LG

Life's Good

LCD TV
OWNER'S MANUAL

LCD TV MODELS

20LS7D
20LS7DC
23LS7D
23LS7DC

Please read this manual carefully before operating your set.
Retain it for future reference.
Record model number and serial number of the set.
See the label attached on the back cover and quote this information to your dealer
when you require service.

ENERGY STAR is a set of power-saving guidelines issued by the U.S. Environmental Protection Agency(EPA).

As an ENERGY STAR Partner LGE U. S. A.,Inc. has determined that this product meets the ENERGY STAR guidelines for energy efficiency.

WARNING / CAUTION

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

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING/CAUTION

TO REDUCE THE RISK OF FIRE AND ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.

NOTE TO CABLE/TV INSTALLER

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the National Electric Code (U.S.A.). The code provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of the cable entry as practical.

WARNING / CAUTION

To prevent fire or shock hazards, do not expose this product to rain or moisture.

FCC NOTICE

Class B digital device
This equipment has been tested and found to comply with the limits 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:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

CAUTION

Do not attempt to modify this product in any way without written authorization from LG Electronics. Unauthorized modification could void the user's authority to operate this product

SAFETY INSTRUCTIONS

IMPORTANT SAFETY INSTRUCTIONS

Important safety instructions shall be provided with each apparatus. This information shall be given in a separate booklet or sheet, or be located before any operating instructions in an instruction for installation for use and supplied with the apparatus.

This information shall be given in a language acceptable to the country where the apparatus is intended to be used.

The important safety instructions shall be entitled "Important Safety Instructions". The following safety instructions shall be included where applicable, and, when used, shall be verbatim as follows. Additional safety information may be included by adding statements after the end of the following safety instruction list. At the manufacturer's option, a picture or drawing that illustrates the intent of a specific safety instruction may be placed immediately adjacent to that safety instruction :

Read these instructions.
Keep these instructions.
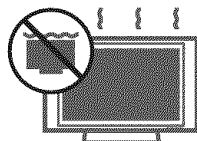**Heed all warnings.**
Follow all instructions.

1. Do not use this apparatus near water.
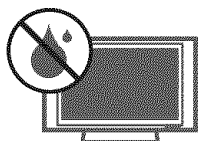
2. Clean only with dry cloth.

3. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions

4. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers)that produce heat.

5. 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.
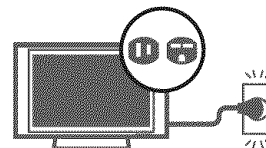
6. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
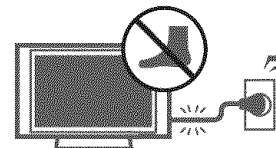
7. Only use attachments/accessories specified by the manufacturer.
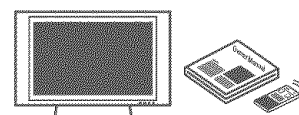
8 Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

S3125A
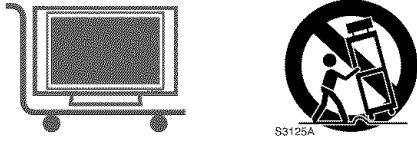
9 Unplug this apparatus during lightning storms or when unused for long periods of time.
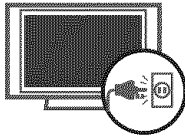

10 Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has exposed to rain or moisture, does not operate normally, or has been dropped.
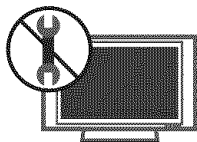

11 CAUTION concerning the Power Cord :
Most appliances recommend they be placed upon a dedicated circuit; that is, a single outlet circuit which powers only that appliance and has no additional outlets or branch circuits. Check the specification page of this owner's manual to be certain.
Do not overload wall outlets. Overloaded wall outlets, loose or damaged wall outlets, extension cords, frayed power cords, or damaged or cracked wire insulation are dangerous. Any of these conditions could result in electric shock or fire. Periodically examine the cord of your appliance, and if its appearance indicates damage or deterioration, unplug it, discontinue use of the appliance, and have the cord replaced

with an exact replacement part by an authorized servicer. Protect the power cord from physical or mechanical abuse, such as being twisted, kinked, pinched, closed in a door, or walked upon. Pay particular attention to plugs, wall outlets, and the point where the cord exits the appliance.
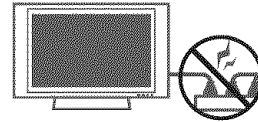
12 Outdoor use marking :
WARNING - To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.
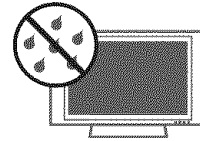
13 Wet Location Marking : Apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on or over apparatus.
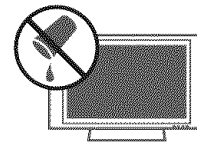
14 GROUNDING
Ensure that you connect the earth ground wire to prevent possible electric shock. If grounding methods are not possible, have a qualified electrician install a separate circuit breaker.
Do not try to ground the unit by connecting it to telephone wires, lightening rods, or gas pipes.

Power
Supply

Short-circuit
Breaker
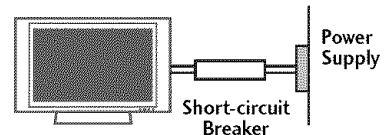
15 DISCONNECTING DEVICE FROM MAINS
Mains plug is the disconnecting device. The plug must remain readily operable.

CONTENTS

TIME SETTING

PARENTAL CONTROL / RATINGS

APPENDIX

INTRODUCTION

FEATURE OF THIS TV

XD™ ENGINE — LG's own special digital image generator, consisting of a full digital image processor, six different main picture quality factors.

HDTV — High-definition television. High-resolution digital television broadcast and playback system composed of roughly a million or more pixels, 16:9 aspect-ratio screens, and AC3 digital audio. A subset of digital television, HDTV formats include 1080i and 720p resolutions.

DD DOLBY® DIGITAL — Manufactured under license from Dolby Laboratories. "Dolby "and the double-D symbol are trademarks of Dolby Laboratories.

HDMI — HDMI™, the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing."

If the TV feels cold to the touch, there may be a small "flicker" when it is turned on. This is normal, there is nothing wrong with TV.

Some minute dot defects may be visible on the screen, appearing as tiny red, green, or blue spots. However, they have no adverse effect on the monitor's performance.

Avoid touching the LCD screen or holding your finger(s) against it for long periods of time. Doing so may produce some temporary distortion effects on the screen.

On Disposal

a. The fluorescent lamp used in this product contains a small amount of mercury.

b. Do not dispose of this product with general household waste.

c. Disposal of this product must be carried out in accordance to the regulations of your local authority.

PREPARATION

ACCESSORIES

Ensure that the following accessories are included with your product. If an accessory is missing, please contact the dealer where you purchased the product.
User must use shielded signal interface cables (D-sub 15 pin cable) with ferrite cores to maintain standard compliance for the product.

Owner's Manual   CD Manual   Remote Control,   Power Cord
                                            Batteries
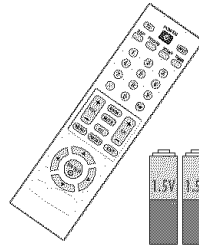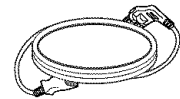
Cable Management
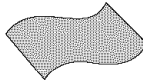
Polishing Cloth

* Slightly wipe stained spot on the exterior only with the polishing cloth for the product exterior if there is stain or fingerprint on surface of the exterior.

* Do not wipe roughly when removing stain. Please be cautions of that excessive pressure may cause scratch or discoloration.

Option Extras
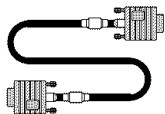
D-sub 15 pin Cable

PREPARATION

FRONT PANEL INFORMATION

Here shown may be somewhat different from your TV.

| POWER Button | INPUT Button | MENU Button | ENTER Button | VOLUME (◄,►)Buttons | CHANNEL (▼,▲)Buttons |

Ⓞ/I   INPUT   MENU   ENTER⊙   ◄ VOL ►   ▼ CH ▲
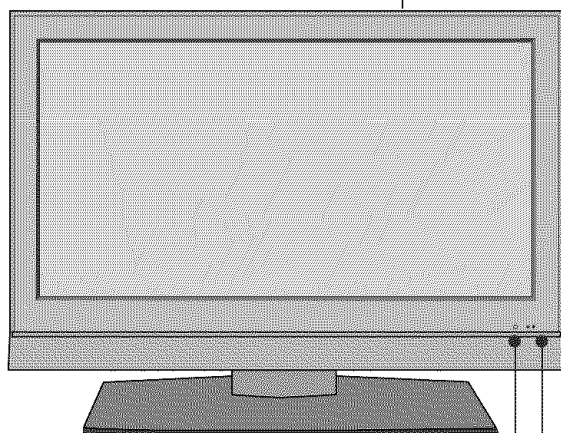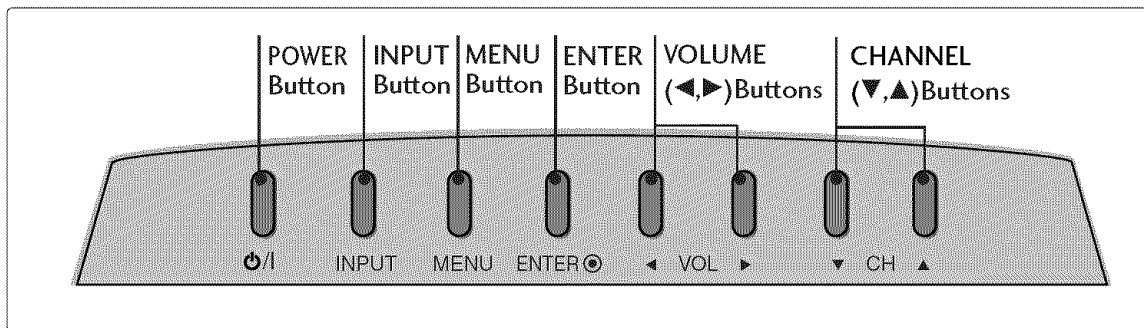
Remote Control Sensor

Power Standby Indicator

Illuminates red in standby mode.
When the TV is turned on, the indicator
blinks green and then illuminates green
before the picture is displayed.

⏻ NOTE

► If your TV stand has a protection film, remove it attached to the stand.
Then wipe the stand with polishing cloth.

BACK PANEL INFORMATION

■ Here shown may be somewhat different from your TV.
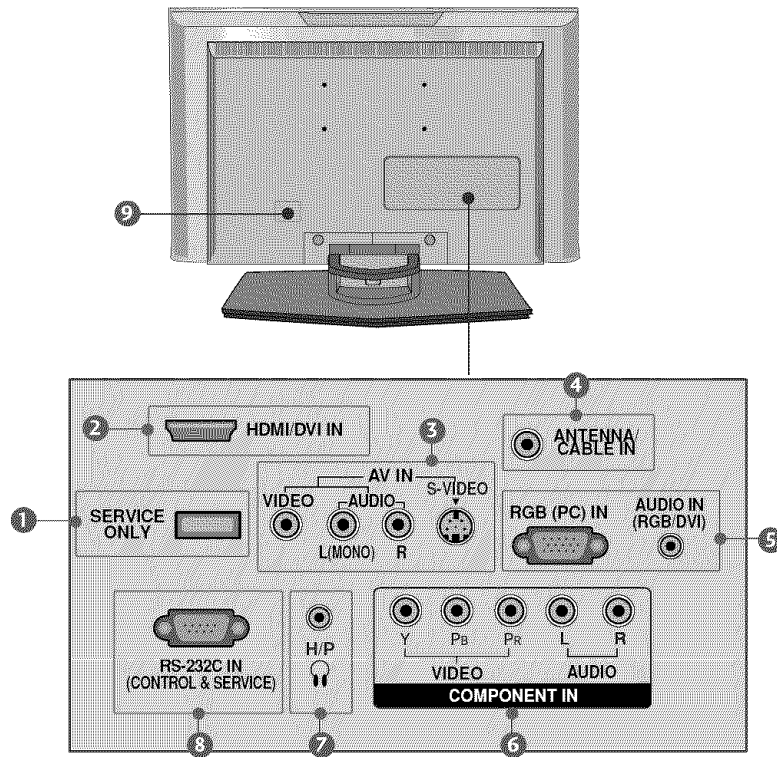
❶ SERVICE ONLY

❷ HDMI/DVI IN

Connect a HDMI signal to this jack.
Or DVI (Video) signal to this jack with a HDMI to DVI cable.

❸ AV IN (Audio/Video)

Connect audio/video output from an external device to these jacks.

S-VIDEO

Connect S-Video out from an S-VIDEO device.

❹ ANTENNA/CABLE IN

Connect over-the air signals to this jack.
Connect cable signals to this jack.

❺ RGB (PC) IN

Connect the output from a PC.

AUDIO IN (RGB/DVI)

Connect the audio from a PC or DTV.

❻ COMPONENT IN

Connect a component video/audio device to these jacks.

❼ HEADPHONE INPUT

Plug the headphone into the headphone socket.

❽ RS-232C IN (CONTROL & SERVICE) PORT

For external control devices.

❾ Power Cord Socket

For operation with AC power.
Caution: Never attempt to operate the TV on DC power.

PREPARATION

STAND INSTALLATION

▓ Here shown may be somewhat different from your TV.

1 Assemble parts of the stand body with cover base of the stand. Insert the stand body into a cover base until clicking sound.

stand body

cover base
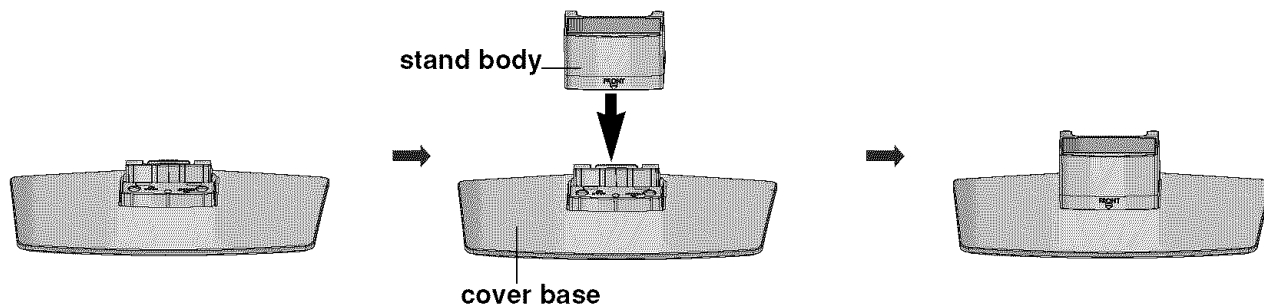
2 Carefully place the product screen side down on a cushioned surface that will protect product and screen from damage.
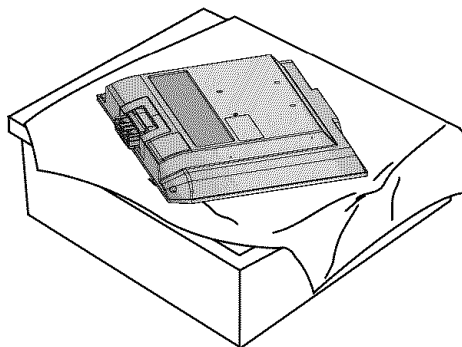
3 Place the product stand on the product as shown.
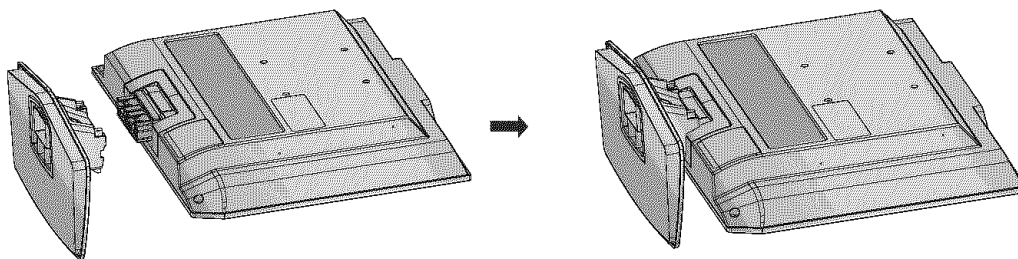
DETACHING STAND

■ Here shown may be somewhat different from your TV.

1 Carefully place the product screen side down on a cushioned surface that will protect product and screen from damage.
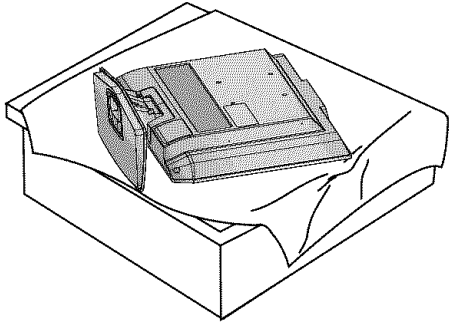
2 Pull cover base backward while pressing button on stand body.
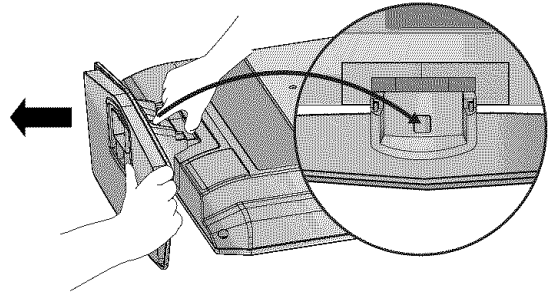
3 Shake the base while pulling, it will separate from stand body.
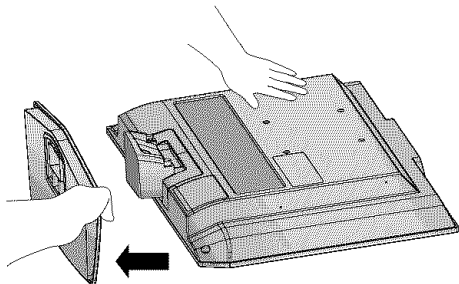
4 Hold the stand and bend it upward.
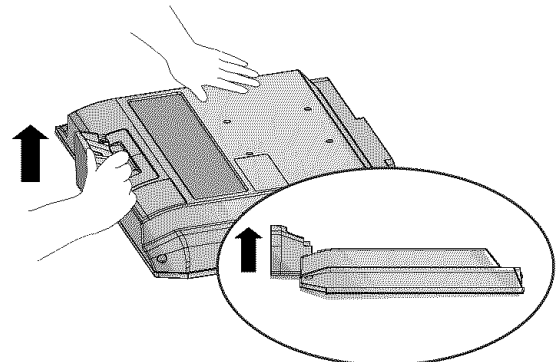
5 Pull stand body to separate from set while pressing the 2 latches.
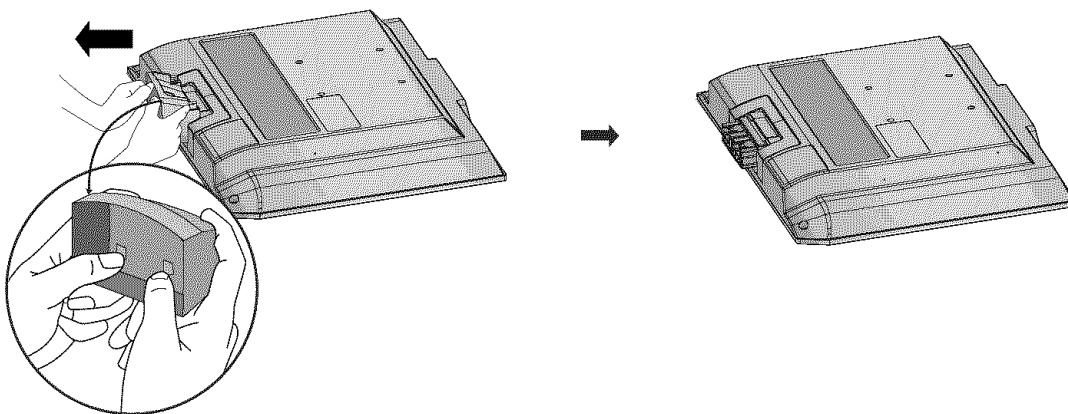
PREPARATION

BACK COVER FOR WIRE ARRANGEMENT

▒ Here shown may be somewhat different from your TV.

