

# PLASMA TV OWNER'S MANUAL

## PLASMA TV MODELS

50PS70\*\*

60PS70\*\*

Please read this manual carefully before operating your TV.  
Retain it for future reference.  
Record the model number and serial number of the TV.  
Refer to the label on the back cover and quote this information.  
To your dealer when requiring any service.

Model :  
Serial No. :



Trade Mark of the DVB Digital Video  
Broadcasting Project (1991 to 1996)

ID Number(s): 6250 : 50PS70FD-AA  
6249 : 60PS70FD-AA



This product qualifies for ENERGY STAR in the "factory default (Home Use mode)" setting and this is the setting in which power savings will be achieved.

Changing the factory default picture setting or enabling other features will increase power consumption that could exceed the limits necessary to qualify for Energy Star rating.

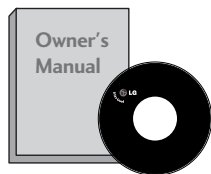


HDMI, the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing LLC.

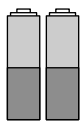
# ACCESSORIES

Ensure that the following accessories are included with your TV. If an accessory is missing, please contact the dealer where you purchased the TV.

- Image shown may differ from your TV.



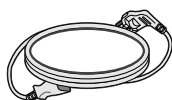
Owner's Manual



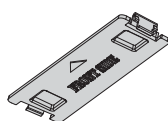
Batteries



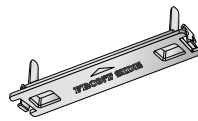
Remote Control



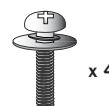
Power Cord



or

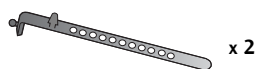


Protection Cover  
(Refer to p.8)



x 4

Bolts for stand assembly  
(Only 50PS70\*\*) (Refer to p.6)



Cable Holder  
(Refer to p.8)



Ferrite Core  
(This item is not included for all models.)

This item is not included for all models.



Polishing Cloth

Polishing cloth for use on the screen.

\* Lightly wipe any stains or fingerprints on the surface of the TV with the polishing cloth.

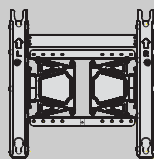
Do not use excessive force. This may cause scratching or discolouration.



Cable management clip  
(Refer to p.8)

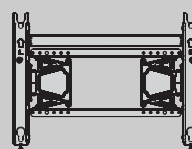
## Wall Mounting Bracket (Separate purchase)

AW-50PG60MS



(50PS70\*\*)

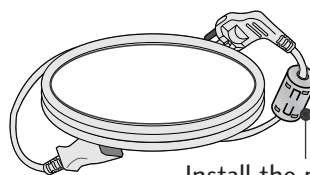
AW-60PG60MS



(60PS70\*\*)

## Use of ferrite core (This item is not included for all models.)

Ferrite core can be used to reduce the electromagnetic wave when connecting the power cord. The closer the location of the ferrite core to the power plug, the better it is.



Install the power plug closely.

# CONTENTS

## ACCESSORIES ..... 1

### PREPARATION


Front Panel Controls .....	4
Back Panel Information .....	5
Stand Installation .....	6
Careful installation advice .....	7
Back Cover for Wire Arrangement .....	8
Swivel Stand .....	8
Not using the desk-type stand .....	8
Desktop pedestal Installation .....	9
Wall Mount: Horizontal Installation .....	9
Antenna Connection .....	10

### EXTERNAL EQUIPMENT SETUP

HD Receiver Setup .....	11
DVD Setup .....	13
VCR Setup .....	14
AV Output Setup(Only Analogue Mode) .....	15
Other A/V Source Setup .....	16
Digital Audio Out Setup .....	16
Usb Setup .....	17
PC Setup .....	18
- Screen Setup for PC Mode .....	20

### WATCHING TV / PROGRAMME CONTROL

Remote Control Key Functions .....	24
Turning on the TV .....	26
Initializing setup .....	26
Programme Selection .....	26
Volume Adjustment .....	26
Quick Menu .....	27
On-Screen Menus Selection and Adjustment ..	28
Auto Programme Tuning .....	29
Manual Programme Tuning (In Digital Mode) ..	30
Manual Programme Tuning (In Analogue Mode) ..	31
Programme Edit .....	33
Booster .....	35
Software Update .....	36
Diagnostics .....	38
Selecting the Programme List .....	39

Favourite Programme Setup .....	40
Brief Information .....	41
Input List .....	42
 SIMPLINK .....	43
Input Label .....	45
AV Mode .....	46
Simple manual .....	47
Initialising (Reset to original factory settings) ..	48

### EPG (ELECTRONIC PROGRAMME GUIDE) (IN DIGITAL MODE)

EPG(Electronic programme guide)(In Digital Mode) .....	49
- Button Function in NOW/NEXT Guide Mode ..	50
- Button Function in 8 Day Guide Mode ....	50
- Button Function in Date Change Mode ....	51
- Button Function in Extended Description Box ..	51
- Button Function in Schedule List Mode ....	51


### TIME MACHINE

Precautions when using the USB Device .....	52
Time Machine (Pause & Replay of Live TV) ....	53
Recording .....	57
Schedule List .....	61
Recorded List .....	63

### MULTIMEDIA

Entry Modes .....	66
Photo List .....	67
Music List .....	71
Movie List .....	73
DivX Registration Code .....	79
Deactivation .....	80

### PICTURE CONTROL

Picture Size (Aspect Ratio) Control .....	81
Picture Wizard .....	83
 ENERGY SAVING .....	85
Preset Picture Settings .....	
- Picture Mode-Preset .....	86

Manual Picture Adjustment	
- Picture Mode-User option	87
Picture Improvement Technology	88
Expert Picture Control	89
Picture Reset	92
Image Sticking Minimization (ISM) Method	93
Demo Mode	94
Mode Setting	95

## SOUND & LANGUAGE CONTROL

Auto Volume leveller(Auto Volume)	96
Clear Voice II	97
Preset Sound Settings (Sound Mode)	98
Sound Setting Adjustment -User Mode	99
SRS TruSurround XT	99
Balance	100
TV Speakers On/ Off Setup	101
Selecting Digital Audio Out	102
Audio Reset	103
Stereo Reception(In Analogue Mode Only)	104
Language Selection(In Digital Mode Only)	105

## TIME SETTING

Clock Setup	106
Auto On/ Off Time Setting	107
Sleep Timer Setting	107

## PARENTAL CONTROL / RATINGS

Set Password & Lock System	
- Setting up Your Password	108
- Lock System	109
- Set Password	110
Block Programme	111
Parental Guidance	112
External Input Blocking	113
Key Lock	114

## TELETEXT

Switch on/off	115
SIMPLE Text	115
TOP Text	115
FASTEXT	116
Special Teletext Functions	116

## APPENDIX

Troubleshooting	117
Maintenance	119
Product Specifications	120
Programming the Remote control	121
IR Codes	122
External Control Device Setup	124
Open Source License	132

# PREPARATION

## FRONT PANEL CONTROLS

### NOTE

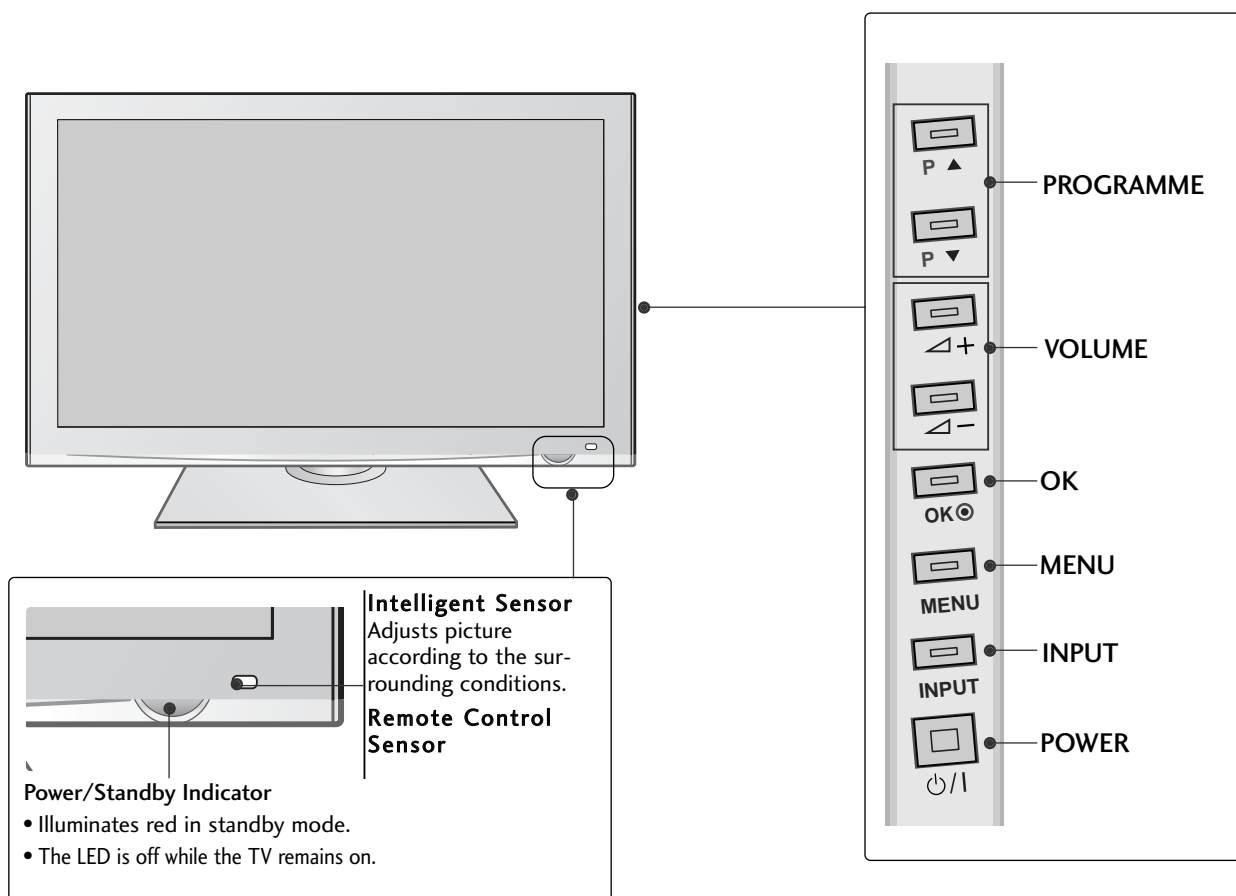
- ▶ TV can be placed in standby mode in order to reduce the power consumption. And the TV should be switched off using the power switch on the TV if it will not be watched for some time, as this will reduce energy consumption.

The energy consumed during use can be significantly reduced if the level of brightness of the picture is reduced, and this will also reduce the overall running cost.

- Image shown may differ from your TV.

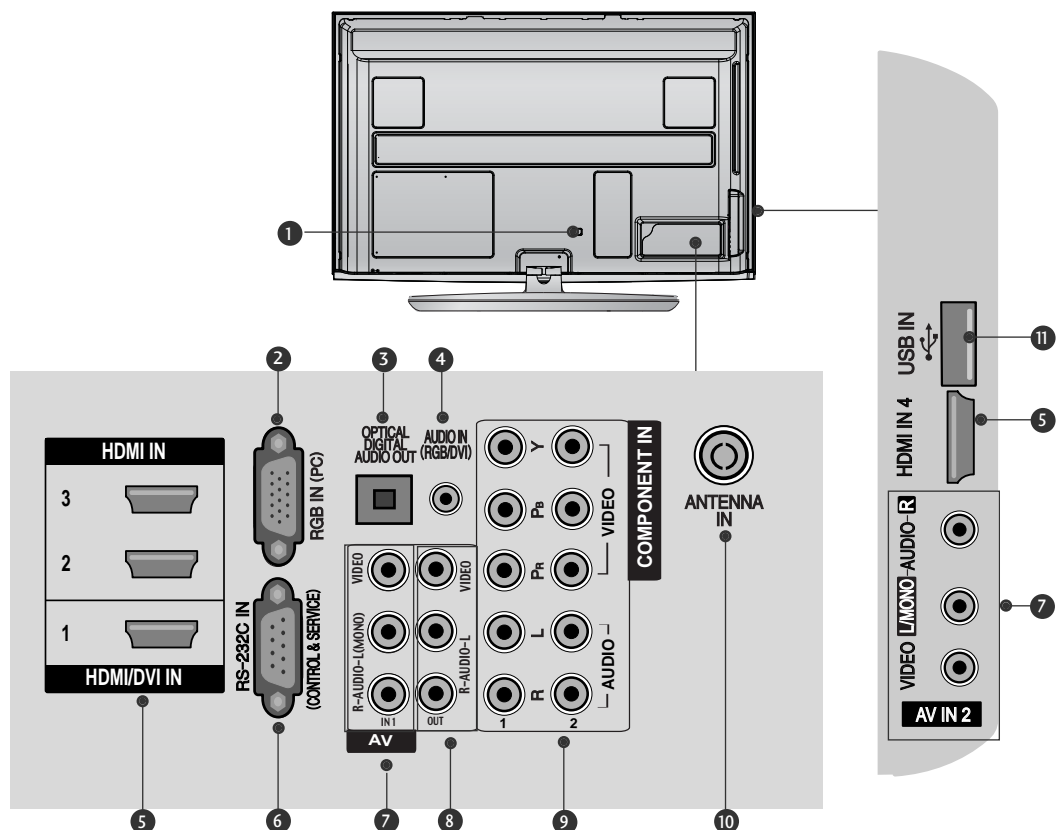
### CAUTION

- ▶ When the TV cannot be turned on with the remote control, press the main power button on the TV. (When the power is turned off with the main power button on the TV, it will not be turned on with the remote control).
- ▶ Do not step on the glass stand or subject it to any impact. It may break, causing possible injury from fragments of glass, or the TV may fall.
- ▶ Do not drag the TV. The floor or the product may be damaged.



