004 105 |
| MAGIN | 040 |
| MAGNASONIC | 117 |
| MAGNAVOX | 067 031 034 068 041 156 170 |
| MARANTZ | 067 069 012 031 |
| MARTA | 101 |
| MATSUI | 027 030 |
| MATSUSHITA | 031 |
| MEI | 031 |
| MEMOREX | 040 101 003 014 031 034 053 072 134 139 025 |
| MGA | 045 046 059 |
| MGN TECHNOLOGY | 040 |
| MINOLTA | 004 020 |
| MITSUBISHI | 059 061 051 004 046 020 045 053 |
| MOTOROLA | 031 053 |
| MTS | 034 040 |
| MULTITECH | 024 034 |
| NEC | 012 023 043 048 |
| NIKKO | 101 |
| NOBLEX | 040 |
| NORDMENDE | 043 |
| OLYMPUS | 031 |
| OPTIMUS | 053 101 |
| OPTONICA | 053 054 |
| ORION | 025 |
| PANASONIC | 031 070 133 140 163 |
| PENTAX | 004 031 063 020 |
| PHILCO | 031 034 067 025 |
| PHILIPS | 031 034 054 067 101 150 |
| PILOT | 101 |
| PIONEER | 021 004 048 |
| PORTLAND | 108 |
| PROFITRONIC | 040 |

| VCR | |
|-------------------|---|
| MAKER(BRAND) NAME | CODE NUMBER (3 DIGIT) LIST |
| PROTEC | 024 |
| PULSAR | 072 |
| QUARTZ | 014 |
| QUASAR | 081 070 133 140 163 014 |
| RADIO SHACK | 123 034 |
| RADIX | 101 |
| RANDEX | 101 |
| RCA | 107 109 144 041 031 004 020 034 040 140 147 158 053 |
| REALISTIC | 003 008 014 031 034 040 053 054 101 010 |
| RICO | 058 |
| RUNCO | 072 |
| SALORA | 014 |
| SAMSUNG | 040 017 107 109 113 115 124 122 |
| SANKY | 053 |
| SANSUI | 043 135 048 025 034 |
| SANYO | 003 014 040 134 |
| SCOTT | 017 037 129 131 |
| SEARS | 003 004 008 014 017 081 101 010 031 034 |
| SHARP | 053 031 054 159 |
| SHINTOM | 024 |
| SHOGUN | 040 |
| SINGER | 024 |
| SONY | 001 057 058 003 052 053 031 154 171 009 034 |
| SOUNDESIGN | 034 |
| STS | 004 |
| SYLVANIA | 031 034 059 067 |
| SYMPHONIC | 034 |
| TANDY | 034 010 |
| TATUNG | 043 |
| TEAC | 034 043 |
| TECHNICS | 031 070 |
| TEKNIKA | 031 034 101 |
| THOMAS | 034 |
| TMK | 006 040 |
| TOSHIBA | 017 131 004 008 059 082 150 |
| TOTEVISION | 040 101 |
| UNITECH | 040 |
| VECTOR RESEARCH | 012 |
| VIDEO CONCEPTS | 012 034 046 |
| VIDEOSONIC | 040 |
| WARDS | 003 004 017 024 031 034 040 053 054 131 |
| WESTINGHOUSE | 024 025 |
| XR-1000 | 024 031 034 |
| YAMAHA | 012 034 043 |
| ZENITH | 072 034 001 058 080 101 153 048 025 |

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| DVD | |
|--------------------|----------------------------|
| MAKER (BRAND) NAME | CODE NUMBER (3 DIGIT) LIST |
| AIWA | 202 |
| ALPINE | 221 |
| APEX DIGITAL | 251 246 |
| ARCAM | 215 |
| CYBERHOME | 220 |
| DAEWOO | 220 |
| DENON | 226 241 |
| FUNAI | 208 |
| GE | 230 231 |
| GOLDSTAR | 235 239 |
| GO VIDEO | 201 |
| HARMAN KARDON | 243 |
| HITACHI | 223 |
| HITEKER | 246 |
| JVC | 238 |
| KENWOOD | 216 |
| KLH | 210 |
| LG | 235 239 |
| MAGNAVOX | 254 237 |
| MARANTZ | 253 242 |
| MCINTOSH | 217 |
| MEMOREX | 207 |
| MITSUBISHI | 227 |
| MYRYAD | 224 |
| NAD | 247 239 |
| NAKAMICHI | 225 |
| ONKYO | 240 |
| OPTIMUS | 229 |
| PANASONIC | 228 206 226 |
| PHILIPS | 253 237 214 242 |
| PIONEER | 255 222 229 |
| PROCEED | 245 |
| PROSCAN | 230 231 |
| RCA | 230 231 |
| SAMSUNG | 236 248 201 |
| SANSUI | 205 |
| SANYO | 204 |
| SHARP | 252 |
| SONY | 232 218 203 |
| SYLVANIA | 208 |
| SYMPHONIC | 208 |
| TATUNG | 224 |
| TECHNICS | 228 |
| THETA DIGITAL | 229 |
| TOSHIBA | 233 244 219 205 |
| VENTURER | 209 |
| YAMAHA | 249 226 |
| ZENITH | 239 226 235 239 |

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