① Connect the cables as necessary.
To connect an additional equipment, see the **EXTERNAL EQUIPMENT SETUP** section.
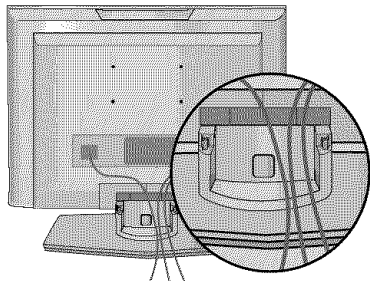
② Install the **CABLE MANAGEMENT** as shown.
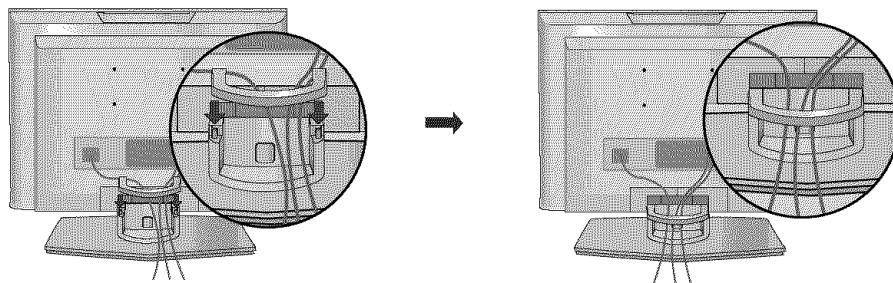
How to remove the CABLE MANAGEMENT

First, press the cable management. Hold the **CABLE MANAGEMENT** with both hands and pull it upward.
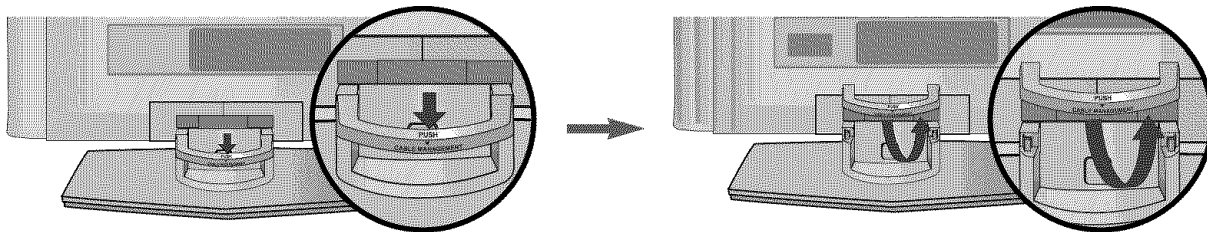
❶ NOTE

▶ Do not hold the **CABLE MANAGEMENT** when moving the product.
- If the product is dropped, you may be injured or the product may be broken.

POSITIONING YOUR DISPLAY

■ Here shown may be somewhat different from your TV.

■ **Adjust the position of the panel in various ways for maximum comfort.**

• **Tilt range**
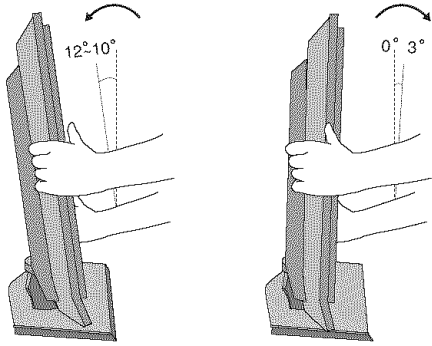
VESA WALL MOUNTING

This product accepts a VESA-compliant mounting interface pad. (optional)
There 4 threaded holes are available for attaching the bracket.

100 mm

100 mm
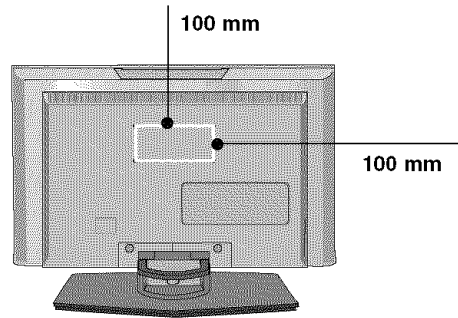
🔵 NOTE

▶ Screw length needed depends on the wall mount used. For further information, refer to the VESA Wall Mounting Instruction Guide.

DESKTOP PEDESTAL INSTALLATION

For proper ventilation, allow a clearance of 4inches on all four sides from the wall.

4 inches

4 inches   4 inches   4 inches
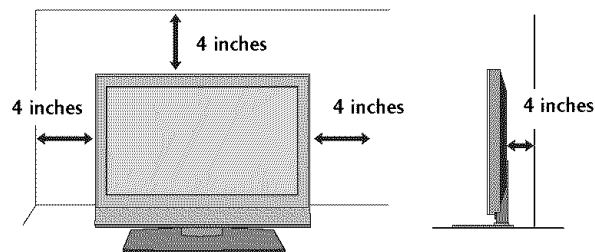
⚠ CAUTION   ▶ Ensure adequate ventilation by following the clearance recommendations.

KENSINGTON SECURITY SYSTEM

- The TV is equipped with a Kensington Security System connector on the back panel. Connect the Kensington Security System cable as shown below.
- For the detailed installation and use of the Kensington Security System, refer to the user's guide provided with the Kensington Security System.
  For further information, contact **http://www.kensington.com**, the internet homepage of the Kensington company. Kensington sells security systems for expensive electronic equipment such as note-book PCs and LCD projectors.

NOTE
- The Kensington Security System is an optional accessory.
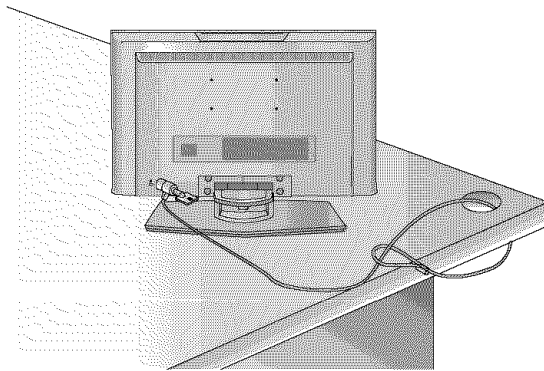
ATTACHING THE TV TO A DESK (Only 23 inches)

We recommend that the TV be attached to a desk so it cannot be pulled in a forward/backward direction, potentially causing injury or damaging the product.

2-Bolts (M3x25)
(not provided as parts
of the product)

Stand

Desk
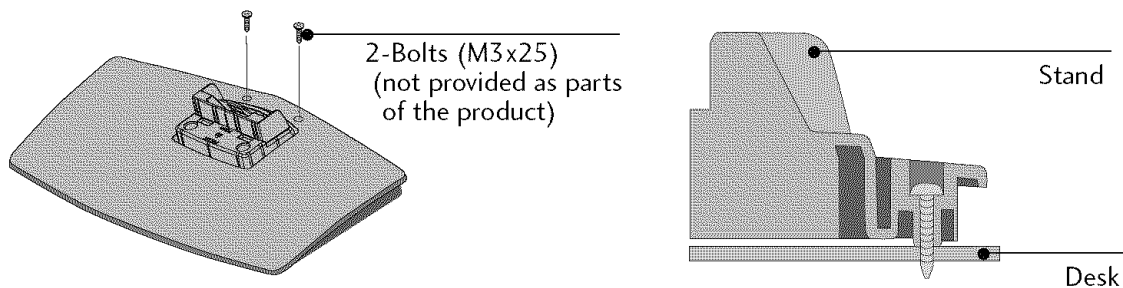
⚠ WARNING

▶ This apparatus must be securely attached to the floor/wall per installation instructions. Tipping, shaking, or rocking the machine may cause injury/death.

PREPARATION

ANTENNA OR CABLE CONNECTION

1. Antenna (Analog or Digital)

Wall Antenna Socket or Outdoor Antenna without a Cable Box Connections.
For optimum picture quality, adjust antenna direction if needed.

Wall Antenna Socket

Multi-family Dwellings/Apartments
(Connect to wall antenna socket)

Outdoor Antenna (VHF, UHF)

RF Coaxial Wire (75 ohm)

Single-family Dwellings /Houses
(Connect to wall jack for outdoor antenna)

ANTENNA/ CABLE IN

Copper Wire
Be careful not to bend the bronze wire when connecting the antenna.

2. Cable

Cable TV Wall Jack

RF Coaxial Wire (75 ohm)

ANTENNA/ CABLE IN
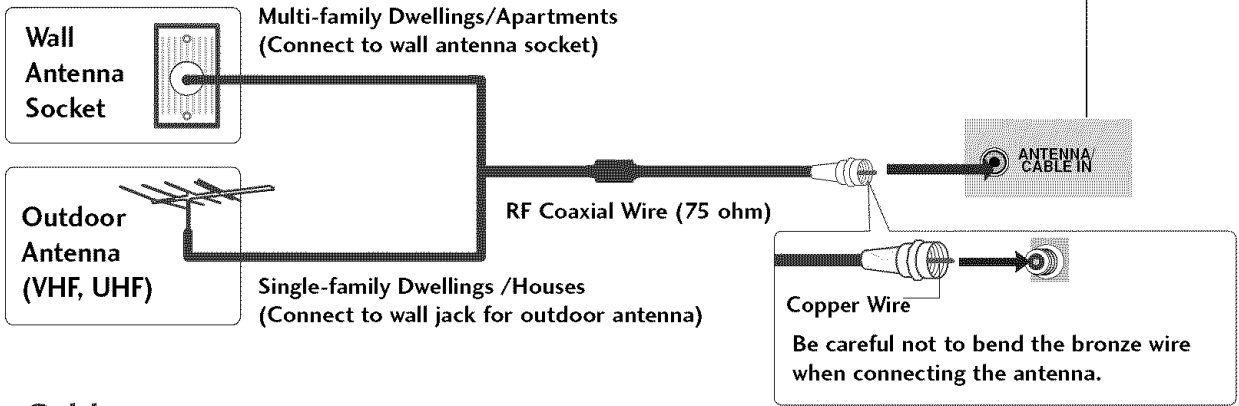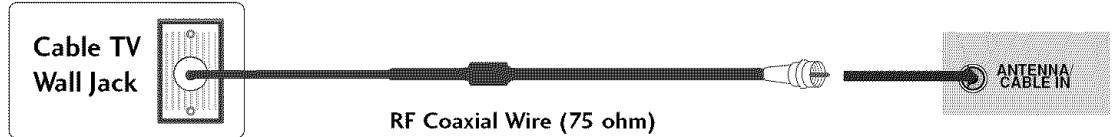
3. Using both cable and antenna

Antenna

RF Coaxial Wire (75 ohm)

Cable TV Wall Jack

RF Coaxial Wire (75 ohm)

Diplexer (Signal Combiner)

ANTENNA/ CABLE IN

Antenna

UHF

Signal Amplifier

VHF

ANTENNA/ CABLE IN
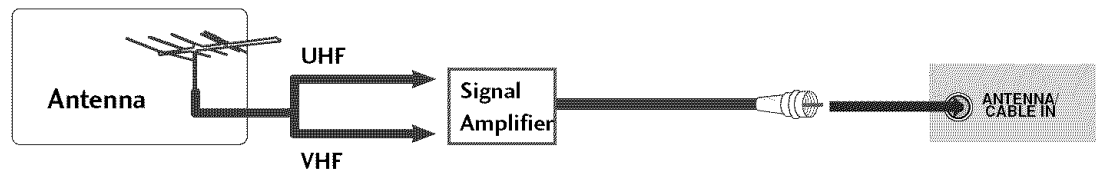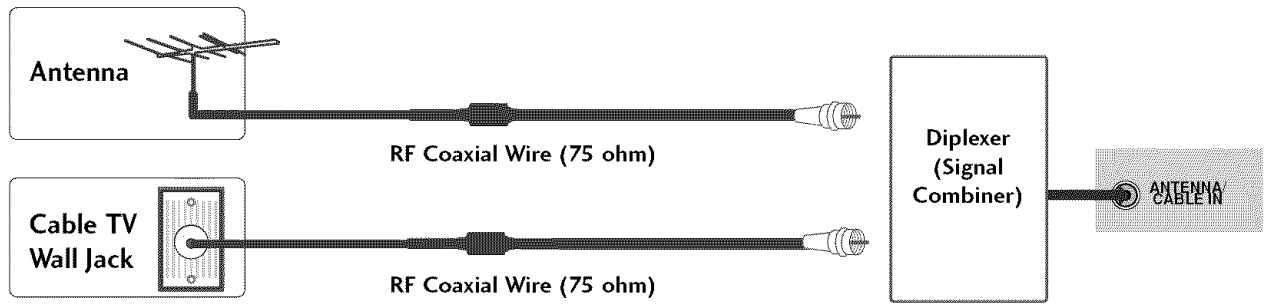
- To improve the picture quality in a poor signal area, please purchase a signal amplifier and install properly.
- If the antenna needs to be split for two TV's, install a 2-Way Signal Splitter.
- If the antenna is not installed properly, contact your dealer for assistance.

❶ NOTE ▶ The TV will let you know when the analog, cable, and digital channel scans are complete.

EXTERNAL EQUIPMENT SETUP

■ To prevent the equipment damage, never plug in any power cords until you have finished connecting all equipment.

HD RECEIVER SETUP

This TV can receive Digital Over-the-air/Cable signals without an external digital set-top box. However, if you do receive digital signals from a digital set-top box or other digital external device, refer to the figure as shown below.

When connecting Component cable

1. How to connect

1 Connect the video outputs (Y, PB, PR) of the digital set top box to the **COMPONENT IN VIDEO** jacks on the set. Match the jack colors
(Y = green, PB = blue, and PR = red).

2 Connect the audio output of the digital set-top box to the **COMPONENT IN AUDIO** jacks on the set.

2. How to use

■ Turn on the digital set-top box.
(Refer to the owner's manual for the digital set-top box. operation)

■ Select **Component** input source by using the **INPUT** button on the remote control.
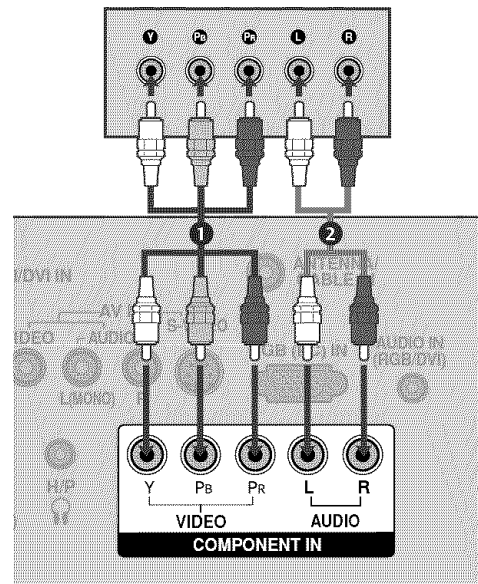
EXTERNAL EQUIPMENT SETUP

When connecting HDMI cable

1. How to connect

① Connect the digital set-top box to **HDMI/DVI IN** jack on the set.

② No separated audio connection is necessary. HDMI supports both audio and video.

2. How to use

■ Turn on the digital set-top box.
   (Refer to the owner's manual for the digital set-top box.)

■ Select **HDMI/DVI** input source by using the **INPUT** button on the remote control.

> **⚠ NOTE**
>
> ▶ When connected, the TV will tell a connected device what resolution it supports and the resolution it prefers. If the device supports this Auto HDMI function, the player output resolution will be automatically set to 720p.
>
> ▶ If the device does not support Auto HDMI, you need to set the output resolution appropriately.

When connecting HDMI to DVI cable

HDMI/DVI IN

ANTENNA/
CABLE IN

AV IN
VIDEO   AUDIO   S-VIDEO

SERVICE
ONLY

L(MONO)   R

RGB (PC) IN

AUDIO IN
(RGB/DVI)

RS-232C IN
(CONTROL & SERVICE)

H/P

Y   PB   PR   L   R
VIDEO   AUDIO
COMPONENT IN

DVI-DTV OUTPUT   ① L   ② R
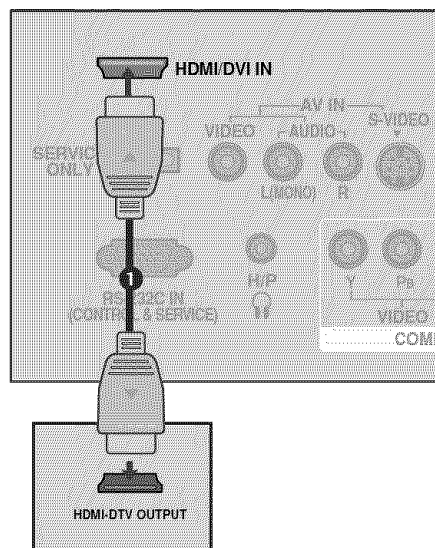
1. How to connect

① Connect the DVI output of the digital set-top box to the **HDMI/DVI IN** jack on the set.

② Connect the audio output of the digital set-top box to the **AUDIO IN (RGB/DVI)** jack on the set.

2. How to use

▧ Turn on the digital set-top box. (Refer to the owner's manual for the digital set-top box.)

▧ Select **HDMI/DVI** input source by using the **INPUT** button on the remote control.

EXTERNAL EQUIPMENT SETUP

DVD SETUP

### When connecting Component cable

1. How to connect

1 Connect the video outputs (Y, PB, PR) of the DVD to the
COMPONENT IN VIDEO jacks on the set.
Match the jack colors
(Y = green, PB = blue, and PR = red).

2 Connect the audio outputs of the DVD to the
COMPONENT IN AUDIO jacks on the set.

2. How to use

▥ Turn on the DVD player, insert a DVD.

▥ Select **Component** input source by using the **INPUT**
button on the remote control.