# BACK PANEL INFORMATION

■ Image shown may differ from your TV.



- ❶ **Power Cord Socket**  
This TV operates on an AC power. The voltage is indicated on the Specifications page. Never attempt to operate the TV on DC power.
- ❷ **RGB Input**  
Connect the output from a PC.
- ❸ **OPTICAL DIGITAL AUDIO OUT**  
Connect digital audio to various types of equipment.  
Connect to a Digital Audio Component.  
Use an Optical audio cable.
- ❹ **RGB/DVI Audio Input**  
Connect the audio from a PC or DTV.
- ❺ **HDMI Input**  
Connect an HDMI signal to HDMI IN. Or DVI (VIDEO) signal to HDMI/DVI port with DVI to HDMI cable.
- ❻ **RS-232C IN (CONTROL & SERVICE) PORT**  
Connect to the RS-232C port on a PC.  
This port is used for Service or Hotel mode.
- ❼ **Audio/Video Input (AV IN1/2)**  
Connect audio/video output from an external device to these jacks.
- ❽ **AV Output**  
Connect second TV or monitor to the AV OUT socket on the TV.
- ❾ **Component Input**  
Connect a component video/audio device to these jacks.
- ❿ **Antenna Input**  
Connect RF antenna to this jack.
- ⓫ **USB Input**  
Connect USB storage device to this jack.

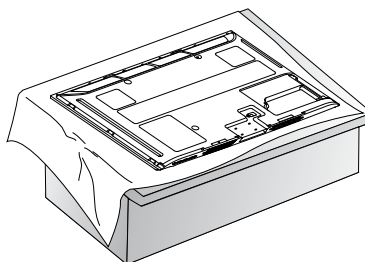
# PREPARATION

## STAND INSTALLATION

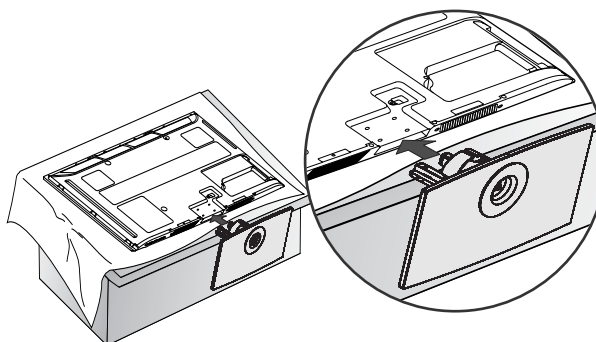
### Only 50PS70\*\*

- Image shown may differ from your TV.
- When assembling the desk type stand, check whether the bolt is fully tightened. (If not tightened fully, the product can tilt forward after the product installation.) If you tighten the bolt with excessive force, the bolt can deviate from abrasion of the tightening part of the bolt.

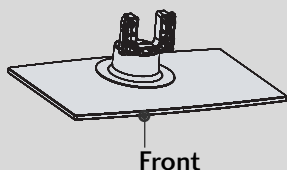
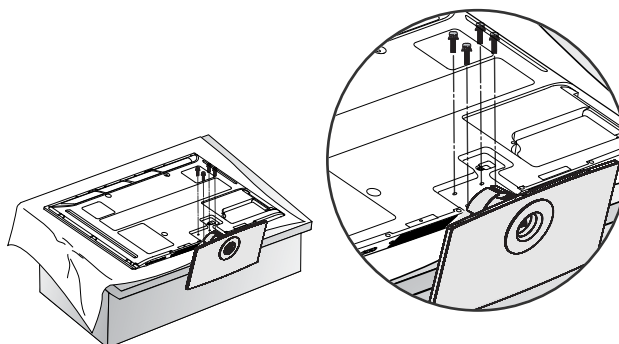
- 1** Carefully place the TV screen side down on a cushioned surface to protect the screen from damage.



- 2** Assemble the TV as shown.



- 3** Fix the 4 bolts securely using the holes in the back of the TV.

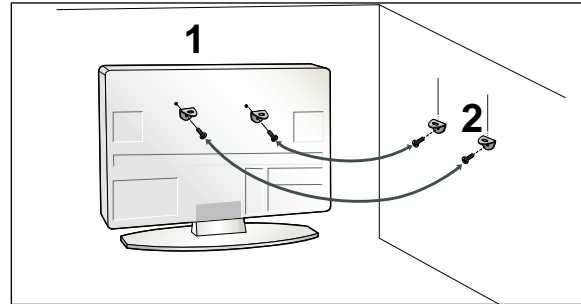
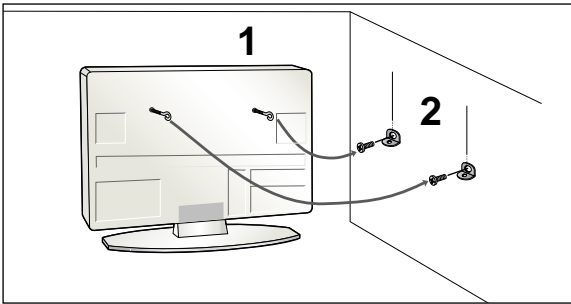


When assembling the stand, make sure to distinguish and assemble the front and rear side of the stand correctly.

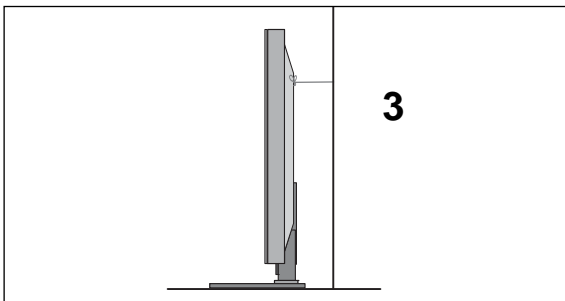


## CAREFUL INSTALLATION ADVICE

- You should purchase necessary components to fix the TV safely and secure to the wall from the market.
- Position the TV close to the wall to avoid the possibility of it falling when pushed.
- The instructions shown below are a safer way to set up the TV, by fixing it to the wall, avoiding the possibility of it falling forwards if pulled. This will prevent the TV from falling forward and causing injury. This will also prevent the TV from damage. Ensure that children do not climb or hang from the TV.



- 1 Use the eye-bolts or TV brackets/bolts to fix the product to the wall as shown in the picture.  
(If your TV has bolts in the eyebolts, loosen then bolts.)  
\* Insert the eye-bolts or TV brackets/bolts and tighten them securely in the upper holes.
- 2 Secure the wall brackets with the bolts on the wall. Match the height of the bracket that is mounted on the wall.



- 3 Use a sturdy rope to tie the product for alignment. It is safer to tie the rope so it becomes horizontal between the wall and the product.

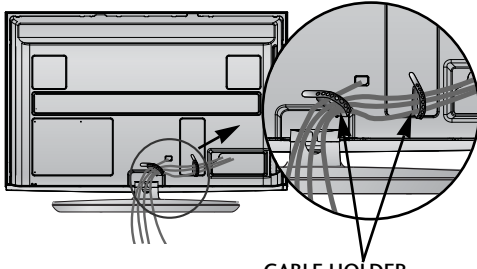
### ! NOTE

- ▶ When moving the TV undo the cords first.
- ▶ Use a platform or cabinet strong and large enough to support the size and weight of the TV.
- ▶ To use the TV safely make sure that the height of the bracket on the wall and on the TV is the same.

# PREPARATION

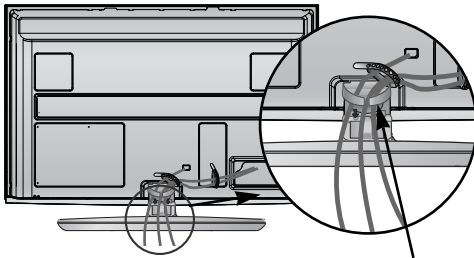
## BACK COVER FOR WIRE ARRANGEMENT

- 1 After Connecting the cables as necessary, install **CABLE HOLDER** as shown and bundle the cables. To connect additional equipment, see the **External equipment Setup** section.



CABLE HOLDER

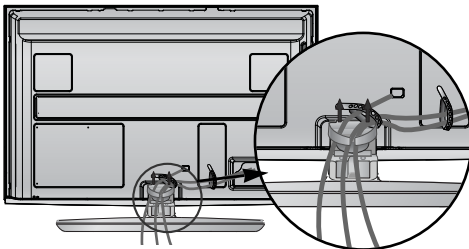
- 2 Install the **CABLE MANAGEMENT CLIP** as shown.



CABLE MANAGEMENT CLIP

### How to remove the cable management clip

Hold the **CABLE MANAGEMENT CLIP** with both hands and pull it upward.

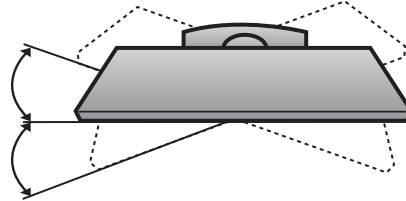


#### ! NOTE

- Do not use the **CABLE MANAGEMENT CLIP** to lift the TV.
- If the TV is dropped, you may be injured or the TV may be damaged.

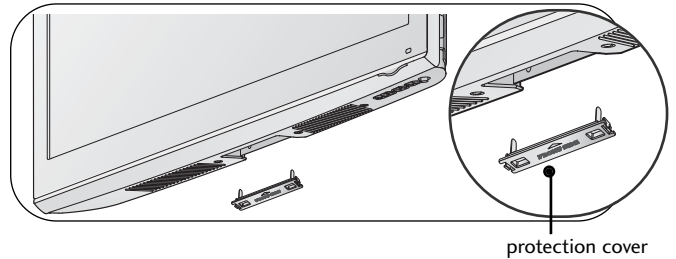
## SWIVEL STAND

- Image shown may differ from your TV.
- After installing the TV, you can adjust the TV set manually to the left or right direction by 20 degrees to suit your viewing position.



## NOT USING THE DESK-TYPE STAND

- Image shown may differ from your TV.
- When installing the wall-mounted unit, use the protection cover. Insert the **PROTECTION COVER** into the TV until clicking sound.

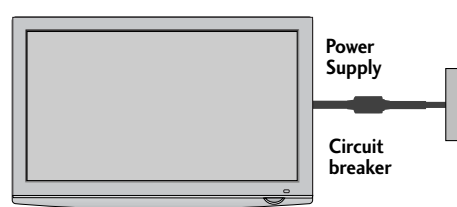


protection cover

## EARTHING

Ensure that you connect the earth wire to prevent possible electric shock. If grounding methods are not possible, have a qualified electrician install a separate circuit breaker.

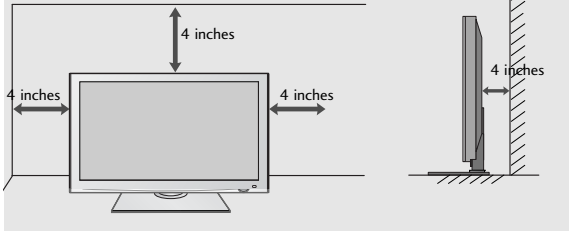
Do not try to earth the TV by connecting it to telephone wires, lightening rods or gas pipes.



- The TV can be installed in various ways such as on a wall, or on a desktop etc.
- The TV is designed to be mounted horizontally.

## DESKTOP PEDESTAL INSTALLATION

For adequate ventilation allow a clearance of 4" (10cm) all around the TV.

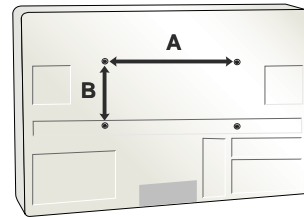
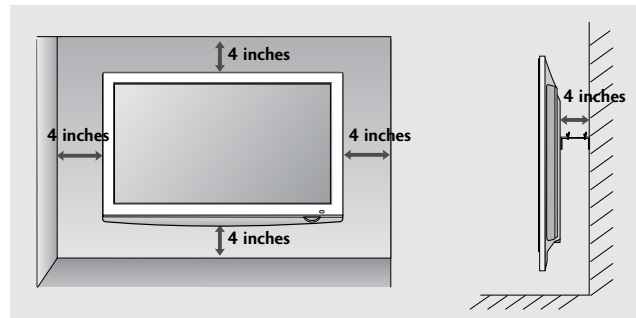


## WALL MOUNT: HORIZONTAL INSTALLATION

- We recommend the use of a LG Brand wall mounting bracket when mounting the TV to a wall.
- We recommend that you purchase a wall mounting bracket which supports VESA standard.
- LG recommends that wall mounting be performed by a qualified professional installer.

### ! NOTE

- ▶ Should Install wall mount on a solid wall perpendicular to the floor.
- ▶ Should use a special wall mount, if you want to install it to ceiling or slanted wall.
- ▶ The surface that wall mount is to be mounted on should be of sufficient strength to support the weight of TV set; e.g. concrete, natural rock, brick and hollow block.
- ▶ Installing screw type and length depends on the wall mount used. Further information, refer to the instructions included with the mount.
- ▶ LG is not liable for any accidents or damage to property or TV due to incorrect installation:
  - Where a non-compliant VESA wall mount is used.
  - Incorrect fastening of screws to surface which may cause TV to fall and cause personal injury.
  - Not following the recommended Installation method.



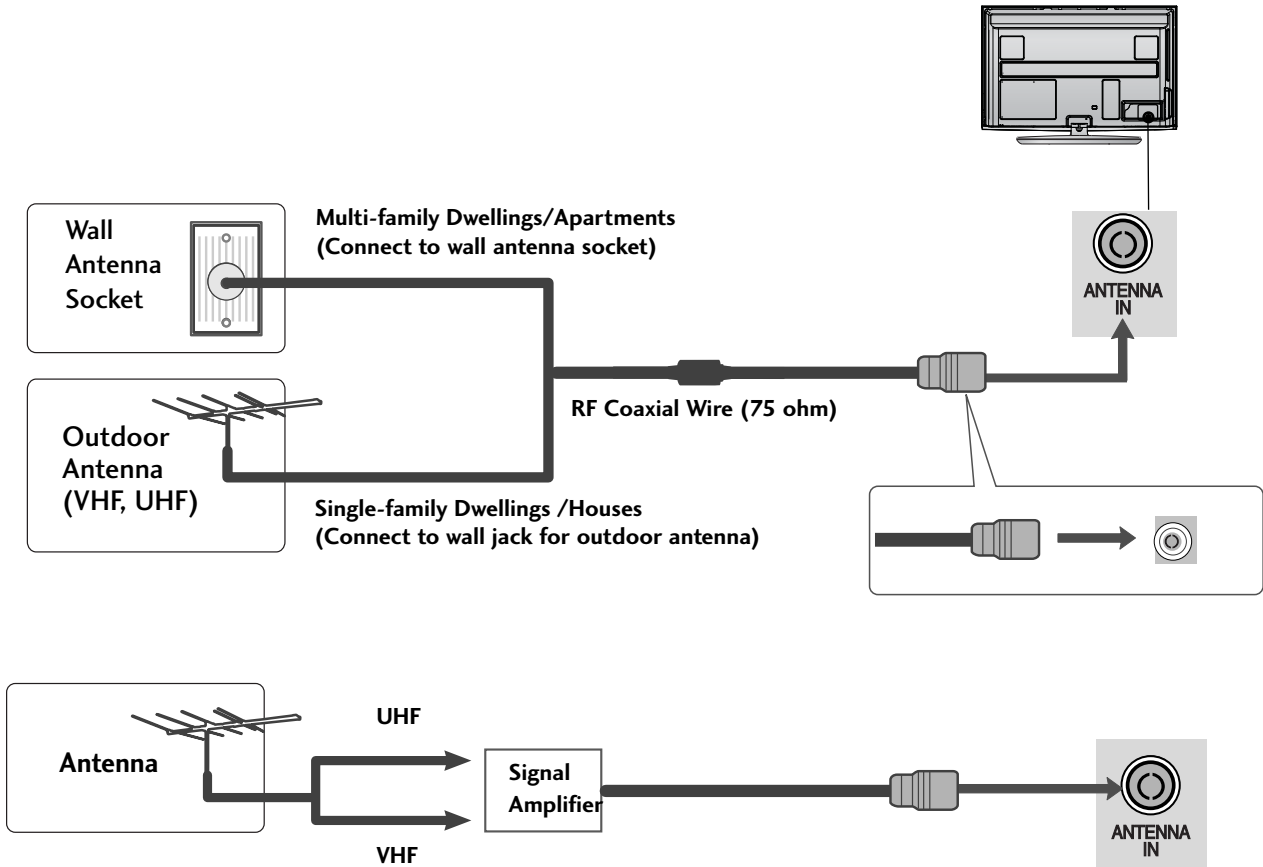
Model	VESA (A * B)	Standard Screw	Quantity
50PS70**	400 * 400	M6	4
60PS70**	600 * 400	M8	4

# PREPARATION

- To prevent damage do not connect to the mains outlet until all connections are made between the devices.

## ANTENNA CONNECTION

- For optimum picture quality, adjust antenna direction.
- An antenna cable and converter are not supplied.



- In poor signal areas, to achieve better picture quality it may be necessary to install a signal amplifier to the antenna as shown above.
- If signal needs to be split for two TVs, use an antenna signal splitter for connection.

# EXTERNAL EQUIPMENT SETUP

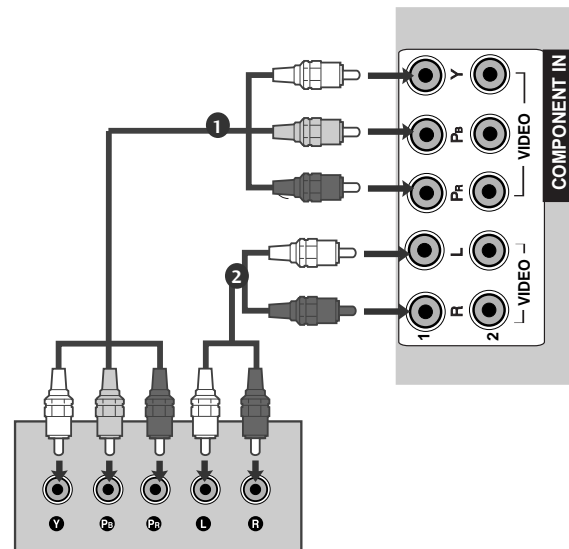
- To avoid damaging any equipment, never plug in any power cords until you have finished connecting all equipment.
- Image shown may differ from your TV.

## HD RECEIVER SETUP

- This TV can receive Digital RF/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 diagram as shown below.

### Connecting with a component cable

- 1 Connect the video outputs (Y, Pb, Pr) of the digital set top box to the **COMPONENT IN VIDEO** jacks on the TV.
- 2 Connect the audio output of the digital set-top box to the **COMPONENT IN AUDIO** jacks on the TV.
- 3 Turn on the digital set-top box.  
(Refer to the owner's manual for the digital set-top box.)
- 4 Select **Component1** input source using the **INPUT** button on the remote control.  
If connected to **COMPONENT IN 2** input, select **Component 2** input source.



Signal	Component	HDMI
480i/576i	O	X
480p/576p	O	O
720p/1080i	O	O
1080p	O (50/60Hz only)	O (24Hz/30Hz/50Hz/60Hz)

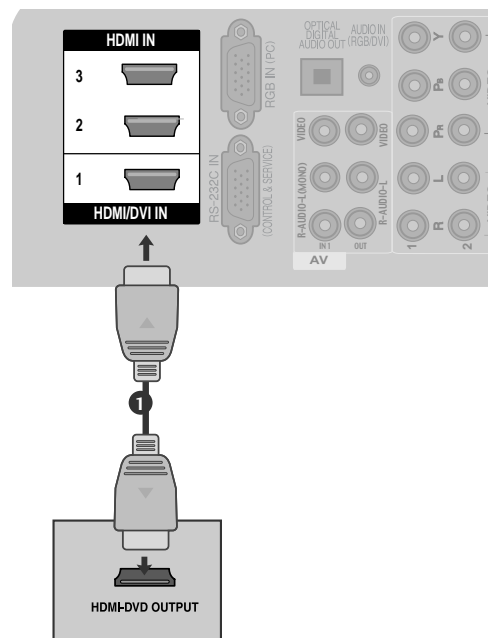
# EXTERNAL EQUIPMENT SETUP

## Connecting a set-top box with an HDMI cable

- 1 Connect the digital set-top box to **HDMI/DVI IN 1**, **HDMI IN 2**, **HDMI IN 3** or **HDMI IN 4** jack on the TV.
- 2 Turn on the digital set-top box.  
(Refer to the owner's manual for the digital set-top box.)
- 3 Select **HDMI1**, **HDMI2**, **HDMI3** or **HDMI 4** input source using the **INPUT** button on the remote control.

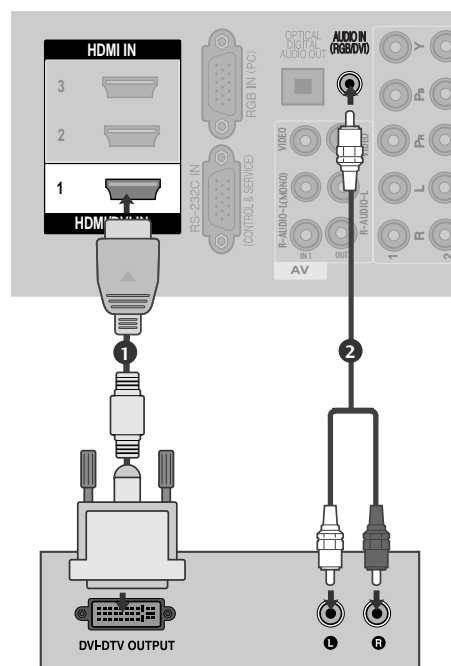
### ! NOTE

- Check that your HDMI cable is version 1.3 or higher.  
If the HDMI cables don't support HDMI version 1.3, flickering or no screen display can result. Please use the latest cables that support at least HDMI version 1.3.



## Connecting with an HDMI to DVI cable

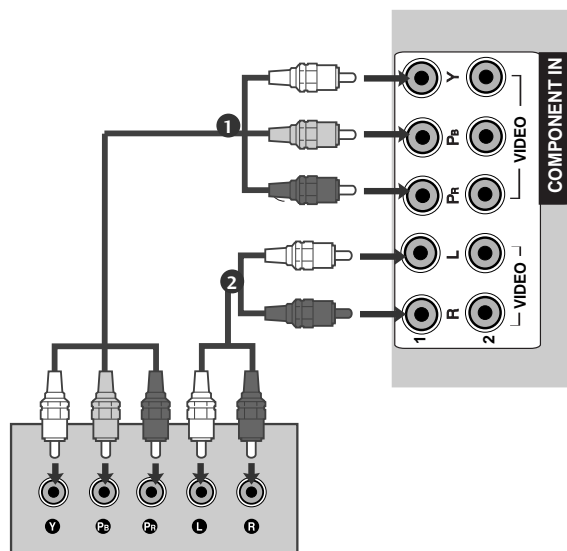
- 1 Connect the digital set-top box to **HDMI/DVI IN 1** jack on the TV.
- 2 Connect the audio output of the digital set-top box to the **AUDIO IN (RGB/DVI)** jack on the TV.
- 3 Turn on the digital set-top box. (Refer to the owner's manual for the digital set-top box.)
- 4 Select **HDMI1** input source using the **INPUT** button on the remote control.



## DVD SETUP

### Connecting with a component cable

- 1 Connect the video outputs (Y, Pb, Pr) of the DVD to the **COMPONENT IN VIDEO** jacks on the TV.
- 2 Connect the audio outputs of the DVD to the **COMPONENT IN AUDIO** jacks on the TV.
- 3 Turn on the DVD player, insert a DVD.
- 4 Select **Component1** input source using the **INPUT** button on the remote control.  
If connected to **COMPONENT IN 2** input, select **Component 2** input source.
- 5 Refer to the DVD player's manual for operating instructions.



### Component Input ports

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

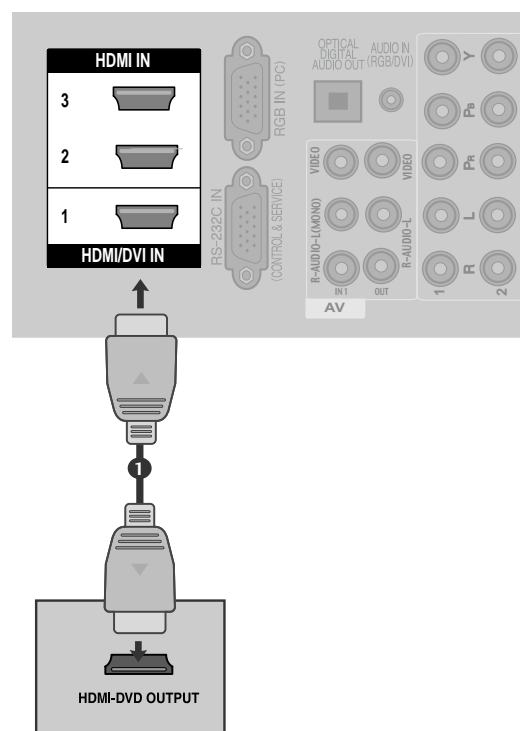
Component ports on the TV	Y	P <sub>B</sub>	P <sub>R</sub>
Video output ports on DVD player	Y	P <sub>B</sub>	P <sub>R</sub>
	Y	B-Y	R-Y
	Y	Cb	Cr
	Y	Pb	Pr

### Connecting the HDMI cable

- 1 Connect the HDMI output of the DVD to the **HDMI/DVI IN 1, HDMI IN 2, HDMI IN 3** or **HDMI IN 4** jack on the TV.
- 2 Select **HDMI1, HDMI2, HDMI 3** or **HDMI 4** input source using the **INPUT** button on the remote control.
- 3 Refer to the DVD player's manual for operating instructions.