▥ Refer to the DVD player's manual for operating instructions.
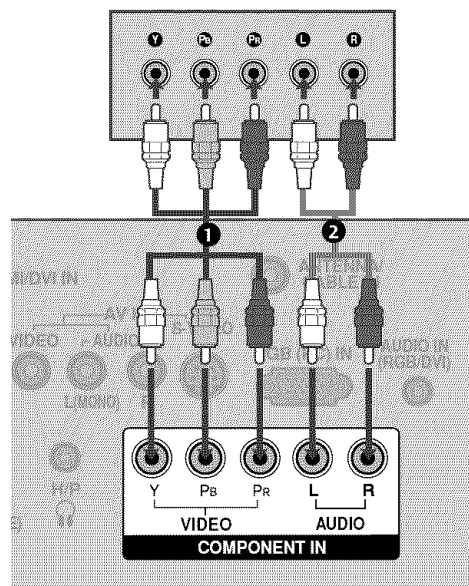
Component Input ports

To get better picture quality, connect a DVD player to the component input ports as shown below.

Component ports on the TV	Y	PB	PR

	Y	PB	PR
Video output ports on DVD player	Y	B-Y	R-Y
	Y	Cb	Cr
	Y	Pb	Pr

When connecting with an S-Video cable

1. How to connect

1 Connect the S-VIDEO output of the DVD to the S-VIDEO input on the set.

2 Connect the audio outputs of the DVD to the AUDIO input jacks on the set.

2. How to use

- Turn on the DVD player, insert a DVD.

- Select AV input source by using the INPUT button on the remote control.

- Refer to the DVD player's manual for operating instructions.
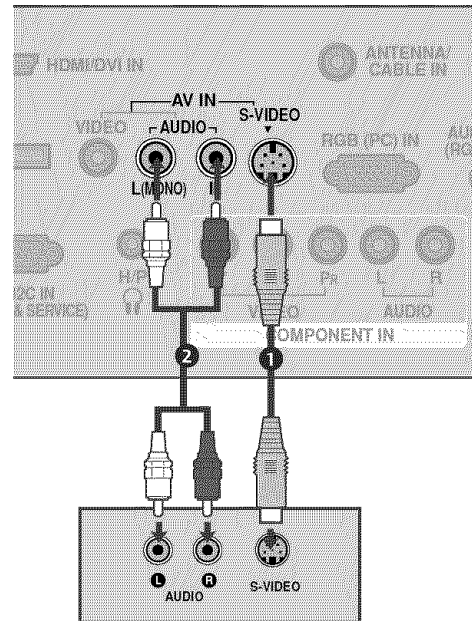
When connecting HDMI cable

1. How to connect

1 Connect the HDMI output of the DVD to the HDMI/DVI IN jack on the set.

2 No separated audio connection is necessary. HDMI supports both audio and video.
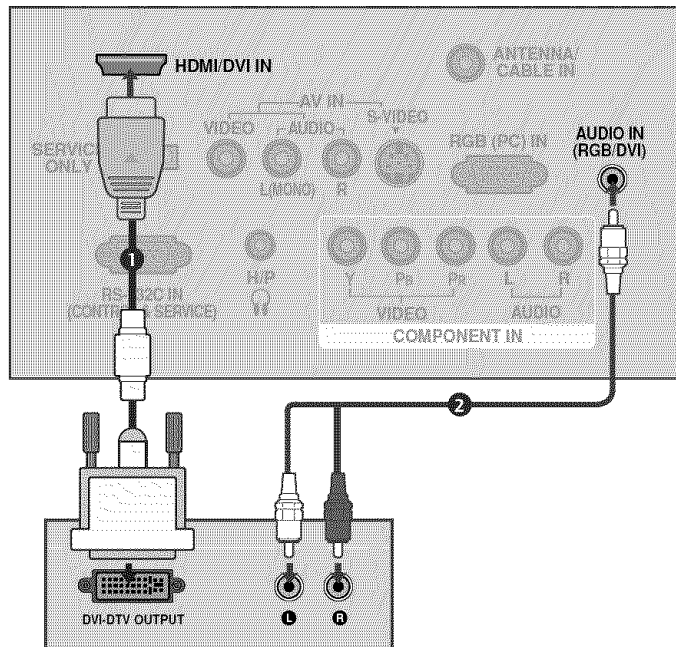
2. How to use

- Select HDMI/DVI input source by using the INPUT button on the remote control.

- Refer to the DVD player's manual for operating instructions.

❶ NOTE

▶ When connected, the TV will tell a connected device what resolution it supports and the resolution it prefers. If the device supports this Auto HDMI function, the player output resolution will be automatically set to 720p.

▶ If the device does not support Auto HDMI, you need to set the output resolution appropriately.
To get the best picture quality, adjust the output resolution of the DVD to 720p.
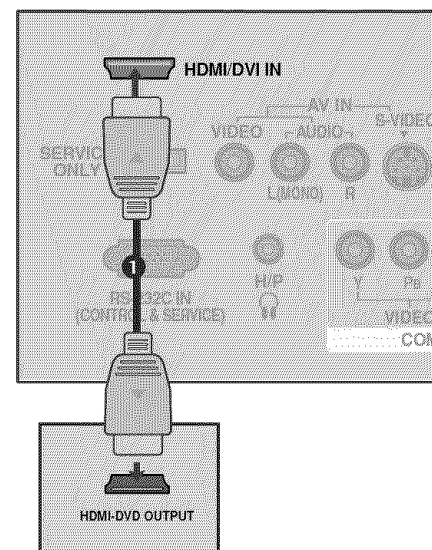
EXTERNAL EQUIPMENT SETUP

VCR SETUP

■ To avoid picture noise (interference), leave an adequate distance between the VCR and TV.

■ If the 4:3 picture format is used; the fixed images on the sides of the screen may remain visible on the screen. This phenomenon is common to all manufactures and in consequence the manufactures warranty does not cover the product bearing this phenomenon.

When connecting with an antenna
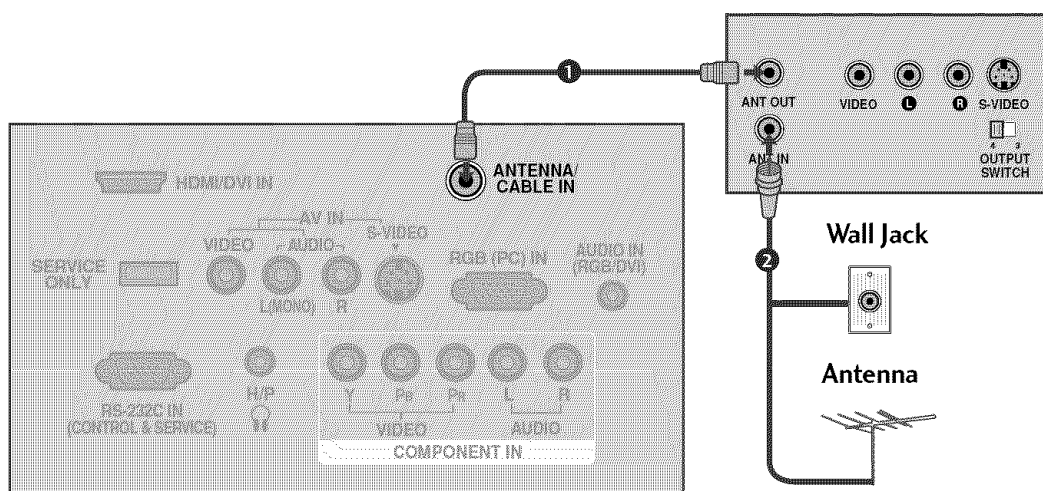
1. How to connect

1 Connect the RF antenna out socket of the VCR to the **ANTENNA/CABLE IN** socket on the set.

2 Connect the antenna cable to the RF antenna in socket of the VCR.

2. How to use

⬛ Set VCR output switch to 3 or 4 and then tune TV to the same channel number.

⬛ Insert a video tape into the VCR and press PLAY on the VCR. (Refer to the VCR owner's manual.)

When connecting with a RCA cable

1. How to connect

① Connect the **AUDIO/VIDEO** jacks between TV and VCR. Match the jack colors (Video = yellow, Audio Left = white, and Audio Right = red)

2. How to use

■ Insert a video tape into the VCR and press PLAY on the VCR. (Refer to the VCR owner's manual.)

■ Select **AV** input source by using the **INPUT** button on the remote control.

ⓘ NOTE

▶ If you have a mono VCR, connect the audio cable from the VCR to the **AUDIO L/MONO** jack of the set.
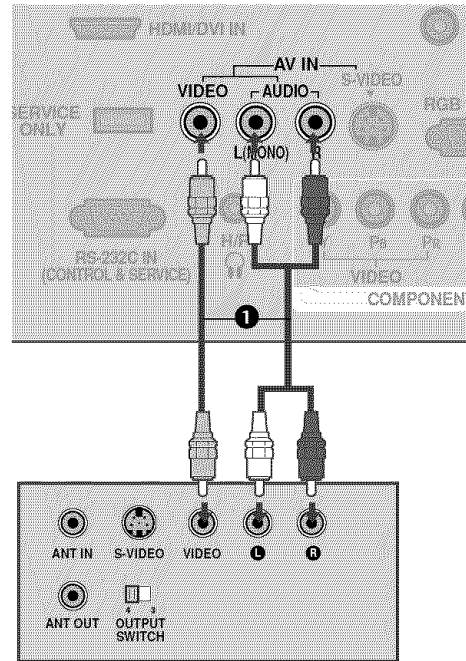
When connecting with an S-Video cable

1. How to connect

① Connect the S-VIDEO output of the VCR to the **S-VIDEO** input on the set.

② Connect the audio outputs of the VCR to the **AUDIO** input jacks on the set.

2. How to use

■ Insert a video tape into the VCR and press PLAY on the VCR. (Refer to the VCR owner's manual.)

■ Select **AV** input source by using the **INPUT** button on the remote control.

ⓘ NOTE

▶ The picture quality is improved: compared to normal composite (RCA cable) input.
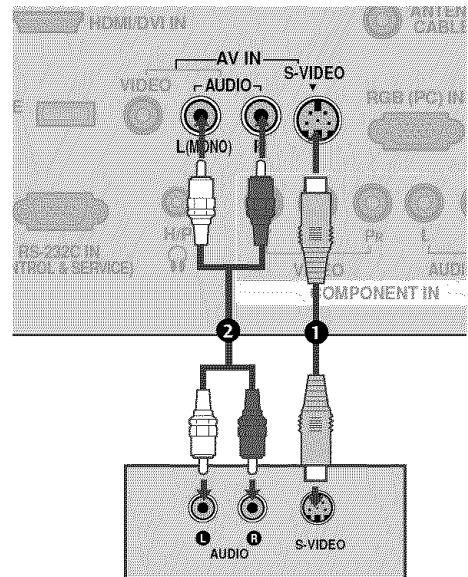
⚠ CAUTION

▶ Do not connect to both Video and S-Video at the same time. In the event that you connect both Video and the S-Video cables, only the S-Video will work.

EXTERNAL EQUIPMENT SETUP

HEADPHONE SETUP

You can listen to the sound through the headphone.

1. How to connect

1 Plug the headphone into the headphone socket.

2 To adjust the headphone volume, press the **VOL** + or - button. If you press the **MUTE** button, the sound from the headphone is switched off.
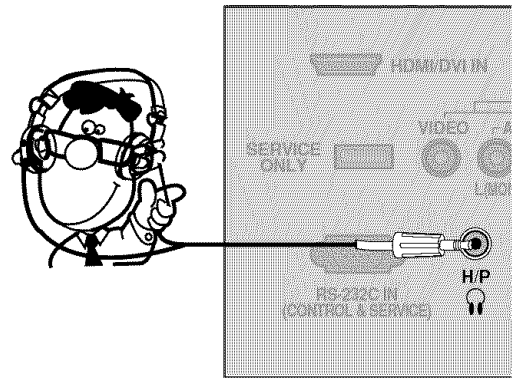
PC SETUP

This TV provides Plug and Play capability, meaning that the PC adjusts automatically to the TV's settings.

When connecting D-sub 15pin cable

1. How to connect

1 Connect the RGB output of the PC to the **RGB (PC) IN** jack on the set.

2 Connect the PC audio output to the **AUDIO IN (RGB/DVI)** jack on the set.

2. How to use

- Turn on the PC and the TV.

- Select **RGB-PC** input source by using the **INPUT** button on the remote control.
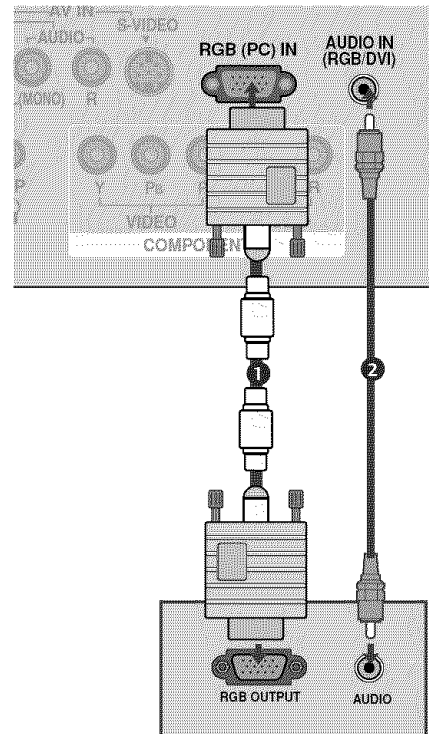
When connecting HDMI to DVI cable

1. How to connect

1 Connect the DVI output of the PC to the **HDMI/DVI IN** jack on the set.

2 Connect the PC audio output to the **AUDIO IN (RGB/DVI)** jack on the set.

2. How to use

- Turn on the PC and the TV.

- Select **HDMI/DVI** input source by using the **INPUT** button on the remote control.

❶ NOTES

▶ To get the the best picture quality, adjust the PC graphics card to 1024x768, 60Hz.

▶ Depending on the graphics card, DOS mode may not work if a HDMI to DVI Cable is in use.

▶ If the video doesn't fit the screen, try pressing the ADJUST button to adjust the screen position of TV.

▶ Check the image on your TV. There may be noise associated with the resolution, vertical pattern, contrast or brightness in PC mode. If noise is present, change the PC output to another resolution, change the refresh rate to another rate or

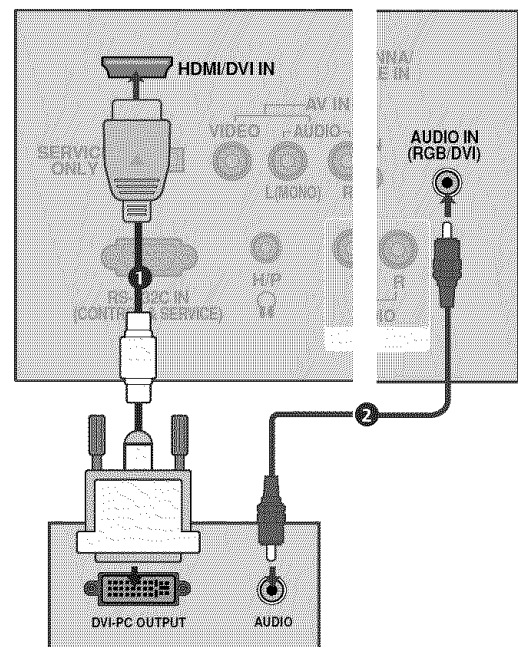adjust the brightness and contrast on the VIDEO menu until the picture is clear. If the refresh rate of the PC graphic card can not be changed, change the PC graphic card or consult the manufacturer of the PC graphic card.

▶ Avoid keeping a fixed image on the screen for a long period of time. The fixed image may become permanently imprinted on the screen.

▶ The synchronization input form for Horizontal and Vertical frequencies is separate.

Supported Display Specifications

| Resolution	Horizontal Frequency(KHz)	Vertical Frequency(Hz)	
640x350	31.469	70.08	● * RGB-PC mode only
720x400	31.469	70.08	●
640x480	31.469	59.94	
800x600	37.879	60.31	
1024x768	48.363	60.00	
1280x768	47.776	59.87	
1360x768	47.712	60.01	
1366x768	60.023	60.00	
720x480	31.469 31.500	59.94 60.00	● * HDMI mode only
1280x720	44.96 45.000	59.94 60.00	●
1920x1080	33.72 33.75	59.94 60.00	●

Screen Setup for PC mode

Overview

When the RGB input of the set is connected to a PC output, select the RGB-PC as the main input mode.

When HDMI connect to PC output and select HDMI/DVI input, this function is used.

After connecting RGB-PC or HDMI/DVI to PC ouput and checking the screen quality.

When you change the resolution, select the proper resolution in present input to see the best picture appearance.
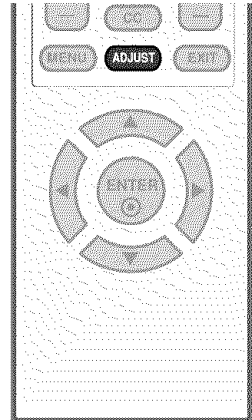
Adjustment for screen Resolution, Position, Size, and Phase

① Press the **ADJUST** button and then use ▲ or ▼ button to select **Resolution, Position, Size**, or **Phase**.

② Press the **ENTER** button and then use ▲ ▼ ◄ ► button to make appropriate adjustments.
- The **Phase** adjustment range is **-16 ~ +16**.
  In HDMI/DVI-PC mode, **Phase** is not available.
- The **Size** adjustment range is **-30 ~ +30**.
  In HDMI/DVI-PC mode, **Size** is not available.

③ Press the **ENTER** button.

Initializing (Reset to original factory values)

To initialize the adjusted values

① Press the **ADJUST** button and then use ▲ or ▼ button to select **Reset**.

② Press the **ENTER** button and then use ◄ or ► button to select **Yes**.

③ Press the **ENTER** button.

Resolution	This function allows you select resolution of XGA/WXGA.
Position	This function is to adjust picture to left/right and up/down as you prefer.
Size	This function is to minimize any vertical bars or stripes visible on the screen background. And the horizontal screen size will also change.
Phase	This function allows you to remove any horizontal noise and clear or sharpen the image of characters.

WATCHING TV / CHANNEL CONTROL

REMOTE CONTROL FUNCTIONS

When using the remote control, aim it at the remote control sensor on the TV.

POWER

TV ⏻ INPUT

SAP PICTURE SOUND TIMER

1 2 3
4 5 6
7 8 9
- 0 FAV

BACK
VOL MUTE CH
CC
MENU ADJUST EXIT

ENTER

28

POWER Turns your TV or any other programmed equipment on or off, depending on the mode.

TV In AV, Component, RGB-PC, and HDMI/DVI input sources, screen returns to the last TV channel.

INPUT External input modes rotate in regular sequence: TV, AV, Component, RGB-PC, and HDMI/DVI. (AV, Component, RGB-PC, and HDMI/DVI input sources are linked automatically, only if a device is connected.)

NUMBER button

— (DASH) Used to enter a program number for multiple program channels such as 2-1, 2-2, etc.

FAV Scroll through the programmed Favorite channels. ▶ **p.34**

Installing Batteries
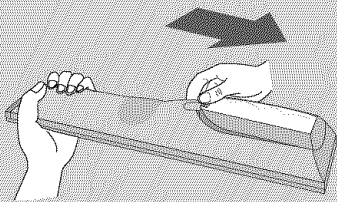
■ Open the battery compartment cover on the back side and install the batteries matching correct polarity (+ with +, - with -).

■ Install two 1.5V AAA batteries. Don't mix old or used batteries with new ones.