#### ! NOTE

- ▶ The TV can receive video and audio signals simultaneously when using a HDMI cable.
- ▶ If the DVD does not support Auto HDMI, you must set the output resolution appropriately.
- ▶ Check that your HDMI cable is version 1.3 or higher.  
If the HDMI cables don't support HDMI version 1.3, flickering or no screen display can result. Please use the latest cables that support at least HDMI version 1.3.

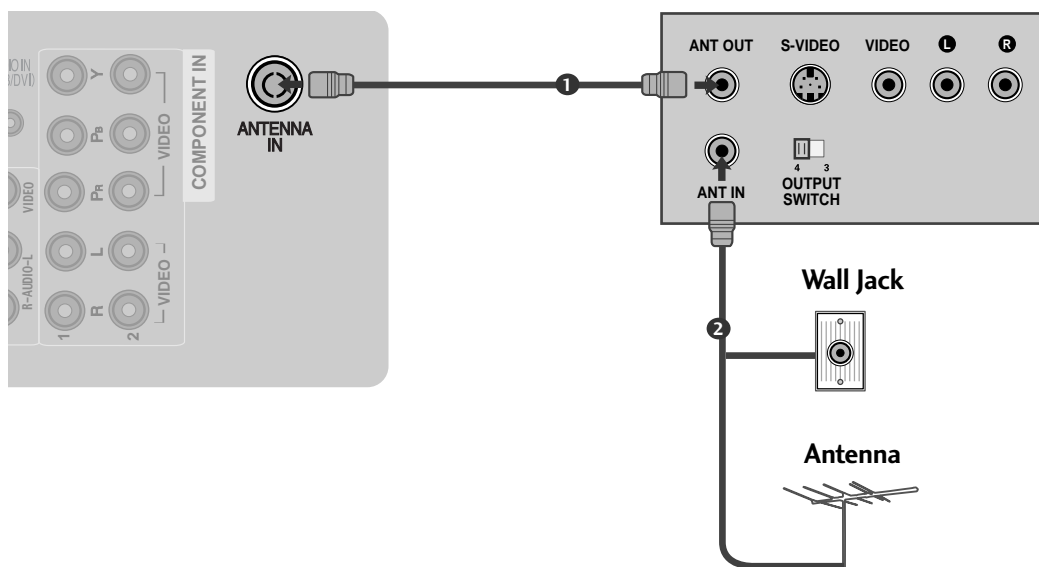


# EXTERNAL EQUIPMENT SETUP

## VCR SETUP

- To avoid picture noise (interference), allow adequate distance between the VCR and TV.

### Connecting with a RF Cable



- 1 Connect the **ANT OUT** socket of the VCR to the **ANTENNA IN** socket on the TV.
- 2 Connect the antenna cable to the **ANT IN** socket of the VCR.
- 3 Press the **PLAY** button on the VCR and match the appropriate channel between the TV and VCR for viewing.

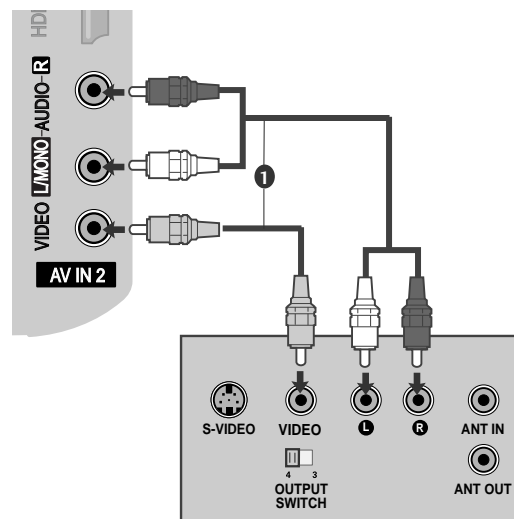


## Connecting with a RCA cable

- 1 Connect the **AUDIO/VIDEO** jacks between TV and VCR. Match the jack colours (Video = yellow, Audio Left = white, and Audio Right = red)
- 2 Insert a video tape into the VCR and press **PLAY** on the VCR. (Refer to the VCR owner's manual.)
- 3 Select **AV2** input source using the **INPUT** button on the remote control.  
If connected to **AV IN 1** input, select **AV1** input source.

### ! NOTE

- If you have a mono VCR, connect the audio cable from the VCR to the **AUDIO L/MONO** jack of the TV.



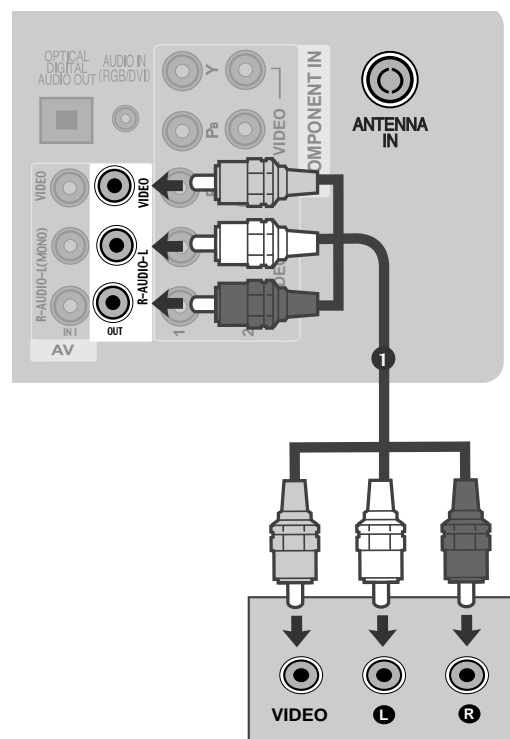
## AV OUTPUT SETUP (Only Analogue Mode)

The TV has a special signal output capability which allows you to hook up the second TV or monitor.

- 1 Connect the second TV or monitor to the TV's **AV OUT** jacks.
- 2 See the Operating Manual of the second TV or monitor for further details regarding that device's input settings.

### ! NOTE

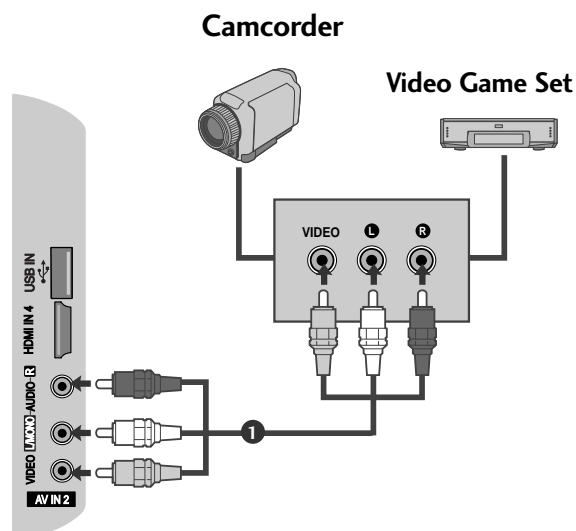
- Only Analog Channel and AV mode can be used for AV out. Component, RGB, HDMI input sources cannot be used for AV out.
- We recommend to use the AV OUT jacks for VCR recording.



# EXTERNAL EQUIPMENT SETUP

## OTHER A/V SOURCE SETUP

- 1 Connect the **AUDIO/VIDEO** jacks between TV and external equipment. Match the jack colours. (Video = yellow, Audio Left = white, and Audio Right = red)
- 2 Select **AV2** input source using the **INPUT** button on the remote control.  
If connected to **AV IN 1** input, select **AV1** input source.
- 3 Operate the corresponding external equipment.  
Refer to external equipment operating guide.



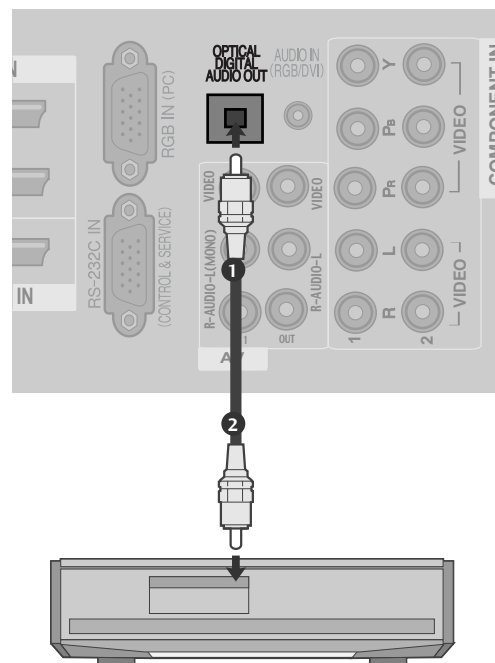
## DIGITAL AUDIO OUT SETUP

Sending the TV's audio signal to external audio equipment via the Digital Audio Output (Optical) port. If you want to enjoy digital broadcasting through 5.1-channel speakers, connect the **OPTICAL DIGITAL AUDIO OUT** terminal on the back of TV to a DVD Home Theatre (or amp).

- 1 Connect one end of an optical cable to the TV Digital Audio (Optical) Output port.
- 2 Connect the other end of the optical cable to the digital audio (Optical) input on the audio equipment.
- 3 Set the "TV Speaker option - Off" in the **AUDIO** menu. (▶p.101). Refer to the external audio equipment instruction manual for operation.

### CAUTION

- ▶ Do not look into the optical output port. Looking at the laser beam may damage your vision.



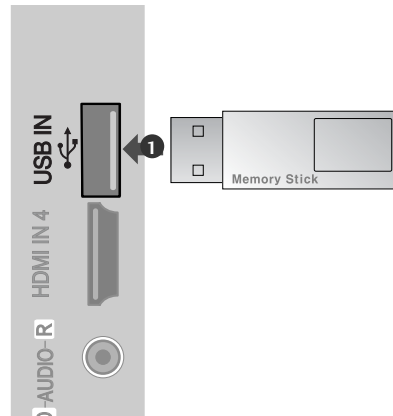
# USB SETUP

- 1 Connect the USB device to the **USB IN** jacks on the side of TV.

- 2 After connecting the **USB IN** jacks, you use the **USB** function. (▶ p.66)

## ⚠ CAUTION

- ▶ Before removing the USB device, please use the Remove USB Device in Quick Menu to prevent software, data loss or damage to USB HDD.



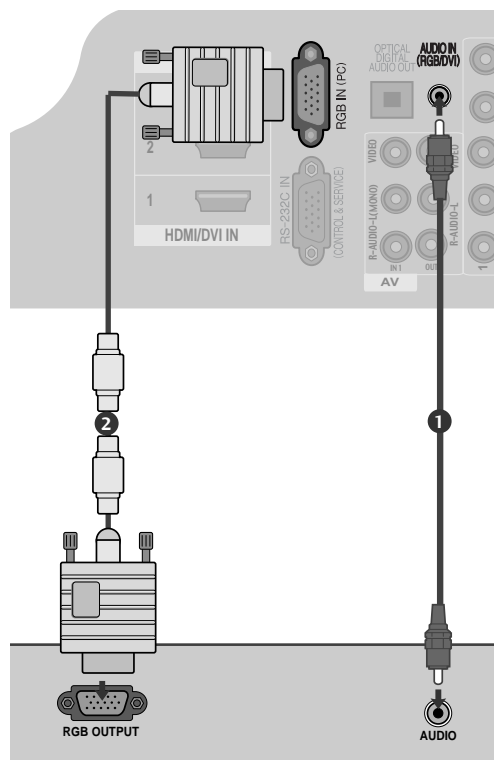
# EXTERNAL EQUIPMENT SETUP

## PC SETUP

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

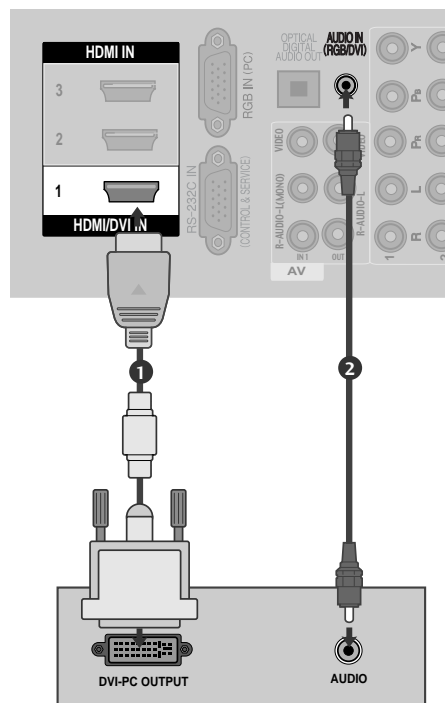
### Connecting with a D-sub 15 pin cable

- 1 Connect the RGB output of the PC to the **RGB IN (PC)** jack on the TV.
- 2 Connect the PC audio output to the **AUDIO IN (RGB/DVI)** jack on the TV.
- 3 Turn on the PC and the TV
- 4 Select **RGB** input source using the INPUT button on the remote control.



### Connecting with a HDMI to DVI cable

- 1 Connect the DVI output of the PC to the **HDMI/DVI IN1** jack on the TV.
- 2 Connect the PC audio output to the **AUDIO IN (RGB/DVI)** jack on the TV.
- 3 Turn on the PC and the TV.
- 4 Select **HDMI1** input source using the INPUT button on the remote control.