■ Close cover.

Remote control effective range
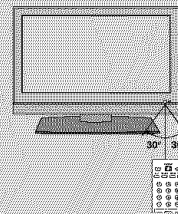
■ Use a remote control up to 7 meters distance and 30 degree (left/right) within the receiving unit scope.

■ Dispose of used batteries in a recycle bin to preserve environment.

TURNING ON TV

① First, connect power cord correctly.
At this moment, the TV switches to standby mode.
■ In standby mode to turn TV on, press the ⏻/I , **INPUT, CH** (+ or -)
button on the TV or press the **POWER, TV, INPUT, CH** (+ or -),
Number (0~9) button on the remote control.

② Select the viewing source by using the **TV, INPUT** button on the remote
control.
■ This TV is programmed to remember which power state it was last set
to, even if the power cord is out.

③ When finished using the TV, press the **POWER** button on the remote
control. The TV reverts to standby mode.
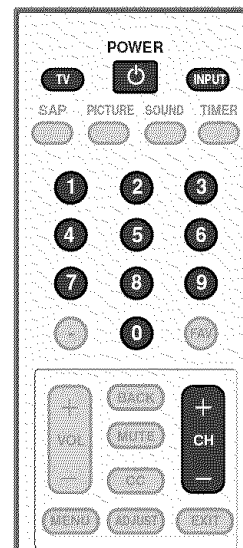
● NOTE

▶ If you intend to be away on vacation, disconnect the power plug from the wall power outlet.

CHANNEL SELECTION

① Press the **CH** + - or **NUMBER** buttons to select a channel number.
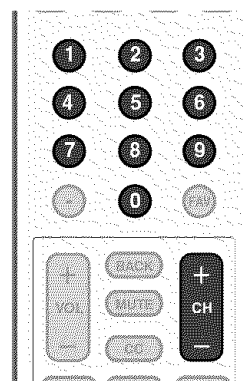
VOLUME ADJUSTMENT

Adjust the volume to suit your personal preference.

① Press the **VOL** + or - button to adjust the volume.

② If you want to switch the sound off, press the **MUTE** button.

③ You can cancel the Mute function by pressing the **MUTE** or **VOL** + or -
button.
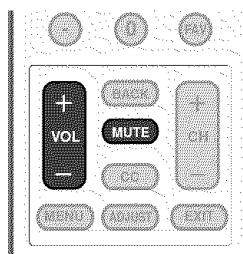
ON-SCREEN MENUS SELECTION

Your TV's OSD (On Screen Display) may differ slightly from what is shown in this manual.

---

1 Press the **MENU** button and then use ▲ or ▼ button to select the each menu.

....

2 Press the ► button and then use ▲ ▼ ◄ ► button to display the available menus.

SETUP

SETUP	EZ Scan
VIDEO	Manual Scan
AUDIO	Channel Edit
TIME	DTV Signal
OPTION	Input Source
LOCK	Set ID

⇄

VIDEO

SETUP	EZ Picture
VIDEO	Color Temperature
AUDIO	XD
TIME	Advanced
OPTION	Video Reset
LOCK	

⇅

LOCK

	For USA	For Canada
SETUP	Lock System	Lock System
VIDEO	Set Password	Set Password
AUDIO	Block Channel	Block Channel
TIME	Movie Rating	TV Rating-English
OPTION	TV Rating-Children	TV Rating-French
LOCK	TV Rating-General	Input Block
	Input Block	

⇅

AUDIO

SETUP	Audio Language
VIDEO	EZ Sound
AUDIO	Balance
TIME	
OPTION	
LOCK	

⇅

OPTION

SETUP	Aspect Ratio
VIDEO	Caption/Text
AUDIO	Caption Option
TIME	Language
OPTION	
LOCK	

⇄

TIME

SETUP	Auto Clock
VIDEO	Manual Clock
AUDIO	Off Timer
TIME	On Timer
OPTION	Sleep Timer
LOCK	Auto Off

CHANNEL SETUP

Auto Scan (EZ Scan)

Automatically finds all channels available through antenna
or cable inputs, and stores them in memory on the channel
list.
Run EZ Scan again after any Antenna/Cable connection
changes.
A password is required to gain access to EZ Scan menu if
the Lock System is turned on.
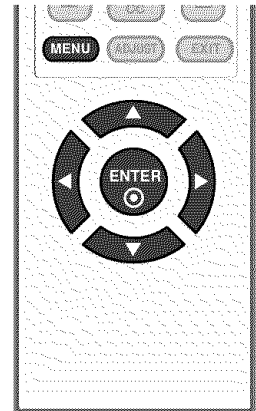
① Press the MENU button and then use ▲ or ▼ button
to select the SETUP menu.

② Press the ▶ button and then use ▲ or ▼ button to
select EZ Scan.

③ Press the ENTER button to begin the channel search.
Allow EZ Scan to complete the channel search cycle
for ANTENNA and CABLE.
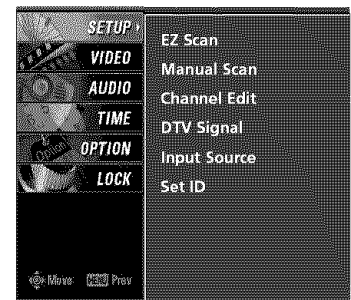
Add/Delete Channel (Manual Scan)

A password is required to gain access to Manual Scan menu if the Lock System is turned on.
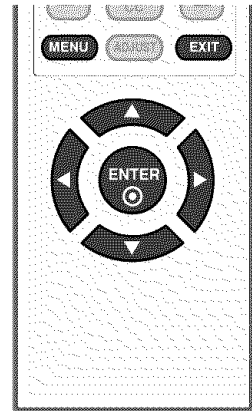
1 Press the **MENU** button and then use ▲ or ▼ button to select the **SETUP** menu.

2 Press the ▶ button and then use ▲ or ▼ button to select **Manual Scan.**

3 Press the ▶ button and then use ▲ or ▼ button to select **TV, DTV, CATV, and CADTV.**

4 Press the ▶ button and then use ▲ or ▼ button to select channel you want to add or delete.

5 Press the **ENTER** button to add or delete the channel.

6 Press the **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.

33
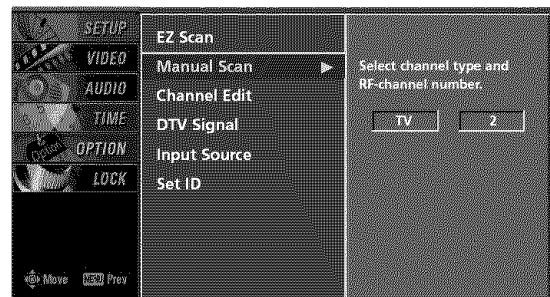
Channel Editing

There are two different ways in order to add or delete scanned channels. One is "Custom List" and the other is "Favorite List" in the channel list. Both of them are available after EZ Scan on the SETUP menu.

A Custom List can be created by toggling each channel on or off with ENTER button. The channels in the Custom List are displayed in black, and the channels deleted from the Custom List are displayed in gray. Once a channel is highlighted you can add or delete the channel by referring to the small window at the top-left corner of the screen.

You can create your own Favorite List. Use the FAV button on the remote control when a channel is highlighted and then add or delete the channel to/from your Favorite List.
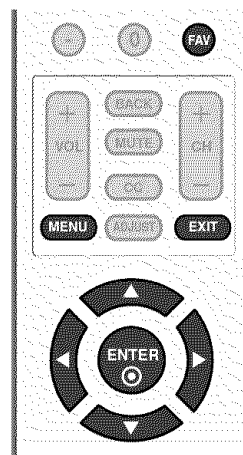
1. Press the MENU button and then use ▲ or ▼ button to select the SETUP menu.

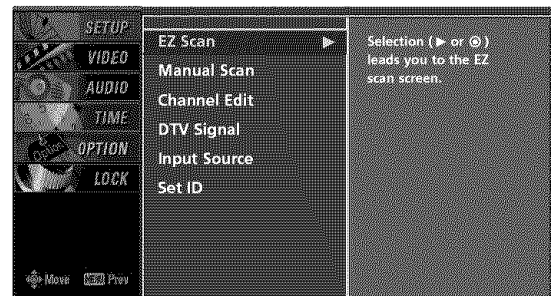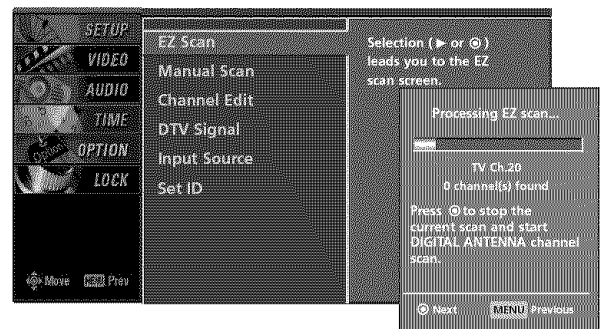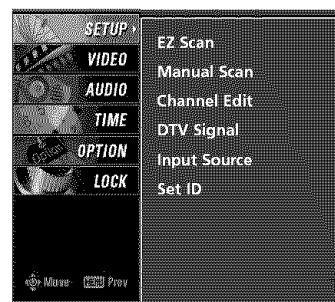2. Press the ► button and then use ▲ or ▼ button to select Channel Edit.
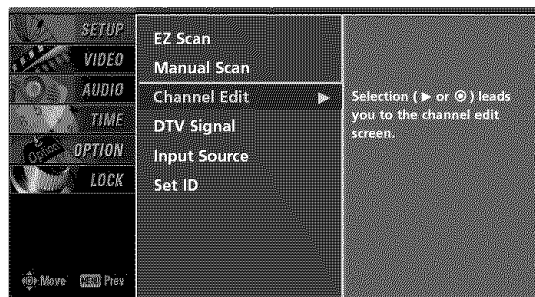
3. Press the ► button. You will now see a screen filled with channel numbers and a preview picture.

4. Use ▲ ▼ ◄ ► button to select a channel and then use the ENTER button to add or delete it.
   Press FAV button to add the channel to the Favorite List. The heart-mark will appear in front of that channel number.

5. Press EXIT button to return to TV viewing or press MENU button to return to the previous menu.

DTV SIGNAL STRENGTH

This feature displays the DTV signal levels being received and indicates whether you need to adjust your antenna or digital cable input. The higher the signal strength, the less likely you are to experience picture degradation.
DTV Signal: This function is only available when the input signal is DTV or CADTV.
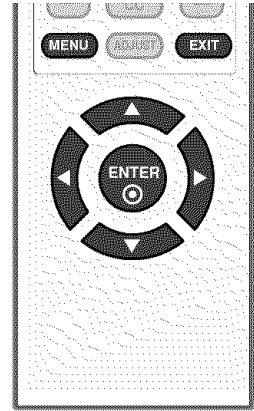
1 Press the **MENU** button and then use ▲ or ▼ button to select the **SETUP** menu.

2 Press the ▶ button and then use ▲ or ▼ button to select **DTV Signal.**

3 View the on-screen signal strength monitor to see the quality of the signal being received.

4 Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.
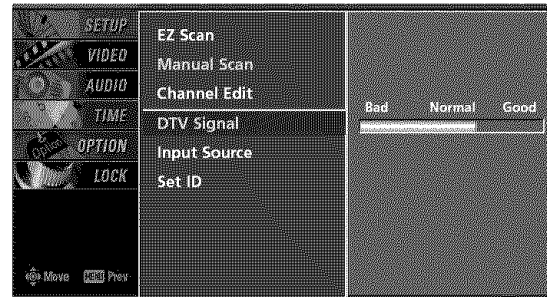
INPUT SOURCE SELECTION

Changes the picture source so you can watch your off-air TV, cable TV, VCR, DVD, or any other devices that are connected to your TV.
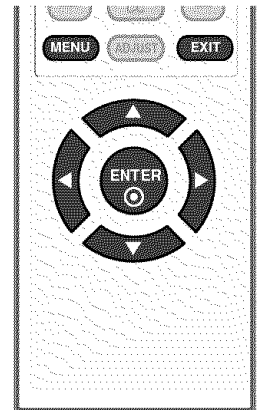
① Press the **MENU** button and then use ▲ or ▼ button to select the **SETUP** menu.

② Press the ▶ button and then use ▲ or ▼ button to select **Input Source**.

③ Press the ▶ button and then use ▲ or ▼ button to select the source: **TV**, **AV**, **Component**, **RGB-PC**, **HDMI/DVI**.

④ Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.

36

PICTURE CONTROL

PICTURE SIZE (ASPECT RATIO) CONTROL

This feature allows an analog picture with a 4:3 aspect ratio is displayed on your TV.
When you receive an analog picture with a 4:3 aspect ratio on your 16:9 TV, you
need to specify how the picture is to be displayed.
▪ RGB-PC input source use 4:3 or 16:9 aspect ratio.
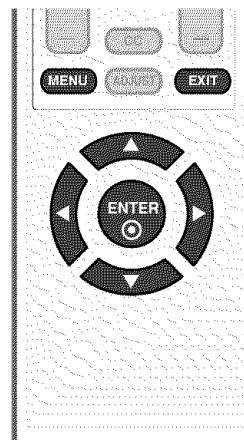
① NOTE

▶ If a fixed image is displayed on the screen for a long time, the image may
become imprinted on the screen and remain visible.
This phenomenon is common to all manufactures and in consequence the
manufactures warranty does not cover the product bearing this phenomenon.

❶ Press the MENU button and then use ▲ or ▼ button
to select the OPTION menu.

❷ Press the ▶ button and then use ▲ or ▼ button to
select Aspect Ratio.

❸ Press the ▶ button and then use ▲ or ▼ button to
select the desired picture option (Set By Program,
4:3, 16:9, Horizon, or Zoom).

❹ Press EXIT button to return to TV viewing or press
MENU button to return to the previous menu.

PICTURE CONTROL

Set by program

Selects the proper picture proportion to match the source's image.

$(4:3 \rightarrow 4:3)$
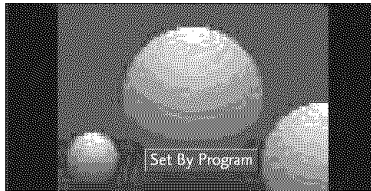
$(16:9 \rightarrow 16:9)$

4:3

Choose 4:3 when you want to view a picture with an original 4:3 aspect ratio.
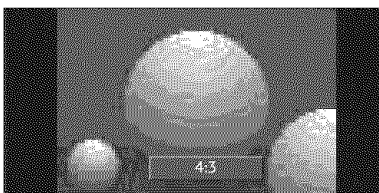
16:9

Adjust the picture horizontally, in a linear proportion to fill the entire screen.
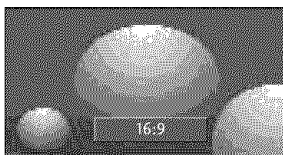
Horizon

The screen size is, more enlarged at both sides, to create a spectacular view.
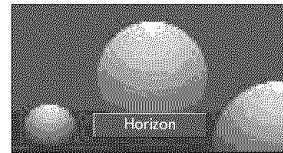
Zoom

Choose Zoom when you want to view the picture without any alteration. However, the top and bottom portions of the picture will be cropped.

38
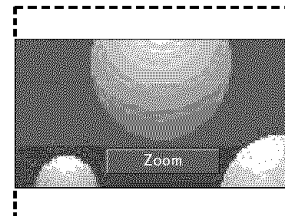
PRESET PICTURE SETTINGS

EZ Picture - Preset

EZ Picture adjusts the TV for the best picture appearance. Select the preset value in the EZ Picture menu based on the program category.

Daylight, Normal, Night Time Settings are preset for the optimum picture quality at the factory and are not adjustable.

In the **User1** and **User2** modes only, user can directly adjust the contrast, brightness, color, sharpness, tint.
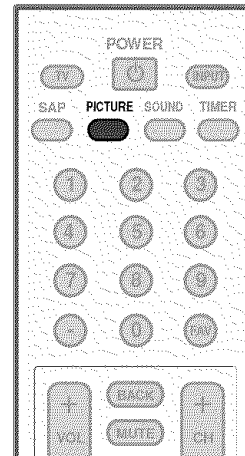
1 Press the **PICTURE** button repeatedly to select the picture appearance setup option as below :
Daylight, Normal, Night Time, User1, and **User2** (your own settings).

2 Press the **EXIT** button to save and return to TV viewing.

■ You can also use the **VIDEO** menu to adjust **EZ Picture.**
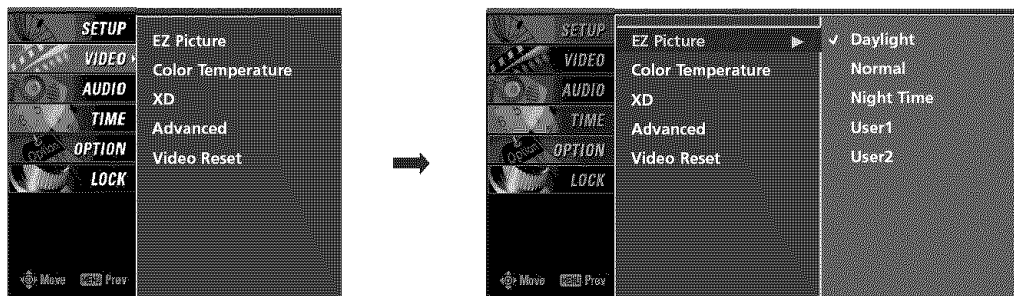
PICTURE CONTROL

Color Tone - Preset

Choose one of three automatic color adjustments. Set to warm to enhance hotter colors such as red, or set to cool to see less intense colors with more blue.
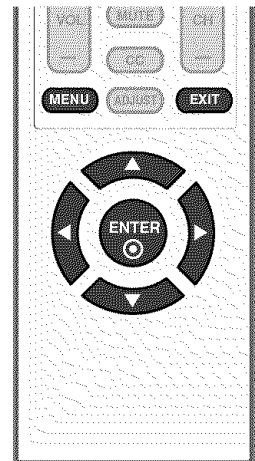
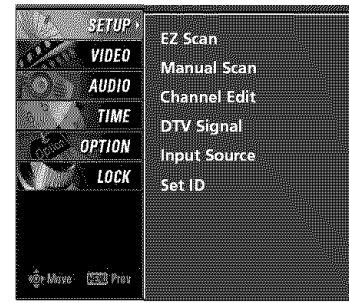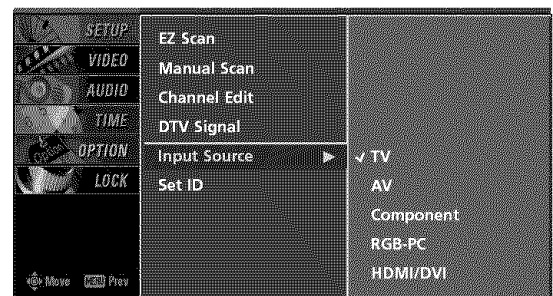**1** Press the **MENU** button and then use ▲ or ▼ button to select the **VIDEO** menu.