## Supported Display Resolution

### RGB-PC, HDMI/DVI-PC mode

Resolution	Horizontal Frequency(kHz)	Vertical Frequency(Hz)
720x400	31.468	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	60.015
1280x1024	63.98	60.02
1400x1050	65.317	59.979
1920x1080	66.587	59.934

### HDMI/DVI-DTV mode

Resolution	Horizontal Frequency(kHz)	Vertical Frequency(Hz)
640x480	31.649	59.94
	31.469	60
720x480	31.47	59.94
	31.50	60
720x576	31.25	50.00
	37.50	50.00
1280x720	44.96	59.94
	45.00	60
1920x1080	28.125	50.00
	33.72	59.94
	33.75	60
	27.00	24.00
	33.75	30
	56.25	50.00
	67.433	59.94
	67.50	60

### ! NOTE

- ▶ Avoid keeping a fixed image on the set's screen for prolonged periods of time. The fixed image may become permanently imprinted on the screen; use a screen saver when possible.
- ▶ There may be interference relating to resolution, vertical pattern, contrast or brightness in PC mode. Change the PC mode to another resolution or change the refresh rate to another rate or adjust the brightness and contrast on the 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.
- ▶ The synchronization input waveform for Horizontal and Vertical frequencies are separate.
- ▶ We recommend using 1920x1080, 60Hz(50PS70\*\*, 60PS70\*\*) for the PC mode, they provide the best picture quality.
- ▶ Connect the signal cable from the monitor output port of the PC to the RGB (PC) port of the TV or the signal cable from the HDMI output port of the PC to the HDMI IN (or HDMI/DVI IN) port on the TV.
- ▶ Connect the audio cable from the PC to the Audio input on the TV. (Audio cables are not included with the TV).
- ▶ If using a sound card, adjust PC sound as required.
- ▶ If required, adjust the settings for Plug and Play functionality
- ▶ If the graphic card on the PC does not output analogue and digital RGB simultaneously, connect only one of either RGB or HDMI IN (or HDMI/DVI IN) to display the PC output on the TV.
- ▶ If the graphic card on the PC does output analogue and digital RGB simultaneously, set the TV to either RGB or HDMI; (the other mode is set to Plug and Play automatically by the TV.)
- ▶ DOS mode may not work depending on the video card if you use an HDMI to DVI cable.
- ▶ If you use an RGB-PC cable that is too long, there may be interference on the screen. We recommend using under 5m of cable. This provides the best picture quality.

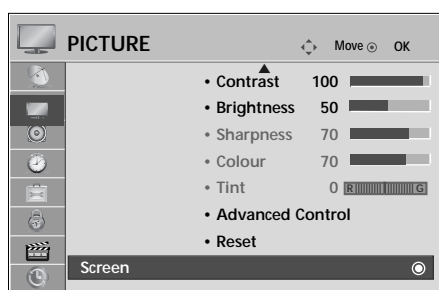
# EXTERNAL EQUIPMENT SETUP


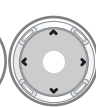

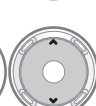
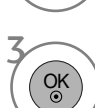




## Screen Setup for PC mode

### Screen Reset

Returns Position, Size and Phase to the factory default settings.

This function works in the following mode : RGB[PC].



- 1   Select **PICTURE**.
- 2   Select **Screen**.
- 3   Select **Reset**.
- 4   Select **Yes**.
- 5  Run **Reset**.

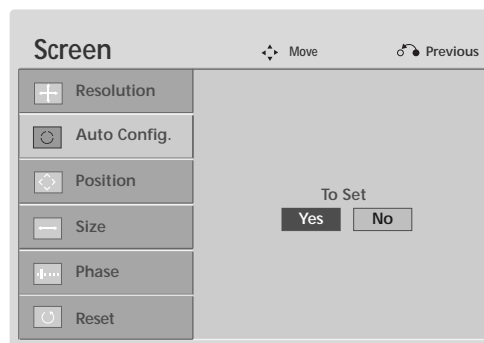
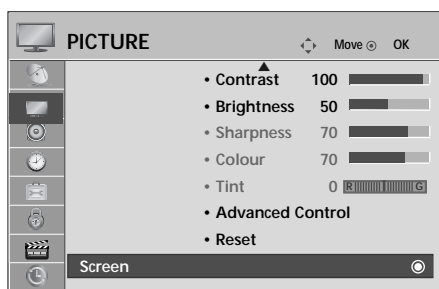
- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

## Auto Configure (RGB [PC] mode only)

Automatically adjusts picture position and minimizes image instability. After adjustment, if the image is still not correct, your TV is functioning properly but needs further adjustment.

### Auto configure

This function is for automatic adjustment of the screen position, size, and phase. The displayed image will be unstable for a few seconds while the auto configuration is in progress.



1 Select **PICTURE**.

2 Select **Screen**.

3 Select **Auto Config..**

4 Select **Yes**.

5 Run **Auto Config..**

- If the position of the image is still not correct, try Auto adjustment again.
- If picture needs to be adjusted again after Auto adjustment in RGB (PC), you can adjust the **Position, Size or Phase**.
- Because the image with the black background may fail the auto adjustment, use the image with the bright background.

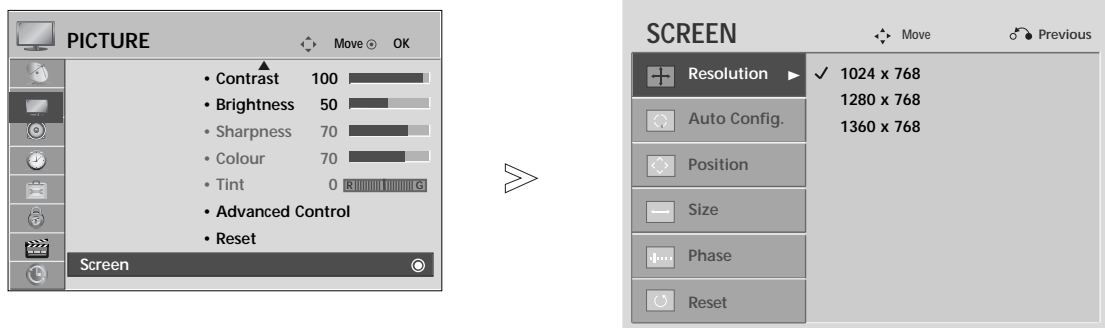
- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

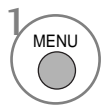


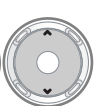

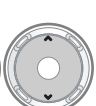

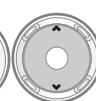
# EXTERNAL EQUIPMENT SETUP

## Selecting Resolution

To view a normal picture, match the resolution of RGB mode and selection of PC mode.

This function works in the following mode: RGB[PC]



- 1   Select **PICTURE**.
- 2   Select **Screen**.
- 3   Select **Resolution**.
- 4   Select the desired resolution.

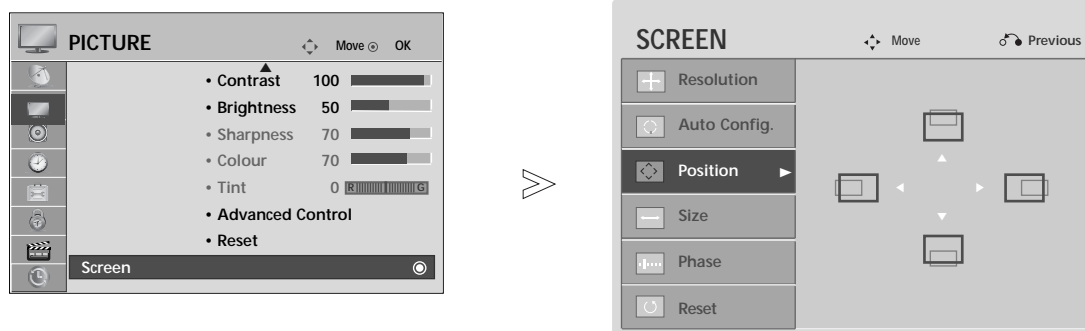
- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.




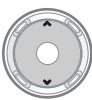







## Adjustment for screen Position, Size, Phase

If the picture is not clear after auto adjustment and especially if characters are still trembling, adjust the picture phase manually.

This function works in the following mode : RGB[PC].



- 1   Select **PICTURE**.
- 2   Select **Screen**.
- 3   Select **Position, Size or Phase**.
- 4    Make appropriate adjustments.

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

# WATCHING TV / PROGRAMME CONTROL

## REMOTE CONTROL KEY FUNCTIONS

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



**TV/STB** Select the remote operating mode: TV, or STB.

**POWER** Switches the TV on from standby or off to standby.

**INPUT** External input mode rotate in regular sequence.  
Switches the TV on from standby.(► p.42)

**TV/RAD** Selects Radio, TV and DTV channel.

**Q. MENU** Select the desired quick menu source. (Aspect Ratio, Clear Voice II, Picture Mode, Sound Mode, Multi Audio, Sleep Timer, Favourite, Remove USB device.)(► p.27)

**MENU** Selects a menu.  
Clears all on-screen displays and returns to TV viewing from any menu.(► p.28)

**GUIDE** Shows programme schedule.(► p.49)

**VOLUME UP /DOWN** Adjusts the volume.

**MARK** Check and un-check programmes in the USB menu or Recorded TV menu.

**FAV** Displays the selected favourite programme.(► p.40)

**MUTE** Switches the sound on or off.

**Programme UP/DOWN** Selects a programme.

**PAGE UP/DOWN** Move from one full set of screen information to the next one.

**CHAR/NUM, DELETE** Used to edit programme title in Recorded TV and schedule list.

**0~9 number button/** Selects a programme.  
Selects numbered items in a menu.  
Use for character/number input.

**LIST** Displays the programme table.(► p.39)

**Q.VIEW** Returns to the previously viewed programme.



**THUMBSTICK** Allows you to navigate the on-screen menus and adjust (Up/Down/Left/Right) Arrow buttons.

**OK** Accepts your selection or displays the current mode.

**Time Machine control buttons** ◀◀ (Rewind), ▶▶ (Fast Forward), ▶ (Playback), || (Pause), < , > (Jump thumbnail)  
(Freezes the current frame by pressing the || (Pause) button.)

**RETURN(EXIT)** Allows the user to move return one step in an interactive application or other user interaction function.

**RECORD** Selects button to record the watching programme or make recording schedules.

**STOP** Stops processing of time machine function. (Playback, Record, etc)

**LIVE** Return to the live.

**Coloured buttons** These buttons are used for teletext (on **TELETEXT** models only) , **Programme edit**, **Multimedia**, **Guide**, **Schedule list**.

**REPEAT** Used for playing the Recorded TV function.

**1 TELETEXT BUTTONS** These buttons are used for teletext. For further details, see the 'Teletext' section.(► p.115)

**SUBTITLE** Recalls your preferred subtitle in digital mode.

**INFO** ⓘ Shows the present screen information.

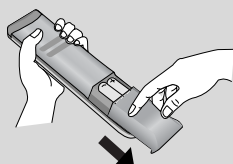
**SIMPLINK** See a list of AV devices connected to TV. When you toggle this button, the Simplink menu appears at the screen.(► p.43)

**RATIO** Selects your desired picture format.

**AV MODE** It helps you select and set images and sounds when connecting AV devices.(► p.46)

**ENERGY SAVING** Adjust the Energy Saving mode of the TV.(► p.85)

## Installing Batteries



- Open the battery compartment cover on the back and install the batteries matching correct polarity (+with +,-with -).
- Install two 1.5V AAA batteries. Do not mix old or used batteries with new ones.
- Close cover.

# WATCHING TV / PROGRAMME CONTROL

## TURNING ON THE TV

- When your TV is turned on, you will be able to use its features.

- 1 Firstly, connect the power cord correctly and check the main power on the TV.  
At this stage, the TV switches to standby mode.
- 2 In standby mode to turn TV on, press the  $\odot$  / I, INPUT or P  $\blacktriangle$   $\blacktriangledown$  button on the TV or press the POWER, INPUT, P  $\wedge$   $\vee$  or NUMBER button on the remote control and the TV will switch on.

## INITIALIZING SETUP

- 1 If the OSD (On Screen Display) is displayed on the screen after turning on the TV, you can adjust the **Mode Setting, Time Zone, Auto Tuning**.

**Note:**

- a. If you close without completing the initial setting, the Initial Setting menu can be displayed again.
- b. Press the RETURN button to change the current OSD to the previous OSD.
- c. For those countries without confirmed DTV broadcasting standards, some DTV features might not work, depending on the DTV broadcasting environment.
- d. "Home Use" mode is the optimal setting for home environments, and is the TV's default mode.
- e. "Store Demo" mode is the optimal setting for store environments. If a user modifies image quality data, "Store Demo" mode initializes the product to the image quality set by us after a certain period of time.
- f. The mode (Home Use, Store Demo) can be changed by executing Mode Setting in the OPTION menu.

### ! NOTE

- If the TV is unplugged once or turn off with the  $\odot$  / I(power) button on the TV, the time setting is set to **Auto** to set time automatically.

## PROGRAMME SELECTION

- 1 Press the P  $\wedge$   $\vee$  or NUMBER buttons to select a programme number.

## VOLUME ADJUSTMENT

- 1 Press the  $\blacktriangle$  + or - button to adjust the volume.


If you wish to switch the sound off, press the MUTE button.

You can cancel this function by pressing the MUTE,  $\blacktriangle$  +, -, or AV Mode button.


## QUICK MENU


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


Q.Menu (Quick Menu) is a menu of features which users might use frequently.