2 Press the ▶ button and then use ▲ or ▼ button to select **Color Temperature**.

3 Press the ▶ button and then use ▲ or ▼ button to select either **Cool, Medium, Warm** or **User**.

**4** Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.

40
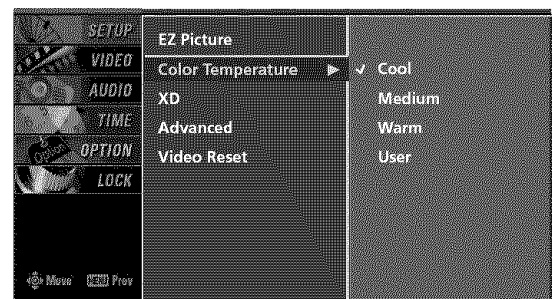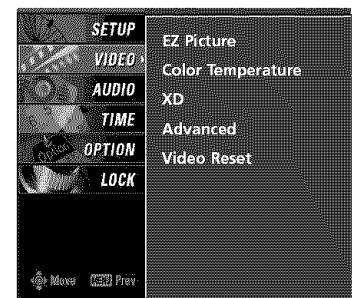
MANUAL PICTURE ADJUSTMENT

EZ Picture - User Mode

Adjust the picture appearance to suit your preference and viewing situations.

① Press the **MENU** button and then use ▲ or ▼ button to select the **VIDEO** menu.

② Press the ► button and then use ▲ or ▼ button to select **EZ Picture**.

③ Press the ► button and then use ▲ or ▼ button to select **User 1** or **User 2**.

④ Press the ► button and then use ▲ or ▼ button to select the desired picture option (**Contrast**, **Brightness**, **Color**, **Sharpness**, or **Tint**).

⑤ Press the ► button and then use ◄ or ► button to make appropriate adjustments.

⑥ Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.

Color Tone - User Mode

You can also adjust the detailed settings (Red, Green, Blue) by selecting the **Color Temperature-User** menu.
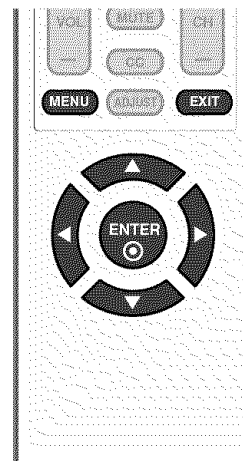
1 Press the **MENU** button and then use ▲ or ▼ button to select the **VIDEO** menu.

2 Press the ▶ button and then use ▲ or ▼ button to select **Color Temperature**.

3 Press the ▶ button and then use ▲ or ▼ button to select **User**.

4 Press the ▶ button and then use ▲ or ▼ button to select **Red**, **Green**, or **Blue**.

5 Press the ▶ button and then use ◄ or ▶ button to make appropriate adjustments.

■ The adjustment range of **Red**, **Green**, or **Blue** is - 20~ +20.

6 Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.
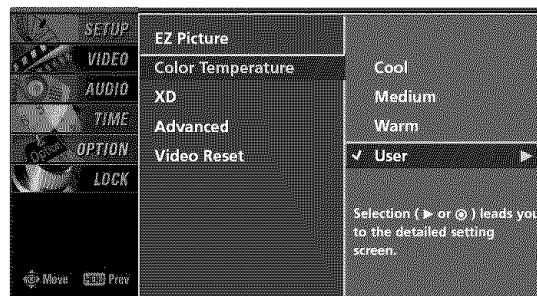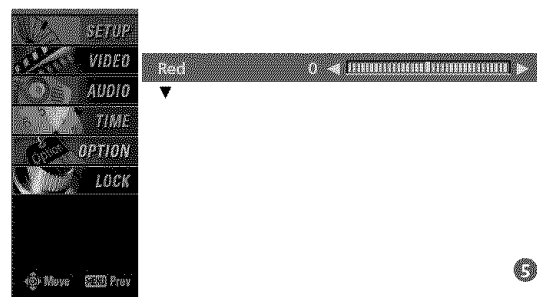
XD - PICTURE IMPROVEMENT TECHNOLOGY

XD is LG Electronic's unique picture improving technology to display a real HD source through an advanced digital signal processing algorithm.

When selecting EZ Picture options (Daylight, Normal and Night time), XD is automatically changed to Auto.

When selecting EZ Picture options (User 1 and User 2), you can choose the Auto / Manual.

When selecting the Manual, you can adjust the XD Contrast, XD color and XD Noise.
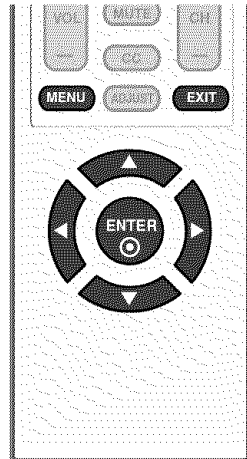
1 Press the **MENU** button and then use ▲ or ▼ button to select the **VIDEO** menu.

2 Press the ▶ button and then use ▲ or ▼ button to select **XD**.

3 Press the ▶ button and then use ▲ or ▼ button to select **Auto** or **Manual**.
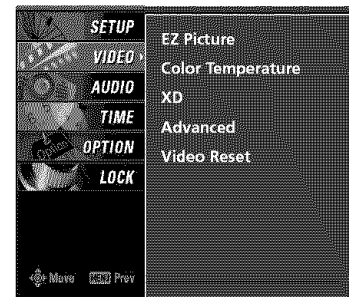
Selecting the Manual

1. Press the ▶ button and then use ◀ or ▶ button to select **XD Contrast**, **XD Color** or **XD Noise**.
   - **XD Contrast:** Optimizing the contrast automatically according to the brightness of the reflection.
   - **XD Color:** Adjusting the colors of the reflection automatically to reproduce as closely as possible to the natural colors.
   - **XD Noise :** Removing the noise up to the point where it does not damage the original picture.

2. Use the ▲ or ▼ button to select **On** or **Off**.
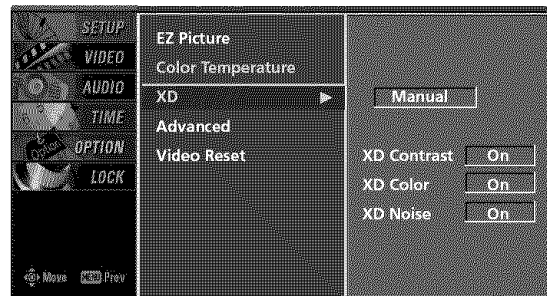
4 Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.

PICTURE CONTROL

ADVANCED - BLACK (DARKNESS) LEVEL

Adjusting the contrast and the brightness of the screen using the black level of the screen.
This feature operates only in AV or HDMI/DVI.
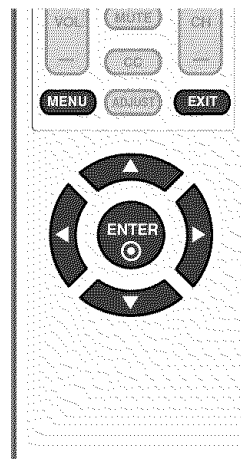
1 Press the **MENU** button and then use ▲ or ▼ button to select the **VIDEO** menu.

2 Press the ► button and then use ▲ or ▼ button to select **Advanced**.

3 Press the ► button and then use ▲ or ▼ button to select **Black level**.

4 Press the ► button and then use ▲ or ▼ button to select **Low** or **High**.

⊪ **Low**
  The screen gets darker.
⊪ **High**
  The screen gets brighter.

5 Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.
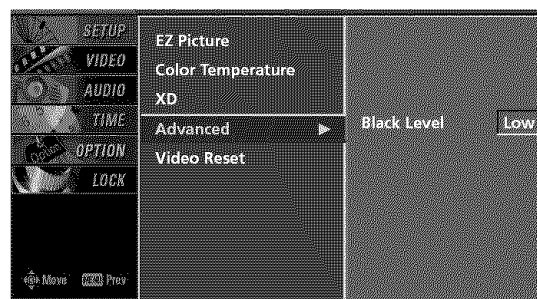
PICTURE RESET

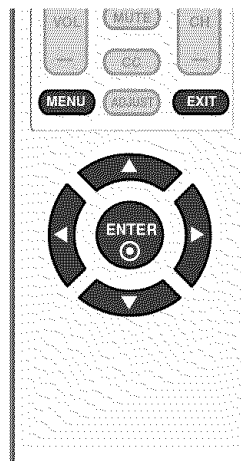Use to quickly reset all the Video menu options to their original factory preset values.

① Press the **MENU** button and then use ▲ or ▼ button to select the **VIDEO** menu.

② Press the ► button and then use ▲ or ▼ button to select **Video Reset**.

③ Press the ► button to reset the Video menu options to original values.
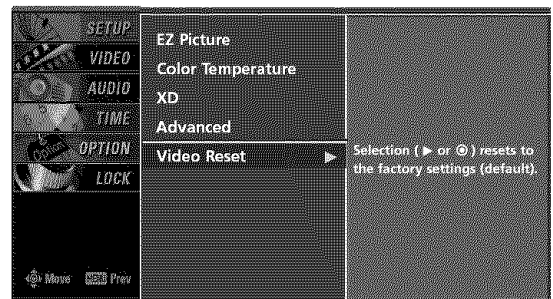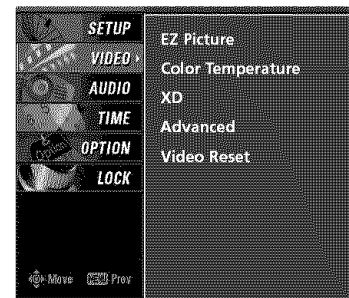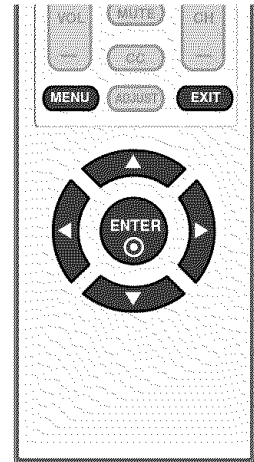
SOUND & LANGUAGE CONTROL

PRESET SOUND SETTINGS (EZ SOUND)

EZ Sound lets you enjoy the best sound without any special adjustment because the TV sets the appropriate sound options based on the program content.

Normal, Stadium, News, Music and Theater are preset for good sound quality at the factory and are not adjustable.

When you select the Stadium or Theater, the AUDIO menu-Balance option is disabled and the Balance option is set to 0 automatically.
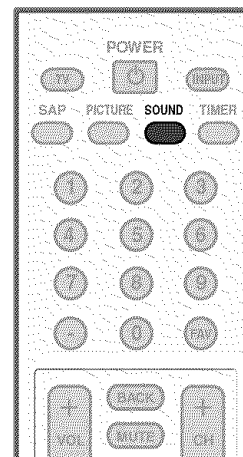
1 Press the **SOUND** button repeatedly to select the appropriate sound setup as below :
Normal, Stadium, News, Music, Theater, and User (your own settings).

2 Press **EXIT** button to return to TV viewing.

■ You can also adjust **EZ Sound** in the AUDIO menu.
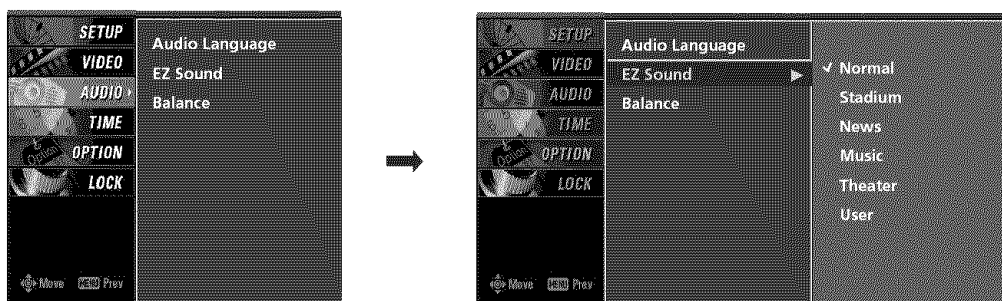
SOUND SETTING ADJUSTMENT - USER MODE

Adjust the sound to suit your taste and room situations.
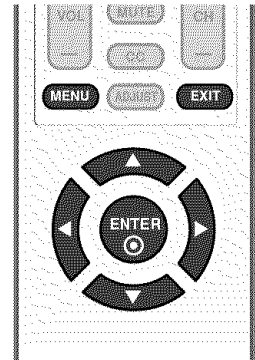
① Press the **MENU** button and then use ▲ or ▼ button to select the **AUDIO** menu.
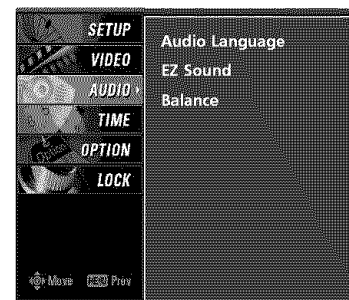
② Press the ► button and then use ▲ or ▼ button to select **EZ Sound**.

③ Press the ► button and then use ▲ or ▼ button to select **User**.

④ Press the ► button and then use ▲ or ▼ button to select the desired sound option (**Treble** or **Bass**).

⑤ Press the ► button and then use ◄ or ► button to make appropriate adjustments.

⑥ Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.
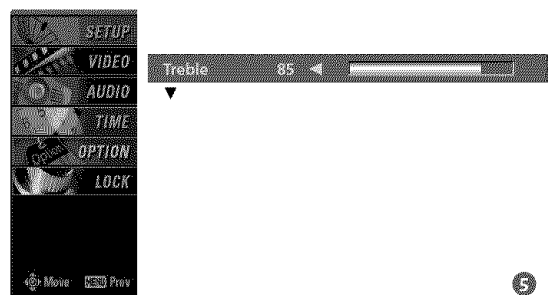
SOUND &LANGUAGE CONTROL

BALANCE

Adjust the left/right sound of speaker to suit your taste and room situations.

① Press the **MENU** button and then use ▲ or ▼ button to select the **AUDIO** menu.

② Press the ▶ button and then use ▲ or ▼ button to select **Balance**.

③ Press the ▶ button and then use ◄ or ▶ button to make appropriate adjustments.

④ Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.
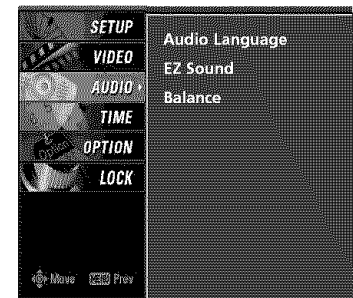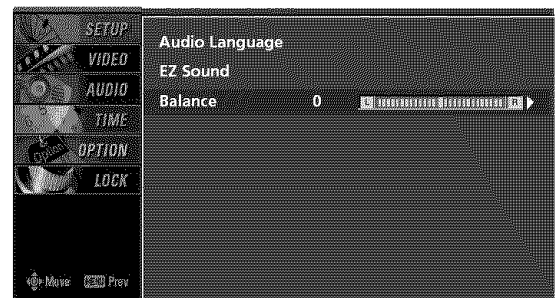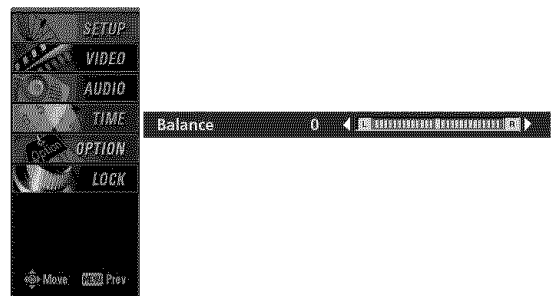
STEREO/SAP BROADCASTS SETUP

This TV can receive MTS stereo programs and any SAP (Secondary Audio Program) that accompanies the stereo program if the station transmits an additional sound signal as well as the original one and when you select Stereo or SAP on the remote control.

Mono sound is automatically received if the broadcast is only in Mono; even though Stereo or SAP has been selected.

Select Mono if you want to listen to the mono sound in remote areas during stereo/SAP broadcasting.

Stereo or SAP can be received in Analog channel.

---
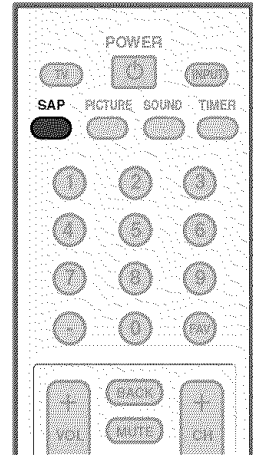
1 Use the **SAP** button to select your desired MTS mode in analog signal. Each time you press the **SAP** button, **Mono**, **Stereo**, or **SAP** appear in turn.

■ If other languages available on the digital signal, select them with the **SAP** button.

---

2 Press **EXIT** button to save and return to TV viewing.

SOUND &LANGUAGE CONTROL

AUDIO LANGUAGE

Other languages may be available if a digital signal is provided by the broadcasting station.
This feature operates only in DTV/CADTV mode.
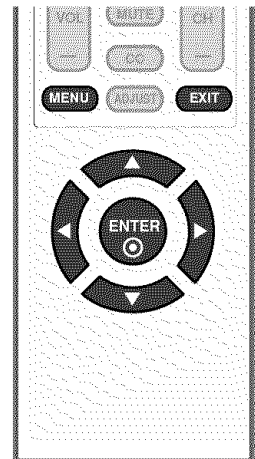
1 Press the **MENU** button and then use ▲ or ▼ button to select the **AUDIO** menu.

2 Press the ▶ button and then use ▲ or ▼ button to select **Audio Language**.

3 Press the ▶ button and then use ▲ or ▼ button to select : **English**, **Spanish**, or **French**.

4 Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.

ON-SCREEN MENUS LANGUAGE SELECTION

The menus can be shown on the screen in the selected language. First select your language.
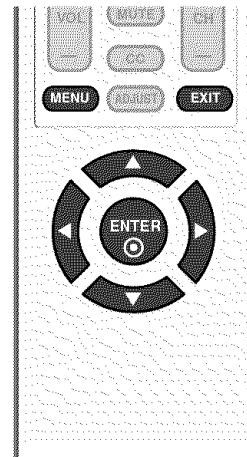
① Press the **MENU** button and then use ▲ or ▼ button to select the **OPTION** menu.

② Press the ► button and then use ▲ or ▼ button to select **Language**.

③ Press the ► button and then use ▲ or ▼ button to select your desired language.
From this point on, the on-screen menus will be shown in the selected language.

④ Press the **EXIT** button to return to TV viewing or press **MENU** to return to the previous menu.

51
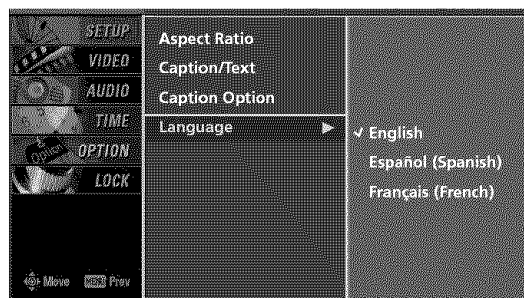
CAPTION / TEXT

Analog Broadcasting System Captions

Select a caption mode for displaying captioning information if provided on a program. Analog caption displays information at any position on the screen and is usually the program's dialog.

Text displays information, usually at the bottom position and is used for a data service, generally not program related.

Caption/Text, if provided by the broadcaster, would be available for both digital and analog channels on the Antenna/Cable.