 **Aspect Ratio:** Selects your desired picture format.


For Zoom Setting, select 14:9, Zoom or Cinema Zoom in Ratio Menu. After completing Zoom Setting, the display goes back to Q.Menu.


 **Clear Voice II :** By differentiating the human sound range from others, it helps make human voices sound better.


 **Picture Mode:** Selects the factory preset picture depend on the viewing environment.

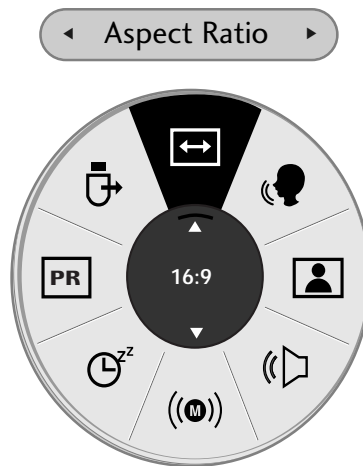
 **Sound Mode:** Selects the factory preset sound for type of programme.





 **Multi Audio:** Selects the sound output.

 **Sleep Timer:** Select the amount of time before your TV turns off automatically.

 **Favourite :** Selects the favourite programme.

 **Remove USB device:** Selects the remove USB device menu to detach safely a USB device from the TV.



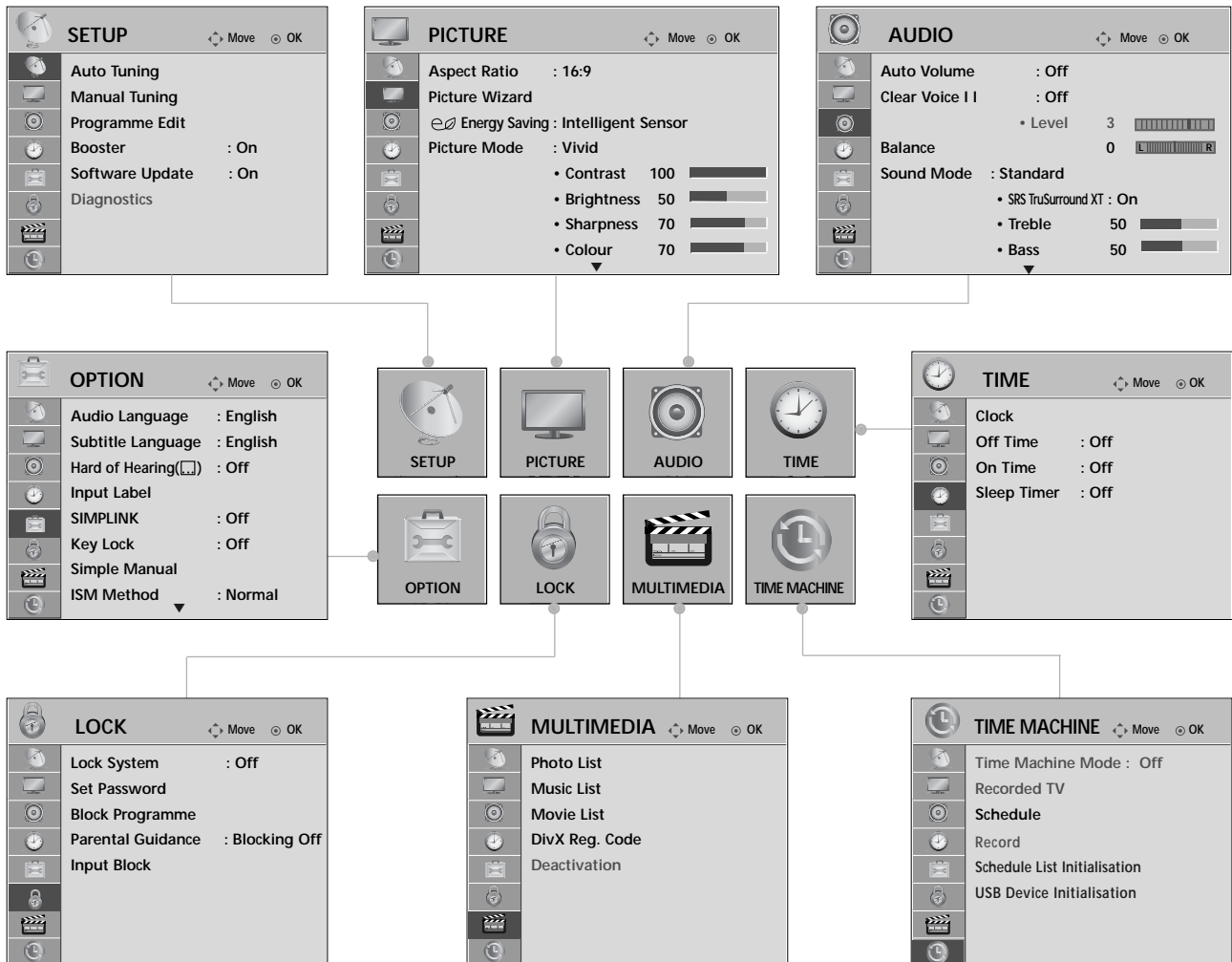
- 1   Display each menu.
- 2  Select your desired Source.
- 3 

- Press the **Q.MENU** button to return to normal TV viewing.

# WATCHING TV / PROGRAMME CONTROL

## ON-SCREEN MENUS SELECTION AND ADJUSTMENT

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



1. Display each menu.
2. Select a menu item.
3. Move to the pop up menu.

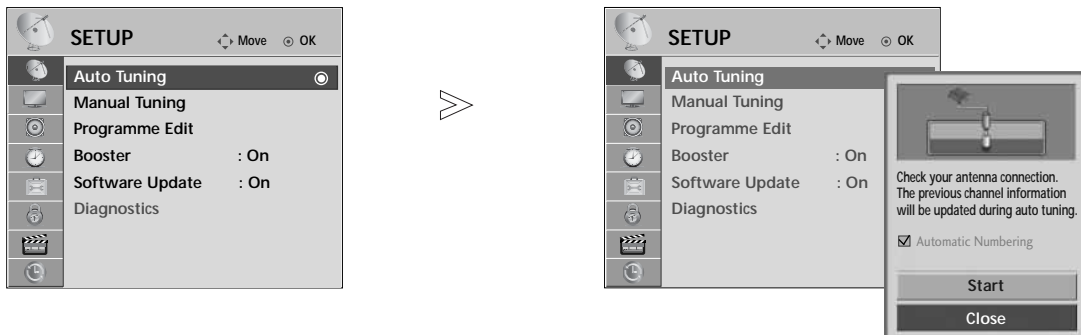
- Press the **INFO** button, you can check the **Simple Manual**.
- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.








# AUTO PROGRAMME TUNING

Use this to automatically find and store all available programmes.

When you start auto programming, all previously stored service information will be deleted.

The maximum number of programmes that can be stored is 400. But the number may differ slightly depending on broadcasting signals.



- 1   Select **SETUP**.
- 2   Select **Auto Tuning**.
- 3   Select **Start**.
- 4  Run **Auto Tuning**.

- Use **NUMBER** buttons to input a 4-digit password in **Lock System 'On'**.
- If you wish to keep on auto tuning select **Start** using the **^** **∨** button. Then, press the **OK** button. Otherwise select **Close**.
- **Automatic Numbering** : Decide whether to use the programme numbers as sent by broadcasting stations for tuning.

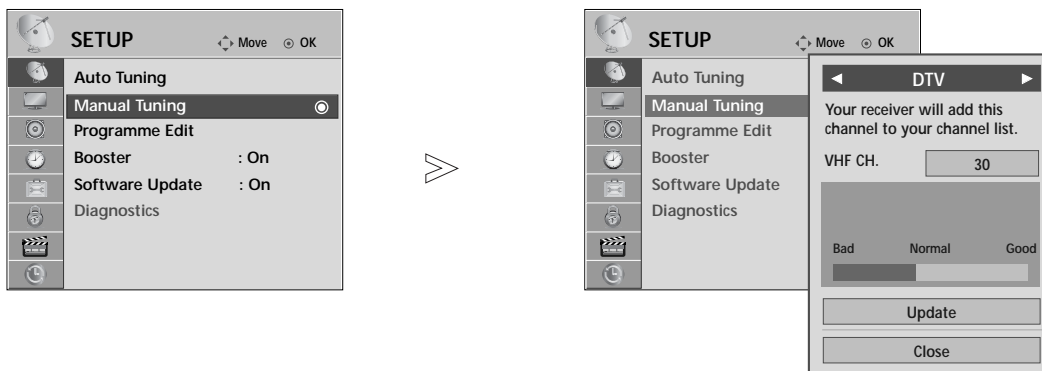
- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.











# WATCHING TV / PROGRAMME CONTROL

## MANUAL PROGRAMME TUNING (IN DIGITAL MODE)

Manual Tuning lets you manually add a programme to your programme list.

When selecting DTV input signal, you can view the on-screen signal strength monitor to see the quality of the signal being received.



- 1   Select **SETUP**.
- 2   Select **Manual Tuning**.
- 3   Select **DTV**.
- 4   Select the desired channel number.
- 5   Update.

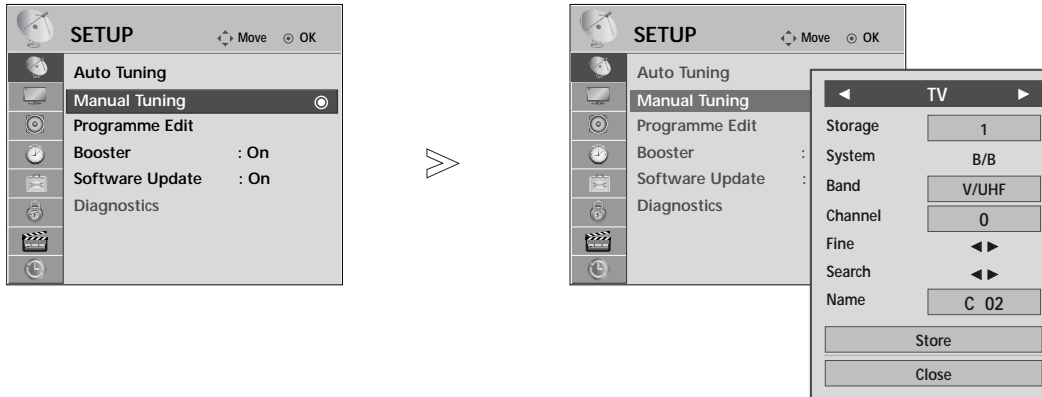
- Use **NUMBER** buttons to input a 4-digit password in **Lock System 'On'**.

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.



## MANUAL PROGRAMME TUNING (IN ANALOGUE MODE)

Manual Tuning lets you manually tune and arrange the stations in whatever order you desire.



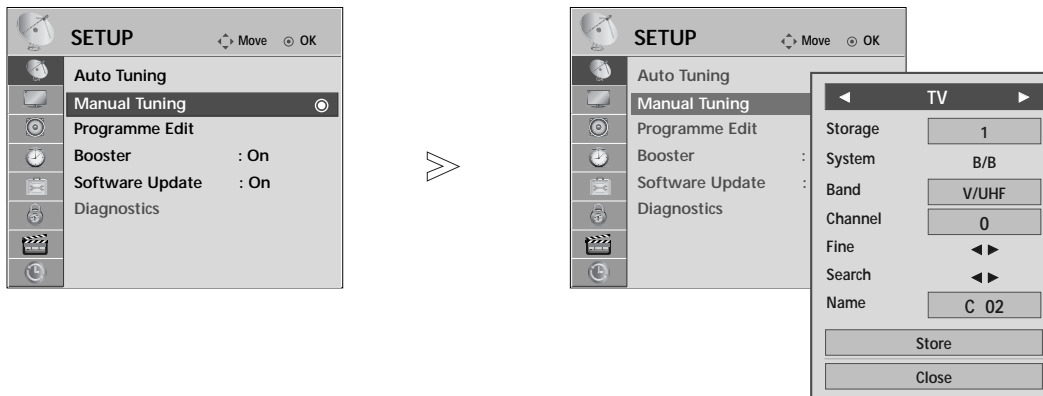
- 1 Select **SETUP**.
- 2 Select **Manual Tuning**.
- 3 Select **TV**.
- 4 or Select the desired programme number on.

- 5 Select **V/UHF** or **Cable**.
- 6 or Select the desired channel number.
- 7 Commence searching.
- 8 Select **Store**.
- 9

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

- Use **NUMBER** buttons to input a 4-digit password in **Lock System 'On'**.
- To store another channel, repeat steps 4 to 9.

# WATCHING TV / PROGRAMME CONTROL



## ■ Assigning a station name

You can assign a station name with five characters to each programme number.

- 1 Select **SETUP**.
- 2 Select **Manual Tuning**.
- 3 Select **TV**.
- 4 Select **Name**.
- 5 Select the position and make your choice of the second character, and so on. You can use the alphabet **A** to **Z**, the number **0** to **9**, **+/ -**, and blank.
- 6 Select **Close**.
- 7 Select **Store**.

## ■ Fine Tuning

Normally fine tuning is only necessary if reception is poor.

- 1 Select **SETUP**.
- 2 Select **Manual Tuning**.
- 3 Select **TV**.
- 4 Select **Fine**.
- 5 Fine tune for the best picture and sound.
- 6 Select **Store**.