This TV is programmed to memorize the caption/text mode which was last set when you turn the power off.

When you select the CC1 ~ Text4, Caption option must be disabled.
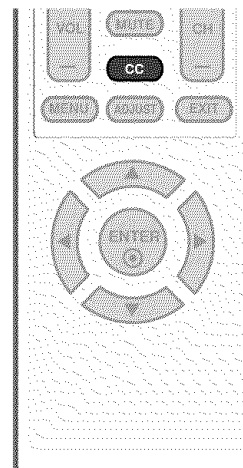
1 Use the **CC** button repeatedly to select Caption **Off, CC1, CC2, CC3, CC4, Text1, Text2, Text3** or **Text4**.

▥ CAPTION
The term for the words that scroll across the bottom of the TV screen; usually the audio portion of the program provided for the hearing impaired.

▥ TEXT
The term for the words that appear in a large black frame and almost cover the entire screen; usually messages provided by the broadcaster.

2 Press **EXIT** to save and return to TV viewing.

▥ You can also use the **OPTION** menu to select **Caption/Text**.

SETUP	Aspect Ratio
VIDEO	Caption/Text
AUDIO	Caption Option
TIME	Language
OPTION ▸	
LOCK	
◀▶Move Prev	

➡

SETUP	Aspect Ratio	✓ Off
VIDEO	Caption/Text ▸	CC1
AUDIO	Caption Option	CC2
TIME	Language	CC3
OPTION		CC4
LOCK		Text1
		Text2
		Text3
◀▶Move Prev		Text4
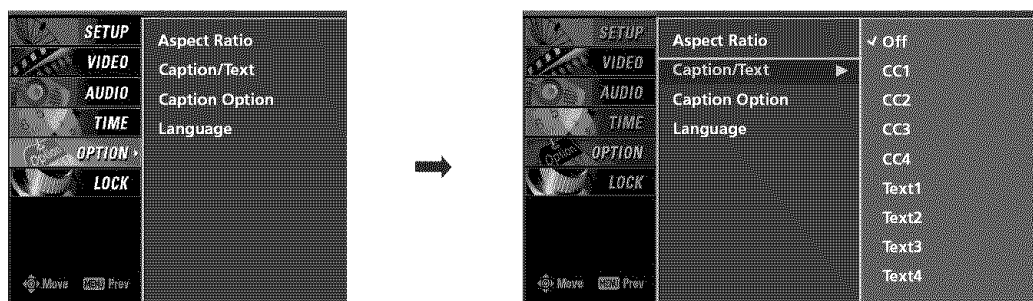
Digital Broadcasting System Captions

Choose the language you want the DTV/CADTV Captions
to appear in.
Other Languages can be chosen for digital sources only if
they are included on the program.
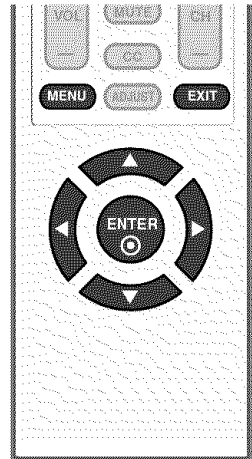
1   Press the **MENU** button and then use ▲ or ▼ button
to select the **OPTION** menu.

2   Press the ▶ button and then use ▲ or ▼ button to
select **Caption/Text**.

3   Press the ▶ button and then use ▲ or ▼ button to
select available caption languages : **English, Spanish**
or **French**.

4   Press **EXIT** button to return to TV viewing or press
MENU button to return to the previous menu.
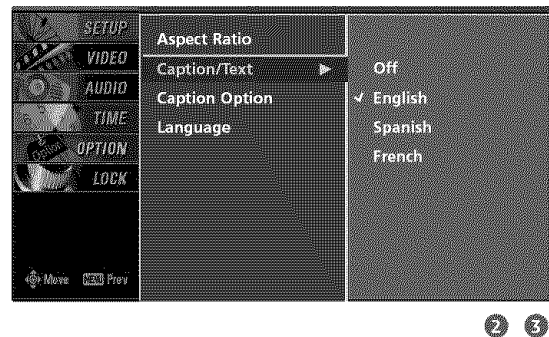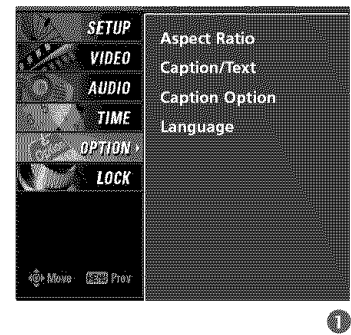
SOUND &LANGUAGE CONTROL

CAPTION OPTION

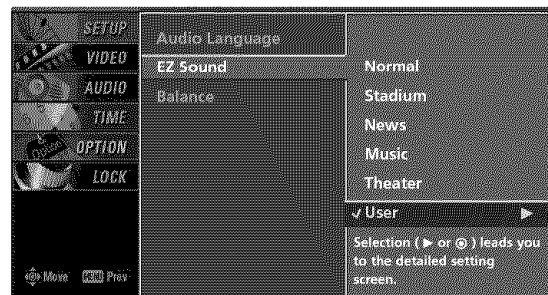Customize the DTV/CADTV captions that appear on your screen.

① Press the **MENU** button and then use ▲ or ▼ button to select the **OPTION** menu.

② Press the ▶ button and then use ▲ or ▼ button to select **Caption Option**.

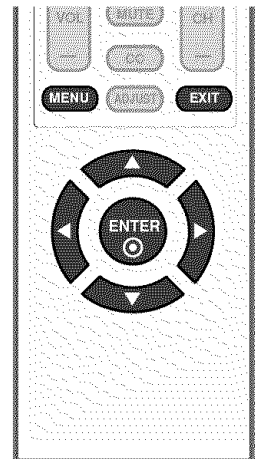**③** Press the ▶ button and then use ◀ or ▶ button to select **Custom**.

④ Use ▲ or ▼ button to customize the **Style**, **Font**, etc., to your preference.
A preview icon is provided at the bottom of the screen, use it to see the caption language.

> ▶ **Size** : Set the word size.
> ▶ **Font** : Select a typeface for the text.
> ▶ **Text Color** : Choose a color for the text.
> ▶ **Text Opacity** : Specify the opacity for the text color.
> ▶ **Bg (Background) Color** : Select a background color.
> ▶ **Bg (Background) Opacity** : Select the opacity for the background color.
> ▶ **Edge Type** : Select an edge type.
> ▶ **Edge Color** : Select a color for the edges.

⑤ Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.
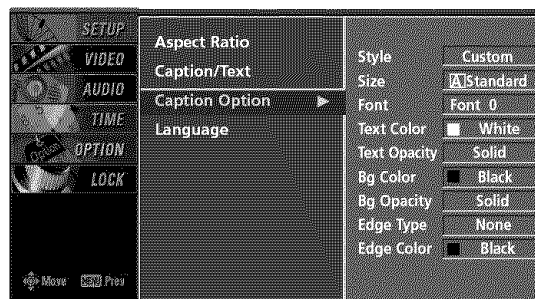
TIME SETTING

CLOCK SETTING

Auto Clock Setup

The time is set automatically from a digital channel signal.

The digital channel signal includes information for the current time provided by the broadcasting station.

Set the clock manually if the current time is set incorrectly by the auto clock function.

The factory default value of the Auto Clock is Off, because a clock information sent each broadcasting station is different.
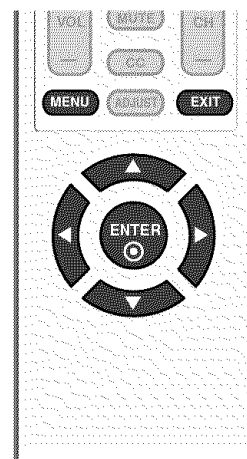
---

1 Press the MENU button and then use ▲ or ▼ button to select the TIME menu.

---

2 Press the ► button and then use ▲ or ▼ button to select Auto Clock.

**3** Press the ► button and then use ▲ or ▼ button to select On.

---

4 Press the ► button and then use ▲ or ▼ button to select your viewing area time zone:

U.S.A : **Eastern, Central, Mountain, Pacific, Alaska** or **Hawaii.**

Canada : **Eastern, Central, Mountain, Pacific, New F.land** or **Atlantic.**

---

5 Press the ► button and then use ▲ or ▼ button to select **Auto, Off, On**, depending on whether or not your viewing area observes Daylight Saving time.

---

6 Press EXIT button to return to TV viewing or press MENU button to return to the previous menu.

TIME SETTING

Manual Clock Setup

If the current time setting is wrong, reset the clock manually.

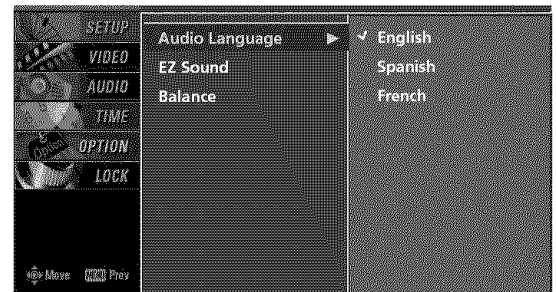**①** Press the **MENU** button and then use ▲ or ▼ button to select the **TIME** menu.

② Press the ▶ button and then use ▲ or ▼ button to select **Manual Clock**.

③ Press the ▶ button and then use ◀ or ▶ button to select either the year, date, or time option. Once selected, use the ▲ or ▼ button to set the year, date, and time options.

④ Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.
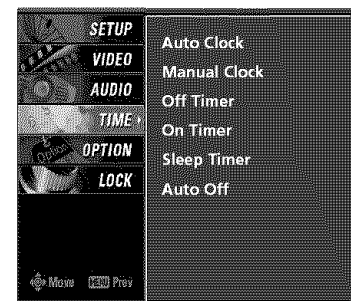
AUTO ON/OFF TIMER SETTING

The timer function operates only if the current time has been set.
The Off-Timer function overrides the On-Timer function if they are both set to the same time.
The TV must be in standby mode for the On-Timer to work.
If you do not press any button within 2 hours after the TV turns on with the On Timer function, the TV will automatically revert to standby mode.
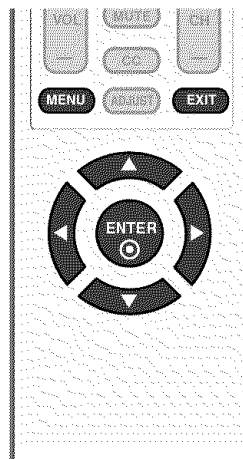
① Press the MENU button and then use ▲ or ▼ button to select the TIME menu.

② Press the ▶ button and then use ▲ or ▼ button to select Off Timer or On Timer.

③ Press the ▶ button and then use ▲ or ▼ button to select On.
■ To cancel the On/Off timer function, select Off.

④ Press the ▶ button and then use ▲ or ▼ button to set the hour.

⑤ Press the ▶ button and then use ▲ or ▼ button to set the minutes.

⑥ **Only On timer**
Press the ▶ button and then use ▲ or ▼ button to select the channel at turn-on.

Press the ▶ button and then use ▲ or ▼ button to set the sound level at turn-on.

⑦ Press EXIT button to return to TV viewing or press MENU button to return to the previous menu.

SETUP	Auto Clock
VIDEO	Manual Clock
AUDIO	Off Timer
TIME ▸	On Timer
OPTION	Sleep Timer
LOCK	Auto Off

❶

SETUP	Auto Clock	
VIDEO	Manual Clock	
AUDIO	Off Timer	
TIME	On Timer ▶	Off
OPTION	Sleep Timer	✓ On
LOCK	Auto Off	
		Time 6 : 30 AM
		Ch. TV 2-0
		Vol 17

❷ ❸ ❹ ❺ ❻

TIME SETTING

SLEEP TIMER SETTING

The Sleep Timer turns the TV off at the preset time.
Note that this setting is cleared when the TV is turned off.
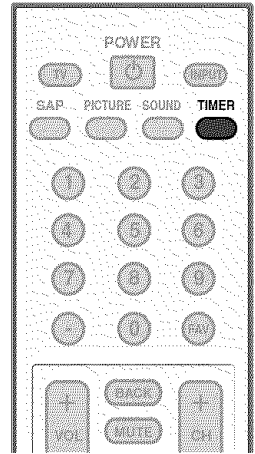
1 Press the **TIMER** button repeatedly to select the number of minutes. First the **Off** option appears on the screen, followed by the following sleep timer options : 10, 20, 30, 60, 90, 120, 180, and 240 minutes.

2 When the number of minutes you want is displayed on the screen, press the **ENTER** button. The timer begins to count down from the number of minutes selected.

3 To check the remaining minutes before the TV turns off, press the **TIMER** button once.

4 To cancel the Sleep Timer, press the **TIMER** button repeatedly to select **Off**.

■ You can also set up the **Sleep Timer** in the **TIME** menu.

SETUP	Auto Clock
VIDEO	Manual Clock
AUDIO	Off Timer
TIME ▸	On Timer
OPTION	Sleep Timer
LOCK	Auto Off

➡

SETUP	Auto Clock	✓ Off
VIDEO	Manual Clock	10 min
AUDIO	Off Timer	20 min
TIME	On Timer	30 min
OPTION	Sleep Timer ▸	60 min
LOCK	Auto Off	90 min
		120 min
		180 min
		240 min
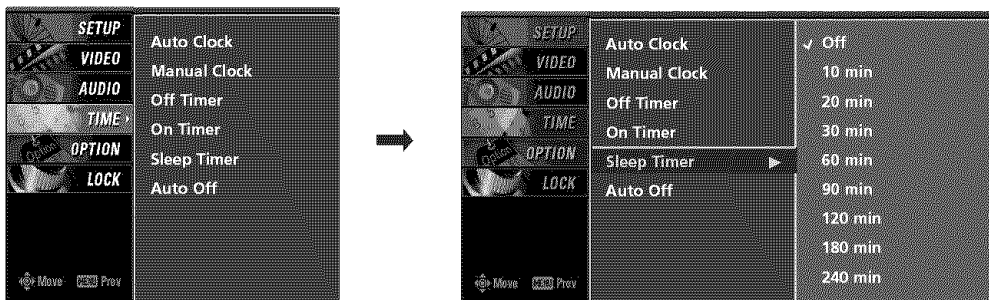
AUTO SHUT-OFF SETTING

If set to on and there is no input signal, the TV turns off automatically after 10 minutes.
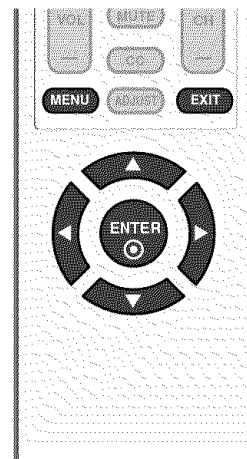
1 Press the **MENU** button and then use ▲ or ▼ button to select the **TIME** menu.

2 Press the ► button and then use ▲ or ▼ button to select **Auto Off**.

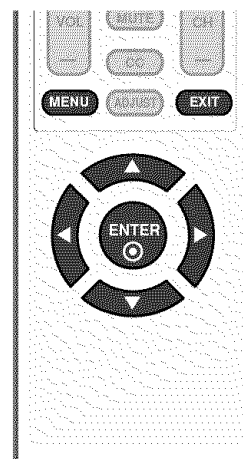**3** Press the ► button and then use ▲ or ▼ button to select **On** or **Off**.

4 Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.

PARENTAL CONTROL / RATINGS

Parental Control can be used to block specific channels, ratings and other viewing sources.

The Parental Control Function (V-Chip) is used to block program viewing based on the ratings sent by the broadcasting station. The default setting is to allow all programs to be viewed. Viewing can be blocked by choosing the type of the program and the categories. It is also possible to block all program viewing for a time period. To use this function, the following must be done :
1. Set ratings and categories to be blocked.
2. Specify a password
3. Enable the lock

V-Chip rating and categories

Rating guidelines are provided by broadcasting stations. Most television programs and television movies can be blocked by TV Rating and/or Individual Categories. Movies that have been shown at the theaters or direct-to-video movies use the Movie Rating System (MPAA) only.

Ratings for Television programs including made-for-TV movies :

- TV-G (General audience)
- TV-PG (Parental guidance suggested)
- TV-14 (Parents strongly cautioned)

- TV-MA (Mature audience only)
- TV-Y (All children)
- TV-Y7 (Children 7 years older)

SET PASSWORD & LOCK SYSTEM

Setting up Your Password

Set up blocking schemes to block specific channels, ratings, and external viewing sources.
A password is required to gain access to this menu.

---

1 Press the **MENU** button and then use the ▲ or ▼ button to select the **LOCK** menu. Then, press the ▶ button.

- Enter the password as requested.
- The TV is set up with the initial password "0-0-0-0".
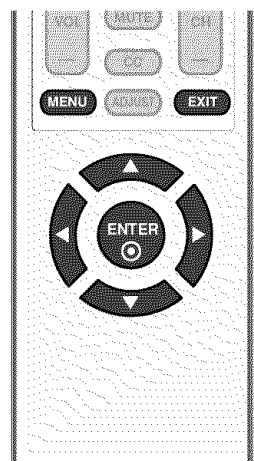
Set Password

Change the password by inputting a new password twice.

① After inputting the password, use the ▲ or ▼ button to choose **Set password**.

② Press the ▶ button and then choose any 4 digits for your new password.

As soon as the 4 digits are entered, re-enter the same 4 digits on the **Confirm**.

Then your changed password has been memorized.

③ Press **EXIT** to return to TV viewing or press **MENU** to return to the previous menu.

ⓘ NOTE

▶ If you ever forget your password, key in '7', '7', '7', '7' on the remote control.

	For USA	For Canada
SETUP	Lock System	Lock System
VIDEO	Set Password	Set Password
AUDIO	Block Channel	Block Channel
TIME	Movie Rating	TV Rating-English
OPTION	TV Rating-Children	TV Rating-French
LOCK	TV Rating-General	Input Block
	Input Block	

Move Prev

❶

SETUP	Lock System	
VIDEO	Set Password ▶	New ▯ ▯ ▯ ▯
AUDIO	Block Channel	Confirm ▯ ▯ ▯ ▯
TIME	Movie Rating	
OPTION	TV Rating-Children	
LOCK	TV Rating-General	
	Input Block	

Move Prev

❷

Lock System

Enables or disables the blocking scheme you set up previously.

① After inputting the password, use the ▲ or ▼ button to choose **Lock System**.

② Press the ▶ button and then use the ▲ or ▼ button to select **On** or **Off**.

■ When you select **On**, the Lock System is enable.

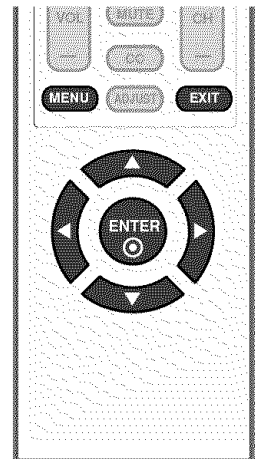③ Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.

	For USA	For Canada
SETUP	Lock System	Lock System
VIDEO	Set Password	Set Password
AUDIO	Block Channel	Block Channel
TIME	Movie Rating	TV Rating-English
OPTION	TV Rating-Children	TV Rating-French
LOCK	TV Rating-General	Input Block
	Input Block	

Move Prev

❶

SETUP	Lock System ▶	✓ Off
VIDEO	Set Password	On
AUDIO	Block Channel	
TIME	Movie Rating	
OPTION	TV Rating-Children	
LOCK	TV Rating-General	
	Input Block	

Move Prev

❷
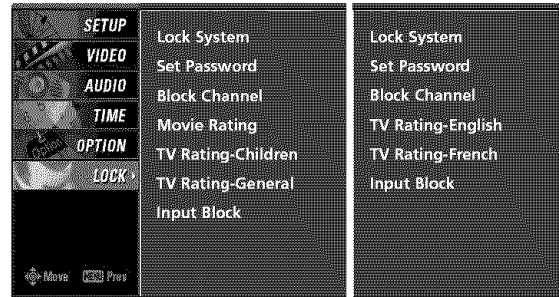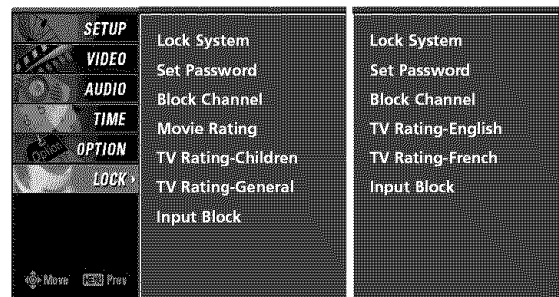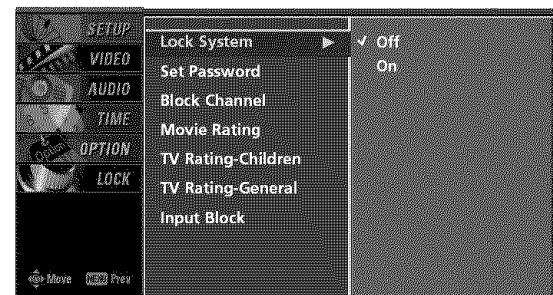
CHANNEL BLOCKING

Blocks any channels that you do not want to watch or that
you do not want your children to watch.

1 After inputting the password, use the **▲** or **▼** button
to choose **Block Channel**.

2 Press the **►** button. You will now see a screen filled
with channel numbers and a preview picture.

3 Use **▲ ▼ ◄ ►** button to select a channel and then
use the **ENTER** button to block or unblock it.

4 Press **EXIT** button to return to TV viewing or press
**MENU** button to return to the previous menu.

EXTERNAL INPUT BLOCKING

Enables you to select a source to block from the external
source devices you have hooked up.

1 After inputting the password, use the **▲** or **▼** button
to choose **Input Block**.

2 Press the **►** button and then use the **◄** or **►** button
to select a source.

3 Press the **►** button and then use the **▲** or **▼** button
to select **On** or **Off** on the each source.

4 Press **EXIT** button to return to TV viewing or press
MENU button to return to the previous menu.

MOVIE & TV RATING

Movie Rating (MPAA) - *for USA only*

Blocks movies according to the movie ratings limits specified, so children cannot view certain movies. You can set the ratings limit by blocking out all the movies with the ratings above a specified level. Keep in mind that the movie ratings limit only applies to movies shown on TV, not TV programs, such as soap operas.
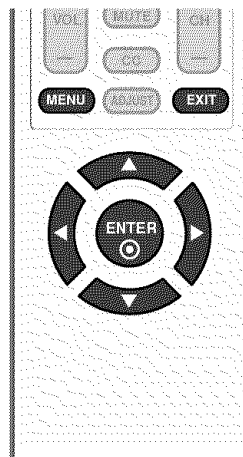
1 After inputting the password, use the ▲ or ▼ button to choose **Movie Rating**.

2 Press the ▶ button and then use the ▲ or ▼ button to select **G, PG, PG-13, R, NC-17** or **X**.

- G (General audience)
- PG (Parental guidance suggested)
- PG-13 (Parents strongly cautioned)
- R (Restricted)
- NC-17 (No one 17 and under admitted)
- X (Adult only)
- Blocking Off (Permits all programs)

> ▶ If you set PG-13 : G and PG movies will be available, PG-13, R, NC-17 and X will be blocked.

3 Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.
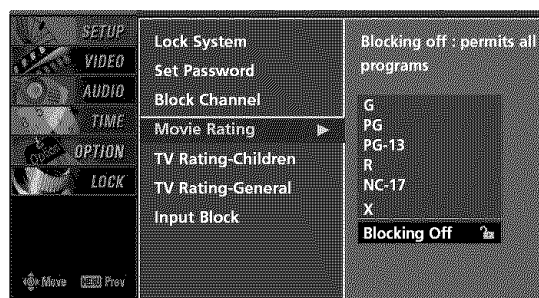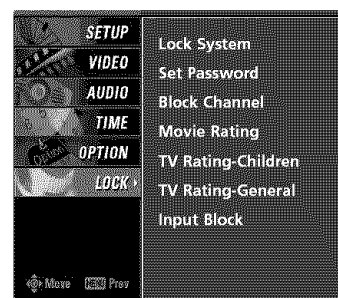
PARENTAL CONTROL /RATINGS

TV Rating Children - for USA only

Prevents children from watching certain children's TV programs, according to the ratings limit set. The children rating does not apply to other TV programs. Unless you block certain TV programs intended for mature audiences in the TV Rating - sub menu, your children can view those programs.

① After inputting the password, use the ▲ or ▼ button to choose **TV Rating-Children.**

② Press the ► button and then use the ▲ or ▼ button to select **Age,** or **Fantasy Violence.**
Press the ► button and then use the ▲ or ▼ button to select block options.

 ▪ Age(applies to TV-Y, TV-Y7)
 ▪ Fantasy Violence(applies to TV-Y7)

③ Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.
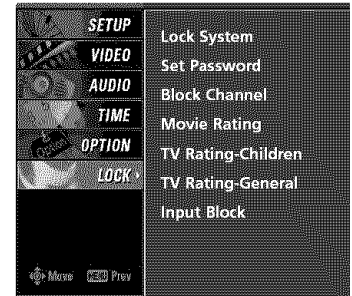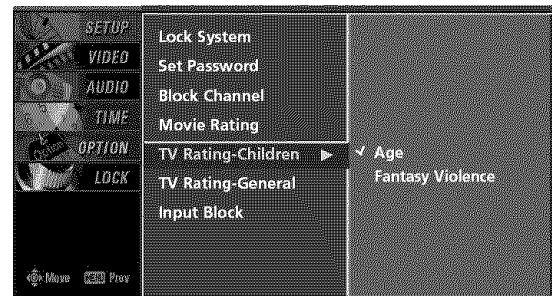
TV Rating General - for USA only

Based on the ratings, blocks certain TV programs that you and your family do not want to view.

① After inputting the password, use the ▲ or ▼ button to choose **TV Rating-General.**

② Press the ► button and then use the ▲ or ▼ button to select **Age, Dialogue, Language, Sex** or **Violence.**
Press the ► button and then use the ▲ or ▼ button to select block options.

 ▪ Age(applies to TV-G,TV-PG,TV-14,TV-MA)
 ▪ Dialogue-sexual dialogue (applies to TV-PG,TV-14)
 ▪ Language-adult language (applies to TV-PG,TV-14,TV-MA)
 ▪ Sex-sexual situations (applies to TV-PG,TV-14,TV-MA)
 ▪ Violence (applies to TV-PG,TV-14,TV-MA)

③ Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.
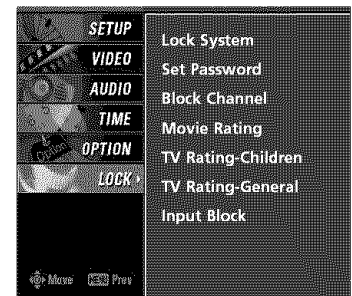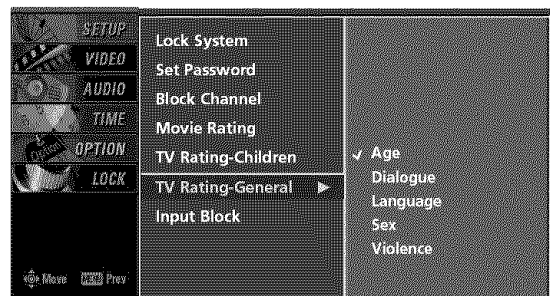
TV Rating English - *for CANADA only*

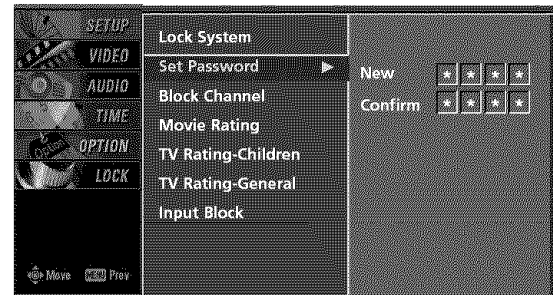Selecting canadian english language rating system.

1 After inputting the password, use the ▲ or ▼ button to choose **TV Rating-English**.

2 Press the ► button and then use the ▲ or ▼ button to select **E, C, C8+, G, PG, 1 4+, 1 8+**, or **Blocking Off**.

■ E (Exempt)
■ C (Children)
■ C8+ (Children eight years and older)
■ G (General programming, suitable for all audiences)
■ PG (Parental Guidance)
■ 14+ (Viewers 14 years and older)
■ 18+ (Adult programming)
■ Blocking Off (Permits all programs)

3 Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.
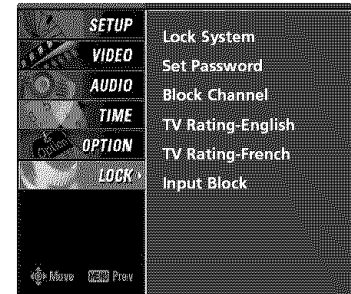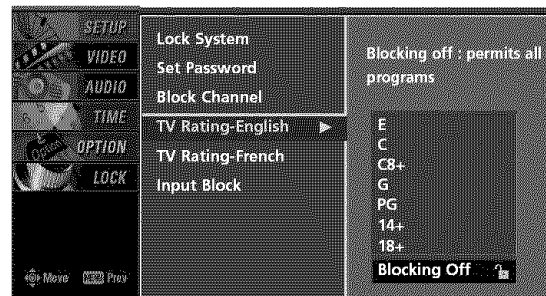
TV Rating French - *for CANADA only*

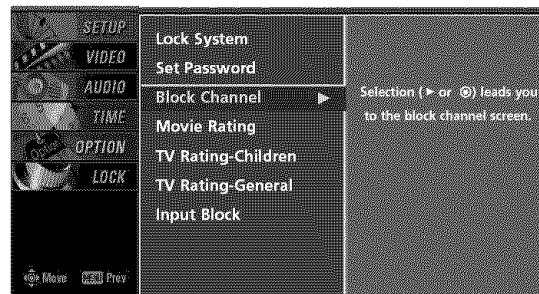Selecting canadian french language rating system.

1 After inputting the password, use the ▲ or ▼ button to choose **TV Rating-French**.

2 Press the ► button and then use the ▲ or ▼ button to select **E, G, 8ans+, 1 3ans+, 1 6ans+, 1 8ans+**, or **Blocking off**.

■ E(Exempt)
■ G(General)
■ 8ans+ (General-Not convenient for little children)
■ 13ans+ (Not convenient for children of 13 years and younger)
■ 16ans+ (Not convenient for children of 16 years and younger)
■ 18ans+ (This programs is only for adults)
■ Blocking off (Permits all programs)

3 Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.
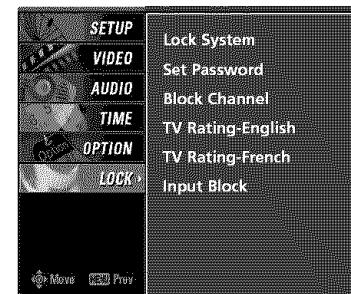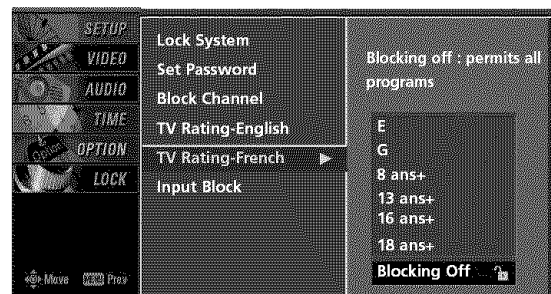
APPENDIX

TROUBLESHOOTING

The operation does not work normally.

The remote control doesn't work	▥ Check to see if there is any object between the product and the remote control causing obstruction. Ensure you are pointing the remote control directly at the TV. ▥ Ensure that the batteries are installed with correct polarity (+ to +, - to -). ▥ Ensure that the correct remote operating mode is set: TV, VCR etc. ▥ Install new batteries.
Power is suddenly turned off	▥ Is the sleep timer set? ▥ Check the power control settings. Power interrupted. ▥ No broadcast on station tuned with Auto off activated.

The video function does not work.

No picture &No sound	▥ Check whether the product is turned on. ▥ Try another channel. The problem may be with the broadcast. ▥ Is the power cord inserted into wall power outlet? ▥ Check your antenna direction and/or location. ▥ Test the wall power outlet, plug another product's power cord into the outlet where the product's power cord was plugged in.
Picture appears slowly after switching on	▥ This is normal, the image is muted during the product startup process. Please contact your service center, if the picture has not appeared after five minutes.
No or poor color or poor picture	▥ Adjust Color in menu option. ▥ Keep a sufficient distance between the product and the VCR. ▥ Try another channel. The problem may be with the broadcast. ▥ Are the video cables installed properly? ▥ Activate any function to restore the brightness of the picture.
Horizontal/vertical bars or picture shaking	▥ Check for local interference such as an electrical appliance or power tool.
Poor reception on some channels	▥ Station or cable product experiencing problems, tune to another station. ▥ Station signal is weak, reorient antenna to receive weaker station. ▥ Check for sources of possible interference.
Lines or streaks in pictures	▥ Check antenna (Change the direction of the antenna).

The audio function does not work.

Picture OK & No sound	▥ Press the VOL or VOLUME button. ▥ Sound muted? Press MUTE button. ▥ Try another channel. The problem may be with the broadcast. ▥ Are the audio cables installed properly?
No output from one of the speakers	▥ Adjust Balance in menu option.
Unusual sound from inside the product	▥ A change in ambient humidity or temperature may result in an unusual noise when the product is turned on or off and does not indicate a fault with the product.

There is a problem in PC mode. (Only PC mode applied)

The signal is out of range	▥ Adjust resolution, horizontal frequency, or vertical frequency. ▥ Check the input source.
Vertical bar or stripe on background & Horizontal Noise & Incorrect position	▥ Work the Auto configure or adjust clock, phase, or H/V position. (Option)
Screen color is unstable or single color	▥ Check the signal cable. ▥ Reinstall the PC video card.

APPENDIX

MAINTENANCE

Early malfunctions can be prevented. Careful and regular cleaning can extend the amount of time you can enjoy your new TV.
Caution: Be sure to turn the power off and unplug the power cord before you begin any cleaning.

Cleaning the Screen

❶ Here's a great way to keep the dust off your screen for a while. Wet a soft cloth in a mixture of lukewarm water and a little fabric softener or dish washing detergent. Wring the cloth until it's almost dry, and then use it to wipe the screen.

❷ Make sure the excess water is off the screen, and then let it air-dry before you turn on your TV.

Cleaning the Cabinet

■ To remove dirt or dust, wipe the cabinet with a soft, dry, lint-free cloth.
■ Please be sure not to use a wet cloth.

Extended Absence

> **⚠ CAUTION**
>
> ► If you expect to leave your TV dormant for a long time (such as a vacation), it's a good idea to unplug the power cord to protect against possible damage from lightning or power surges.

PRODUCT SPECIFICATIONS

■ The specifications shown above may be changed without prior notice for quality improvement.

MODELS		20LS7D (20LS7D-UB) 20LS7DC (20LS7DC-UB)	23LS7D (23LS7D-UB) 23LS7DC (23LS7DC-UB)
Dimensions (Width x Height x Depth)	Including stand	19.7 x 15.8 x 6.9 inches 499.4 x 401.2 x 175.1 mm	22.9 x 18.1 x 7.8 inches 581.3 x 458.9 x 198.8 mm
	Excluding stand	19.7 x 14.0 x 2.9 inches 499.4 x 355.0 x 72.9 mm	22.9 x 16.3 x 3.3 inches 581.3 x 412.9 x 83.9 mm
Weight	including stand	14.1 pounds / 6.4 kg	17.9 pounds / 8.1 kg
	excluding stand	13.2 pounds / 6.0 kg	16.1 pounds / 7.3 kg
Power requirement Television System Program Coverage External Antenna Impedance		AC100-240V ~ 50/60Hz NTSC-M, ATSC, 64 & 256 QAM VHF 2-13, UHF 14-69, CATV 1-135, DTV 2-69, CADTV 1-135 75 ohm	
Environment condition	Operating Temperature	32 ~ 104°F (0 ~ 40°C)	
	Operating Humidity	Less than 80%	
	Storage Temperature	-4 ~ 140°F (-20 ~ 60°C)	
	Storage Humidity	Less than 85%	

APPENDIX

EXTERNAL CONTROL THROUGH RS-232C

The RS-232C port allows you connect the RS-232C input jack to an external control device (such as a computer or an A/V control system) to control the TV's functions externally.
■ Note: RS-232C on this unit is intended to be used with third party RS-232 control hardware and software. The instructions below are provided to help with programming software or to test functionality using telenet software.

RS-232C Setup

PC
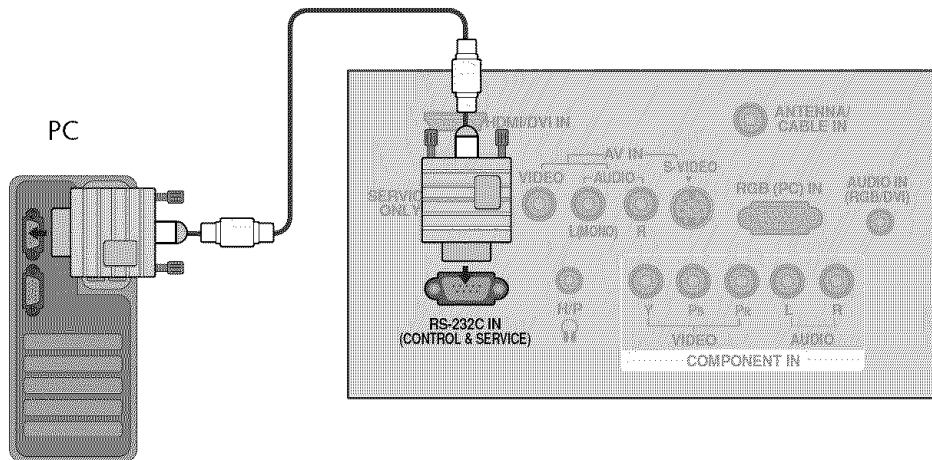
Type of Connector; D-Sub 9-Pin Male

No.	Pin Name
1	No connection
2	RXD (Receive data)
3	TXD (Transmit data)
4	DTR (DTE side ready)
5	GND
6	DSR (DCE side ready)
7	RTS (Ready to send)
8	CTS (Clear to send)
9	No Connection
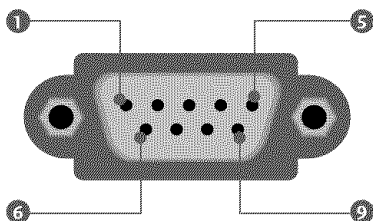
RS-232C Configurations

Either cable below can be used.