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

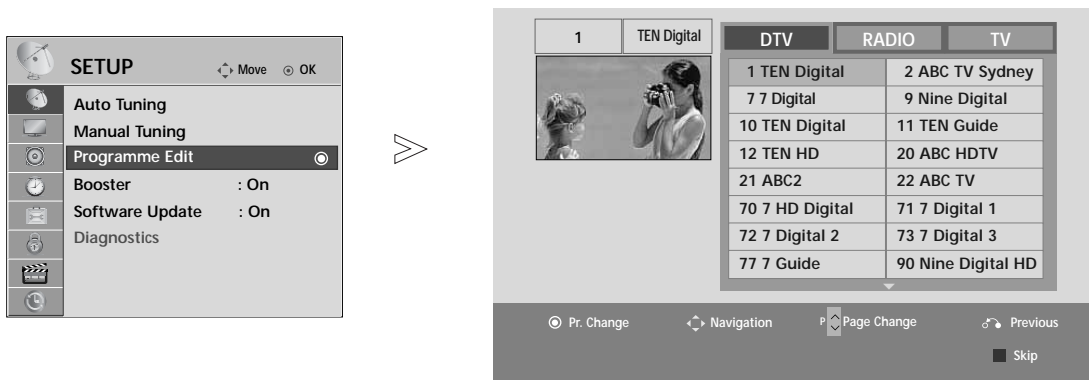
## PROGRAMME EDIT







When a programme number is skipped, it means that you will be unable to select it using **P**  $\wedge$   $\vee$  button during TV viewing.

If you wish to select the skipped programme, directly enter the programme number with the **NUMBER** buttons or select it in the Programme edit menu.

This function enables you to skip the stored programmes.

You can change the programme number using “Move”function, if “Automatic Numbering” is unchecked when you start Auto Tuning.



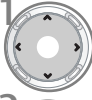


- 1   Select **SETUP**.
- 2   Select **Programme Edit**.
- 3  Enter the **Programme Edit**.
- 4  Select a programme to be stored or skipped.

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

# WATCHING TV / PROGRAMME CONTROL

## IN DTV/RADIO MODE

### ■ Skipping a programme number





- 1  Select a programme number to be skipped.
- 2  Turn the programme number to blue.
- 3  Release.

- When programmes are to be skipped, the skipped programme shows in blue and these programmes will not be selected by the **P**  $\wedge$   $\vee$  buttons during TV viewing.
- If you wish to select a skipped programme, directly enter the programme number with the NUMBER buttons or select it in the programme edit or EPG.

## IN TV MODE





This function enables you to delete or skip the stored programmes.  
You can also move some channels and use other programme numbers.

### ■ Deleting a programme




- 1  Select a programme number to be deleted.
- 2  Turn the programme number to red.
- 3  Delete.  Release.

- The selected programme is deleted, all the following programmes are shifted up one

### ■ Moving a programme

- 1  Select a programme number to be moved.
- 2   Turn the programme number to green.
- 3  Release.

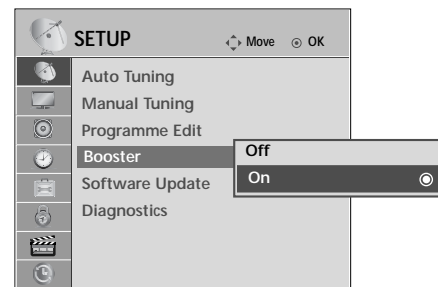
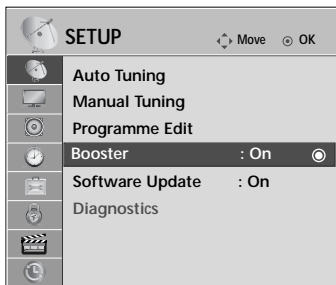
### ■ Skipping a programme number








- 1  Select a programme number to be skipped.
- 2  Turn the programme number to blue.
- 3  Release.

- When a programme number is skipped it means that you will be unable to select it using the **P**  $\wedge$   $\vee$  button during normal TV viewing.
- If you wish to select a skipped programme, directly enter the programme number with the NUMBER buttons or select it in the programme edit or EPG.

# BOOSTER

If reception is poor select Booster to On.  
When the signal is strong, select "Off".



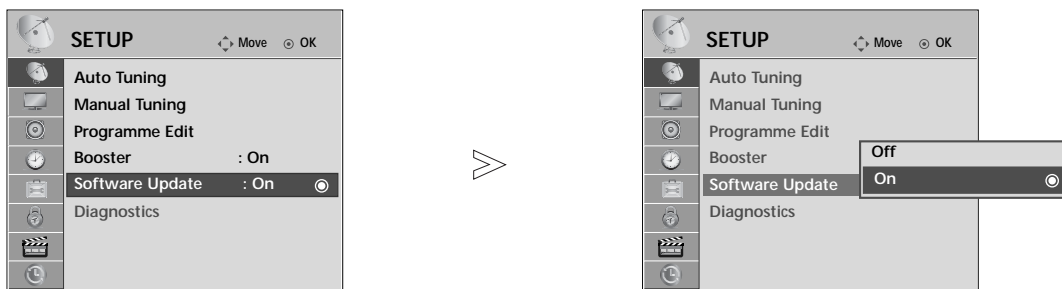
- 1   Select **SETUP**.
- 2   Select **Booster**.
- 3   Select **On** or **Off**.
- 4  Save.



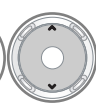

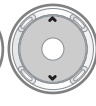

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

# WATCHING TV / PROGRAMME CONTROL

## SOFTWARE UPDATE

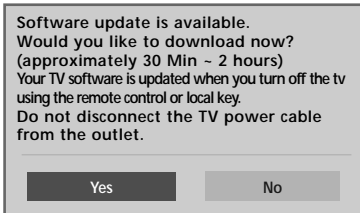
Software Update means software can be downloaded through the digital terrestrial broadcasting system.



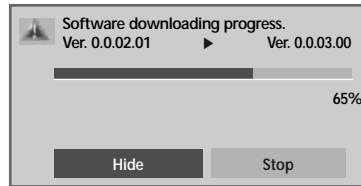
-   Select **SETUP**.
-   Select **Software Update**.
-   Select **On** or **Off**.
  - If you select **On**, a user confirm message box will be displayed to notify that new software is found.
-  Save.

### \* When setting “Software Update”

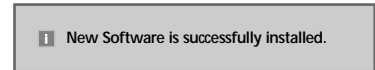
Occasionally, a transmission of updated digital software information will result in the following menu on the TV screen.



Select the **Yes** using the < > button and you will see the following picture.



After the Software Update is complete, the System restarts.



When the power is turned off, downloading starts.

When the power is turned on while updating, the progress status is displayed.

#### - During Progress of a Software Update, please note the following:

- Power to the TV must not be interrupted.
- The TV must not be switched off.
- The antenna must not be disconnected.
- After Software Update, you can confirm the updated software version in Diagnostics menu.
- It may take hours to download the software, so make sure that the power stays on during the download.

# WATCHING TV / PROGRAMME CONTROL

## DIAGNOSTICS








This function enables you to view information on the Manufacturer, Model/Type, Serial Number and Software Version.

This displays the information and signal strength of the tuned \*MUX.

This displays the signal information and service name of the selected MUX.

(\*MUX: A higher directory of channels in digital broadcasting (a single MUX contains multiple channels.))



- 1   Select **SETUP**.
- 2   Select **Diagnostics**.
- 3  Display Manufacturer, Model/Type and Software Version.
- 4   Display the information of Channel.

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.



## SELECTING THE PROGRAMME LIST

You can check which programmes are stored in the memory by displaying the programme table



Displayed when the Locked Programme.



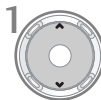
### ■ Displaying programme LIST



Display the Programme List.

- You may find some blue programmes. These have been set up to be skipped in the programme edit mode.
- Some programmes with the channel number shown in the programme LIST indicate there is no station name assigned.

### ■ Selecting a programme in the programme list



Select a programme.

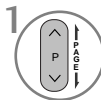


Switch to the chosen programme number.



From the programme you are currently watching, the mode will change from TV to DTV to Radio.

### ■ Paging through a programme list



Turn the pages.



Return to normal TV viewing.

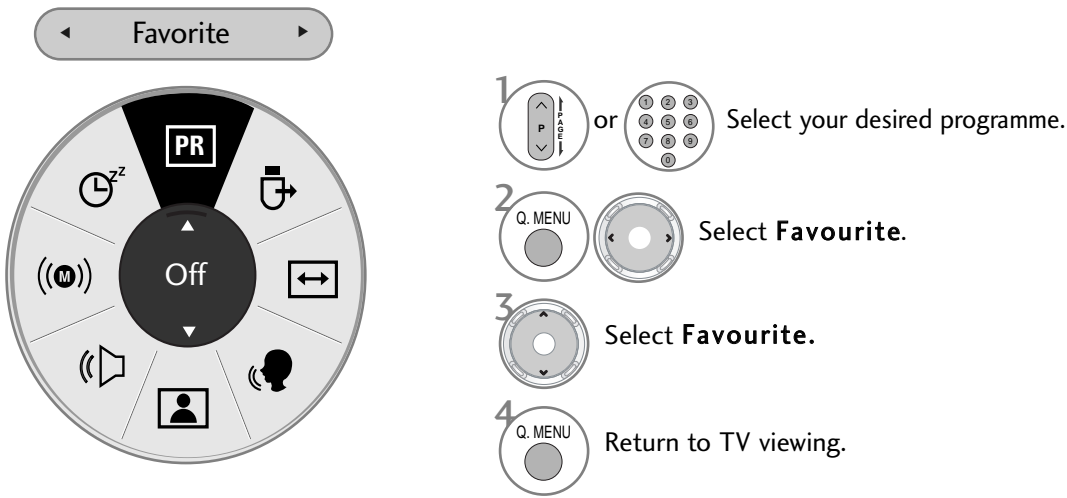
# WATCHING TV / PROGRAMME CONTROL

## FAVOURITE PROGRAMME SETUP

### ■ Selecting favourite programme

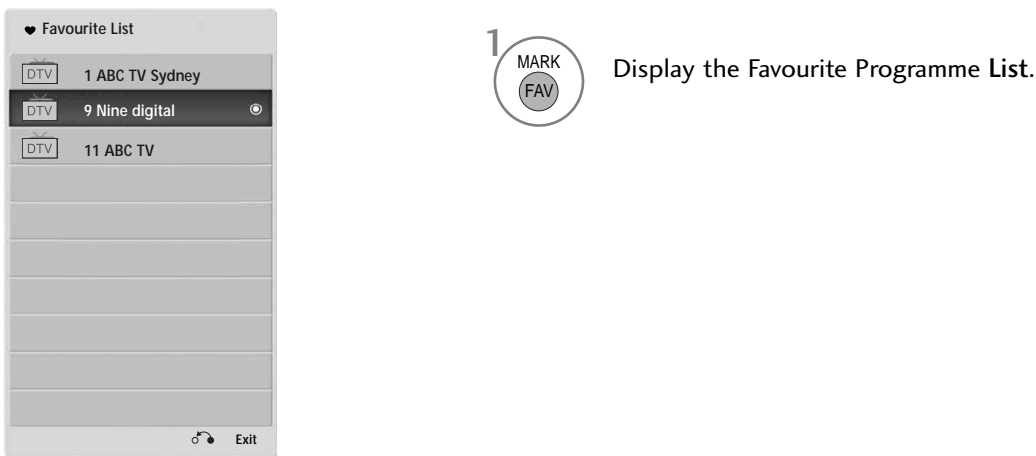
Your TV's OSD (On Screen Display) may differ slightly from what is shown in this manual.

Favourite programmes is a convenient feature that lets you quickly scan up to programmes of your choice without having to wait for the TV to scan through all the in-between programmes.



• This will automatically include the selected programme into your favourite programme list.

### ■ Displaying the favourite programme list

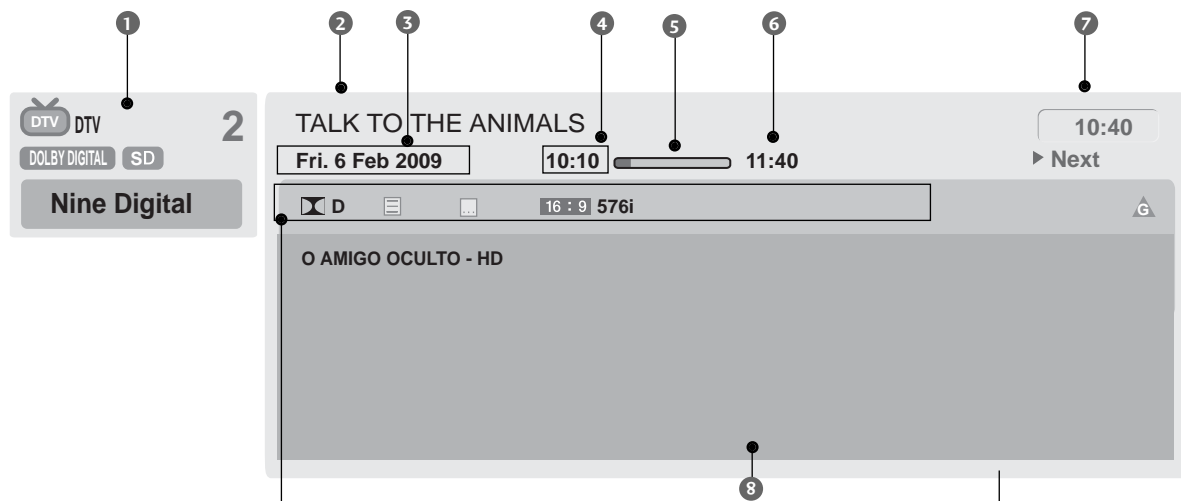


# BRIEF INFORMATION

Brief Info shows the present screen information.