7-Wire Configuration (Serial female-female NULL modem cable)					**3-Wire Configurations** (Not standard)			
	PC	TV				PC	TV	
RXD	2 ———— 3		TXD		RXD	2 ———— 3		TXD
TXD	3 ———— 2		RXD		TXD	3 ———— 2		RXD
GND	5 ———— 5		GND		GND	5 ———— 5		GND
DTR	4 ———— 6		DSR		DTR	4 6		DTR
DSR	6 ———— 4		DTR		DSR	6 4		DSR
RTS	7 ———— 8		CTS		RTS	7 7		RTS
CTS	8 ———— 7		RTS		CTS	8 8		CTS
	D-Sub 9	D-Sub 9				D-Sub 9	D-Sub 9	
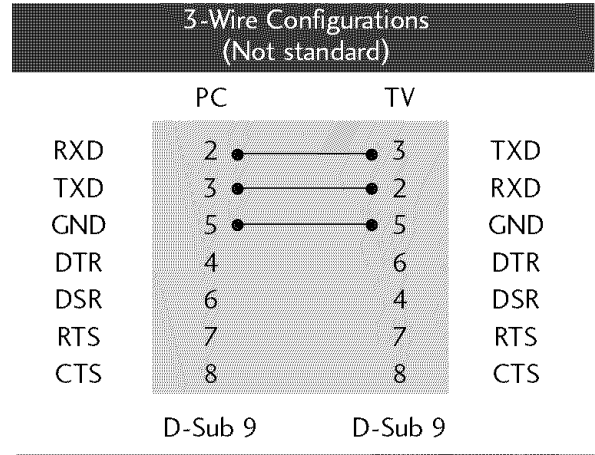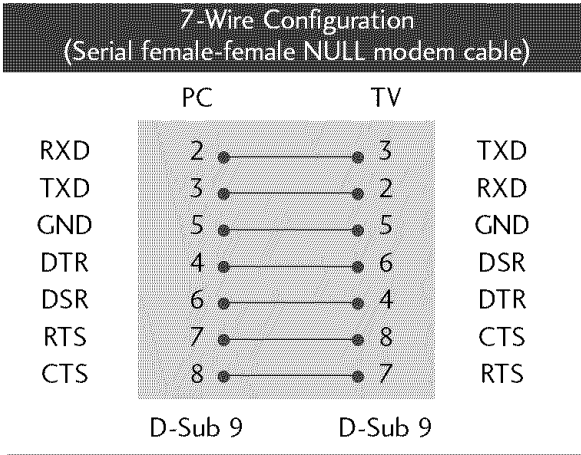
Set ID

Use this function to specify a TV ID number.
Refer to 'Real Data Mapping'. ▶ **p.73.**

① Press the **MENU** button and then use ▲ or ▼ button to select the **SETUP** menu.

② Press the ▶ button and then use ▲ or ▼ button to select **Set ID**.

③ Press the ▶ button and then use ▲ or ▼ button to adjust **Set ID** to choose the desired TV ID number. The adjustment range of Set ID is 1~99.

④ Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.
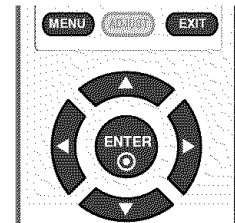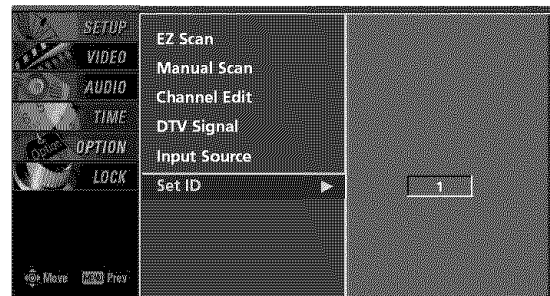
Communication Parameters

▪ Baud rate : 9600 bps (UART)
▪ Data length : 8 bits
▪ Parity : None

▪ Stop bit : 1 bit
▪ Communication code : ASCII code
▪ Use a crossed (reverse) cable.

> **❶ NOTE** ▶ This product has command echo back in the RS-232C Command.

APPENDIX

APPENDIX

Command Reference List

	COMMAND1	COMMAND2	DATA (Hexadecimal)		COMMAND1	COMMAND2	DATA (Hexadecimal)
01. Power	k	a	0 ~ 1	10. Tint	k	j	0 ~ 64
02. Input Select	k	b	(▶ p.73)	11. Sharpness	k	k	0 ~ 64
03. Aspect Ratio	k	c	(▶ p.73)	12. OSD Select	k	l	0 ~ 1
04. Screen Mute	k	d	0 ~ 1	13. Remote Control Lock Mode	k	m	0 ~ 1
05. Volume Mute	k	e	0 ~ 1				
06. Volume Control	k	f	0 ~ 64	14. Treble	k	r	0 ~ 64
07. Contrast	k	g	0 ~ 64	15. Bass	k	s	0 ~ 64
08. Brightness	k	h	0 ~ 64	16. Balance	k	t	0 ~ 64
09. Color	k	i	0 ~ 64	17. Color Temperature	k	u	0 ~ 3

	COMMAND1	COMMAND2	DATA0 (Hexadecimal)	DATA1 (Hexadecimal)	DATA2 (Hexadecimal)	DATA3 (Hexadecimal)	DATA4 (Hexadecimal)	DATA5 (Hexadecimal)
18. Channel Tuning	m	a	physical program high	major program low	major low	minor high	minor low	attribute
19. Channel Add/Del	m	b	0 ~ 1					
20. Key	m	c	(▶ p.75)					
21. Input Select	x	b	(▶ p.75)					

Transmission / Receiving Protocol

Transmission

[Command1][Command2][ ][Set ID][ ][Data][Cr]

[Command 1] : First command to control the set.(j, k, m or x)
[Command 2] : Second command to control the set.
[Set ID] : You can adjust the set ID to choose desired TV ID number in Setup menu. Adjustment range is 1 ~ 99. When selecting Set ID '0', every connected the TV is controlled. Set ID is indicated as decimal (1 ~ 99) on menu and as Hexa decimal (0x0 ~ 0x63) on transmission /receiving protocol.
[DATA] : To transmit command data.
　　Transmit 'FF' data to read status of command.
* In this model, TV will not send the status during the standby mode.
[Cr] : Carriage Return
　　ASCII code '0x0D'
[ ] : ASCII code 'space (0x20)'

OK Acknowledgement

[Command2][ ][Set ID][ ][OK][Data][x]

The TV transmits ACK (acknowledgement) based on this format when receiving normal data. At this time, if the data is data read mode, it indicates present status data. If the data is data write mode, it returns the data of the PC computer.
* In this model, TV will not send the status during the standby mode.
* Data Format
[Command 2] : Use as command.
[Set ID] : Use the small character, if set ID is 10, it will send the '0', 'a'.

[DATA] : Use the small character, if data is 0 x ab, it will send the 'a', 'b'.
[OK] : Use the large character.
* In this model, TV will send the echo, CR, LF with acknowledgement message.
* When it send the power on acknowledgement message, it will be like below.
ex) ka 01 01 (CR) (LF) a 01 OK 01 x (CR) (LF)

Error Acknowledgement

[Command2][ ][Set ID][ ][NG][Data][x]

The TV transmits ACK (acknowledgement) based on this format when receiving abnormal data from non-viable functions or communication errors.
　Data1: Illegal Code
　Data2: Not supported function
　Data3: Wait more time
* In this model, TV will not send the status during the standby mode.
* Data Format
[Command 2] : Use as command.
[Set ID] : Use the small character, if set ID is 10, it will send the '0', 'a'.
[DATA] : Use the small character, if data is 0 x ab, it will send the 'a', 'b'.
[NG] : Use the large character
* In this model, TV will send the echo, CR, LF with acknowledgement message.
* When it send the power on acknowledgement message, it will be like below.
ex) ka 01 01 (CR) (LF) a 01 NG 01 x (CR) (LF)

01. Power (Command2:a)

To control Power On/Off of the TV.

Transmission [k][a][ ][Set ID][ ][Data][Cr]

Data 0 : Power Off   Data 1 : Power On

Acknowledgement [a][ ][Set ID][ ][OK/NG][Data][x]

* In a like manner, if other functions transmit 'FF' data based on this format, Acknowledgement data feedback presents status about each function.
* In this model, TV will send the Acknowledge after power on processing completion.
* There might be a time delay between command and acknowledgement.

02. Input Select (Command2:b) (Main Picture Input)

To select input source for the TV.

Transmission [k][b][ ][Set ID][ ][Data][Cr]

Data 0: DTV   Data 4: Component

Data 1: Analog   Data 7: RGB-PC

Data 2: AV   Data 8: HDMI/DVI

Acknowledgement [b][ ][Set ID][ ][OK/NG][Data][x]

03. Aspect Ratio (Command2:c) (Main picture format)

To adjust the screen format.

Transmission [k][c][ ][Set ID][ ][Data][Cr]

Date 1: 4:3   6: Set by program

      2: 16:9

      3: Horizon

      4: Zoom

Acknowledgement [c][ ][Set ID][ ][OK/NG][Data][x]

04. Screen Mute (Command2:d)

To select screen mute on/off.

Transmission [k][d][ ][Set ID][ ][Data][Cr]

Data 0 : Screen mute off (Picture on)

Data 1 : Screen mute on (Picture off)

Acknowledgement [d][ ][Set ID][ ][OK/NG][Data][x]

05. Volume Mute (Command2:e)

To control volume mute on/off.

You can also adjust mute using the MUTE button on remote control.

Transmission [k][e][ ][Set ID][ ][Data][Cr]

Data 0 : Volume mute on (Volume off)

Data 1 : Volume mute off (Volume on)

Acknowledgement [e][ ][Set ID][ ][OK/NG][Data][x]

06. Volume Control (Command2:f)

To adjust volume.

You can also adjust volume with the volume buttons on remote control.

Transmission [k][f][ ][Set ID][ ][Data][Cr]

Data Min : 0 ~ Max : 64

Refer to 'Real data mapping' as shown below.

Acknowledgement [f][ ][Set ID][ ][OK/NG][Data][x]

07. Contrast (Command2:g)

To adjust screen contrast.

You can also adjust contrast in the Video menu.

Transmission [k][g][ ][Set ID][ ][Data][Cr]

Data Min : 0 ~ Max : 64

Refer to 'Real data mapping' as shown below.

Acknowledgement [g][ ][Set ID][ ][OK/NG][Data][x]

08. Brightness (Command2:h)

To adjust screen brightness.

You can also adjust brightness in the Video menu.

Transmission [k][h][ ][Set ID][ ][Data][Cr]

Data Min : 0 ~ Max : 64(*transmit by Hexadecimal code)

Refer to 'Real data mapping' as shown below.

Acknowledgement [h][ ][Set ID][ ][OK/NG][Data][x]

09. Color (Command2:i)

To adjust the screen color.

You can also adjust color in the Video menu.

Transmission [k][i][ ][Set ID][ ][Data][Cr]

Data Min : 0 ~ Max : 64

Refer to 'Real data mapping' as shown below.

Acknowledgement [i][ ][Set ID][ ][OK/NG][Data][x]

*Real data mapping

 0 : Step 0

 ⋮

 A : Step 10 (SET ID 10)

 ⋮

 F : Step 15 (SET ID 15)

10 : Step 16 (SET ID 16)

 ⋮

63 : Step 99 (SET ID 99)

64 : Step 100

* Tint : R50 ~ G50

* Balance : L50 ~ R50

APPENDIX

10. Tint (Command2:j)

To adjust the screen tint.
You can also adjust tint in the Video menu.
Transmission [k][j][ ][Set ID][ ][Data][Cr]
Data Red : 0 ~ Green : 64
*Refer to 'Real data mapping'. ▶ p.73.
Acknowledgement [j][ ][ ][Set ID][ ][OK/NG][Data][x]

11. Sharpness (Command2:k)

To adjust the screen sharpness.
You can also adjust sharpness in the Video menu.
Transmission [k][k][ ][Set ID][ ][Data][Cr]
Data Min: 0 ~ Max: 64
*Refer to 'Real data mapping'. ▶ p.73.
Acknowledgement [k][ ][Set ID][ ][OK/NG][Data][x]

12. OSD Select (Command2:l)

To select OSD (On Screen Display) on/off.
Transmission [k][l][ ][Set ID][ ][Data][Cr]
Data 0: OSD off   Data 1: OSD on
Acknowledgement [l][ ][Set ID][ ][OK/NG][Data][x]

13. Remote Control Lock Mode (Command2:m)

To lock the remote control and the front panel controls on the set.
Transmission [k][m][ ][Set ID][ ][Data][Cr]
Data 0: Lock off   Data 1: Lock on
Acknowledgement [m][ ][Set ID][ ][OK/NG][Data][x]

If you're not using the remote control and front panel controls on the TV, use this mode. When main power is on/off, remote control lock is released.

14. Treble (Command2:r)

To adjust treble.
You can also adjust treble in the Audio menu.
Transmission [k][r][ ][Set ID][ ][Data][Cr]
Data Min: 0 ~ Max: 64(*transmit by Hexadecimal code)
*Refer to 'Real data mapping'. ▶ p.73.
Acknowledgement [r][ ][Set ID][ ][OK/NG][Data][x]

15. Bass (Command2:s)

To adjust bass.
You can also adjust bass in the Audio menu.
Transmission [k][s][ ][Set ID][ ][Data][Cr]
Data Min: 0 ~ Max: 64(*transmit by Hexadecimal code)
*Refer to 'Real data mapping'. ▶ p.73.
Acknowledgement [s][ ][Set ID][ ][OK/NG][Data][x]

16. Balance (Command2:t)

To adjust balance.
You can also adjust balance in the Audio menu.
Transmission [k][t][ ][Set ID][ ][Data][Cr]
Data Min: 0 ~ Max: 64(*transmit by Hexadecimal code)
*Refer to 'Real data mapping'. ▶ p.73.
Acknowledgement [t][ ][Set ID][ ][OK/NG][Data][x]

17. Color Temperature (Command2:u)

To adjust color temperature.
You can also adjust color temperature in the Video menu.
Transmission [k][u][ ][Set ID][ ][Data][Cr]
Data 0: Medium   1: Cool   2: Warm   3: User
Acknowledgement [u][ ][Set ID][ ][OK/NG][Data][x]

18. Channel Tuning (Command: m a)

To tune channel to following physical/major/minor number.
Transmission [m][a][ ][Set ID][ ][Data0][ ][Data1] [ ][Data2][ ][Data3][ ][Data4][ ][Data5][Cr]

Digital channels have a Physical, Major, and Minor channel number. The Physical number is the actual digital channel number, the Major is the number that the channel should be mapped to, and the Minor is the sub-channel. Since the ATSC tuner automatically maps the channel to the Major number, the Physical number is not required when sending a command.

Data 0: Physical Channel Number

      NTSC air: 02~45, NTSC cable: 01, 0E~7D
      ATSC air: 01~45, ATSC cable: 01~87

Data1 & 2: Major Channel Number
  Data1: High byte   Data2: Low byte
  Two bytes are available for the Major and Minor, normally only the second byte is used.

Data3 & 4: Minor Channel Number
  Not needed for NTSC.

Data5:

7 Main/Sub Picture	6 Two/One Part Channel	5 Using Physical Channel	4 Reserved	3	2	1	0	Step
0 Main	0 Two	0 Use	x	0	0	0	0	NTSC Air
1	1 One	1 No Use	x	0	0	0	1	NTSC Cable
			x	0	0	1	0	ATSC Air
			x	0	0	1	1	ATSC Cable_std
			x	0	1	0	0	ATSC Cable_hrc
			x	0	1	0	1	ATSC Cable_irc
			x	0	1	1	0	ATSC cable_auto
			x	0	1	1	1	Reserved
			x	x	x	x	x	-
			x	1	1	1	1	Reserved

The table above lists the binary code which must be converted to Hexadecimal before sending. For example: The binary code to tune the sub source to an NTSC cable channel is "1000 0001", which translates to "81" in Hex.

* 7th bit : For which source do you want to change the channel.

* 6th bit: Use a two part or one part channel. Most cases just use 0 since it's ignored when using NTSC.

* 5th bit: Use 0 with NTSC since it can only use the physical channel number. Normally use 1 for ATSC since most times it doesn't matter what the physical number is.

* 4th bit: Set to 0.

* 3-0 bits: Choose signal type.

* Tune Command Examples:

1. Tune to the analog (NTSC) cable channel 35.
   Data 0 = Physical of 35 = 23
   Data 1 & 2 = No Major = 00 00
   Data 3 & 4 = No Minor = 00 00
   Data 5 = 0000 0001 in binary = 01
   Total = ma 00 23 00 00 00 00 01

2. Tune to the digital (ATSC) local channel 30-3.
   Data 0 = Don't know Physical = 00
   Data 1 & 2 = Major is 30 = 00 1E
   Data 3 & 4 = Minor is 3 = 00 03
   Data 5 = 0010 0010 in binary = 22
   Total = ma 00 00 00 1E 00 03 22

Acknowledgement[a][ ][Set ID][ ][OK][Data0][Data1]
[Data2][Data3][Data4][x][a][ ][Set ID]
[ ][NG][Data0][x]

19. Channel Add/Del (Command: m b)

To add and delete the channels

Transmission [m][b][ ][Set ID][ ][Data][Cr]

Data 0: Channel Delete   Data 1: Channel Add

Acknowledgement [b][ ][Set ID][ ][OK/NG][Data][x]

20. Key (Command: m c)

To send IR remote key code.

Transmission [m][c][ ][Set ID][ ][Data][Cr]

Acknowledgement [c][ ][Set ID][ ][OK/NG][Data][x]

Code (Hexa)	Remote control	Code (Hexa)	Remote control
0F	TV	39	CC
0B	INPUT	40	▲
08	POWER	41	▼
0E	TIMER	07	◄
10-19	Number Key 0-9	06	►
4C	- (Dash)	44	ENTER
1A	BACK	43	MENU
09	MUTE	52	SOUND
02	VOL +	4D	PICTURE
03	VOL -	5B	EXIT
00	CH +	0A	SAP
01	CH -	CB	ADJUST
1E	FAV		

21. Input select(Command: x b) (Main Picture Input)

To select input source for TV.

Transmission [x][b][ ][Set ID][ ][Data][Cr]

Data 00 : DTV (Antenna)   Data 40 : Component
Data 01 : DTV (Cable)   Data 60 : RGB PC
Data 10 : Analog (Antenna)   Data 90 : HDMI/DVI
Data 11 : Analog (Cable)
Data 20 : AV

Acknowledgement [b][ ][Set ID][ ][OK/NG][Data][x]

LG Electronics Inc.