Show the Brief Info on the screen.



	The programme is broadcast with Dolby Digital audio. Use the <b>Q. MENU</b> to select Dolby Digital audio.	<ul style="list-style-type: none"> <li>① Banner information</li> <li>② Programme title</li> <li>③ Day, Month, Year</li> <li>④ Programme start time</li> <li>⑤ Programme progress bar</li> <li>⑥ Programme finish time</li> <li>⑦ Present time</li> <li>⑧ Programme information</li> </ul>
	<b>Teletext</b> : Displayed with a Teletext Programme.	
	<b>Description</b>	
<div>4:3</div> <div>16:9</div>	The original aspect ratio of the video is 4:3 The original aspect ratio of the video is 16:9 (wide)	
<div>576i</div> <div>576p</div> <div>720p</div> <div>1080i</div>	<b>Video Resolution</b>	

• Press the **RETURN** button to return to normal TV viewing.

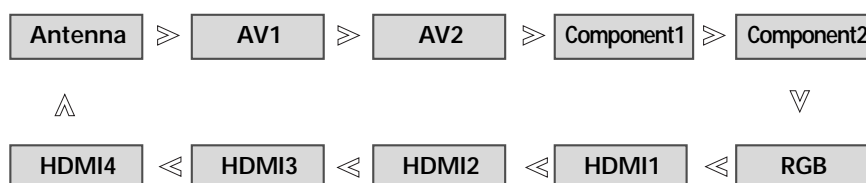
# WATCHING TV / PROGRAMME CONTROL

## INPUT LIST

HDMI can be recognized by a detect pin and thus enabled only when an external device approves voltage.

And AV, Component, RGB can be recognized when an external device is connected.

By using **TV/RAD** button, you can move from External Input to RF Input and to the last watched programme in DTV/RADIO/TV mode.



- **Antenna** : Select it when watching the DTV/RADIO/TV.
- **AV1, AV2** : Select it when watching the VCR or external equipment.
- **Component1, Component2** : Select it when using the DVD or the Digital set-top box depends on connector.
- **RGB** : Select it when using PC depends on connector.
- **HDMI1, HDMI2, HDMI 3, HDMI4** : Select it when using DVD, PC or Digital set-top box depend on connector.

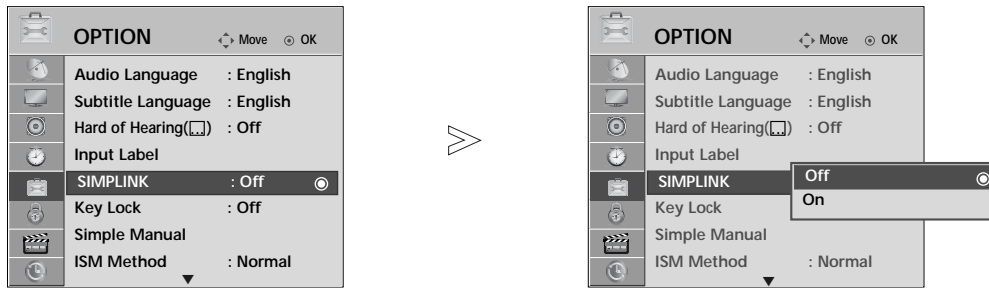


This function operates only with devices with the SIMPLINK logo.  
Please check the SIMPLINK logo.

This TV might not function properly when using it with other products with HDMI-CEC function.

This allows you to control and play other AV devices connected to the display through HDMI cable without additional cables and settings.

If you do not want SIMPLINK menu, select "Off".



Select **OPTION**.



Select **SIMPLINK**.



Select **On** or **Off**.



Save.

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

## SIMPLINK Functions

### Disc playback

Control connected AV devices by pressing the  $\wedge$   $\vee$   $<$   $>$ , OK,  $\blacktriangleright$ ,  $\blacksquare$ ,  $\text{II}$ ,  $\ll$  and  $\gg$  buttons.

### Direct Play

After connecting AV devices to the TV, you can directly control the devices and play media without additional settings.

### Select AV device

Enables you to select one of the AV devices connected to the TV and operate it.

### Power off all devices

When you switch off the TV, all connected devices are turned off.

### Switch audio-out

Offers an easy way to switch audio-out.

### Sync Power on

When the equipment with Simplink function connected HDMI terminal starts to play, The TV will change automatically to turn on mode.

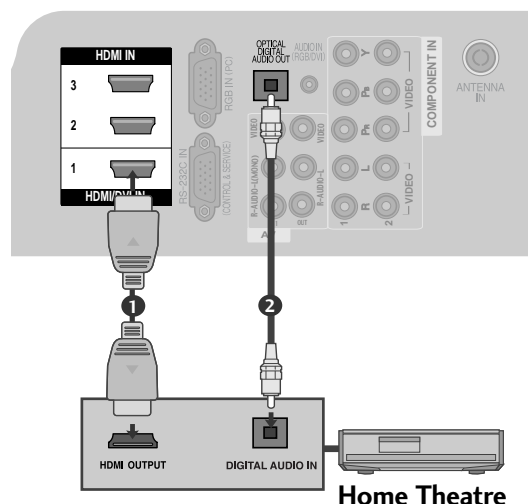
\* A device, which is connected to the TV through an HDMI cable but does not support SIMPLINK, does not provide this function.

Note: To operate SIMPLINK, an HDMI cable over Version 1.3 with \*CEC function should be used. (\*CEC: Consumer Electronics Control).

# WATCHING TV / PROGRAMME CONTROL

## Connecting to Home Theatre with the SIMPLINK logo.

- 1 Connect the **HDMI/DVI IN 1**, **HDMI IN 2**, **HDMI IN 3** or **HDMI IN 4** terminal on the back of the TV and the HDMI output terminal of the Home Theatre using HDMI cables.
- 2 Connect the Digital Audio output terminal on the back of the TV and the Digital Audio input terminal of the Home Theatre using optical cables.
- 3 Select Home Theatre in the Speaker menu by pushing the **SIMPLINK** button.



- When you select or operate a media device with home theatre-function, the speaker automatically switches to home theatre speaker (HT speaker).

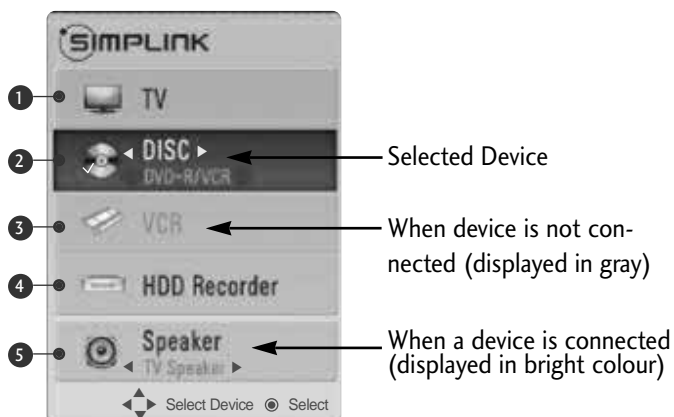
### ! NOTE

- Connect the HDMI/DVI IN or HDMI IN terminal of the TV to the rear terminal (HDMI terminal) of the SIMPLINK device with the HDMI cable.
- When you switch the Input source using the INPUT button on the remote control, you can stop the operation of a device controlled by SIMPLINK.

## SIMPLINK Menu

Press the  $\wedge \vee < >$  button and then **OK** button to select the desired SIMPLINK source.

- 1 **TV viewing** : Switch to the previous TV programme regardless of the current mode.
- 2 **DISC playback** : Select and play connected discs.  
When multiple discs are available, the titles of discs are conveniently displayed at the bottom of the screen.
- 3 **VCR playback** : Play and control the connected VCR.
- 4 **HDD Recordings playback** : Play and control recordings stored in HDD.
- 5 **Audio Out to Home theatre/Audio Out to TV:**  
Select Home theatre or TV speaker for Audio Out.

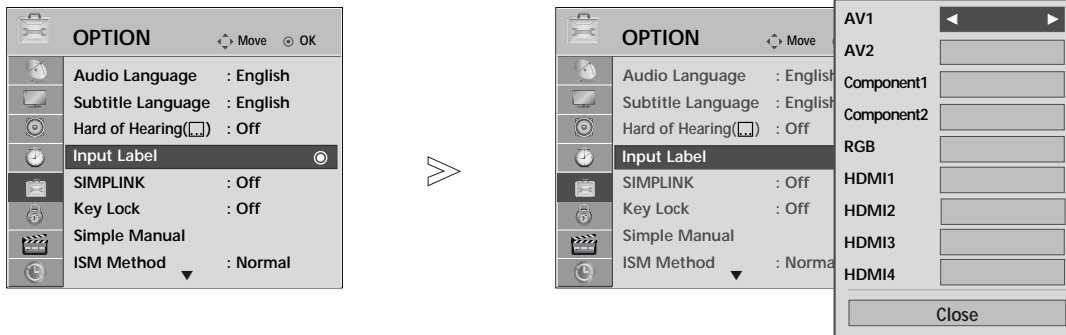









- **Home theatre:** Only one supported at a time
- **DVD, Recorder:** Up to four supported at a time
- **VCR:** Only one supported at a time

# INPUT LABEL

You can set a label for each input source when it's not in use.

Available label: VCR -> DVD -> Set Top Box -> Satellite -> Cable Box -> Game -> PC -> HD-DVD -> Blu-ray.



- 1   Select **OPTION**.
- 2   Select **Input Label**.
- 3   Select the source.
- 4  Select the label.

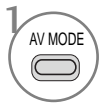
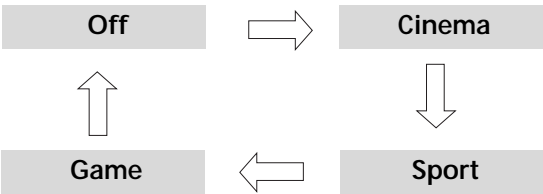
- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

# WATCHING TV / PROGRAMME CONTROL

## AV MODE

You can select the optimal images and sounds when connecting AV devices to external input.

<b>Off</b>	Disables the AV MODE.
<b>Cinema</b>	Optimizes video and audio for watching movies.
<b>Sport</b>	Optimizes video and audio for watching sports events.
<b>Game</b>	Optimizes video and audio for playing games.



Press the **AV MODE** button repeatedly to select the desired source.

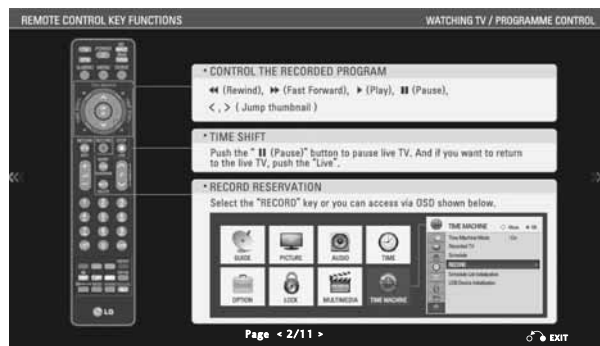
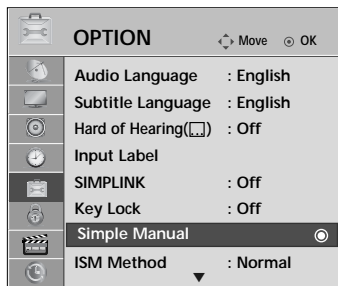








- If you select **Cinema** in AV mode, **Cinema** will be selected both for **Picture Mode** and **Sound Mode** in **PICTURE** menu and **AUDIO** menu respectively.
- If you select “**Off**” in AV mode, the picture and image which you initially set will be selected.



# SIMPLE MANUAL

You can easily and effectively access the TV information by viewing a simple manual on the TV.  
During the Simple Manual operation, audio will be muted.



- 1   Select **OPTION**.
- 2   Select **Simple Manual**.
- 3   Select the part of the manual you want to see.

- Press the **RETURN** button to return to normal TV viewing.

# WATCHING TV / PROGRAMME CONTROL

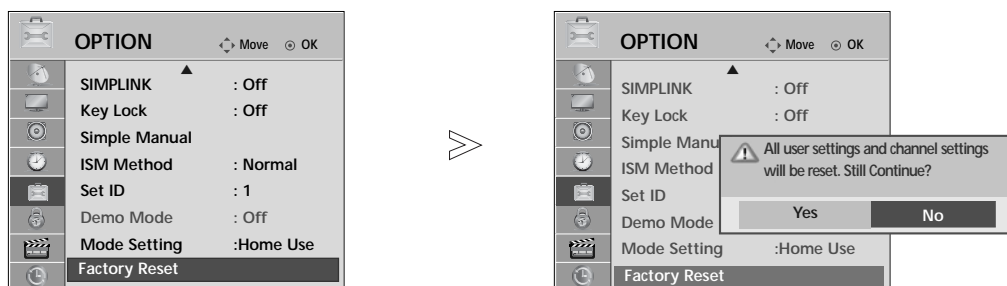
## Initialising (Reset to original factory settings)

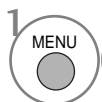


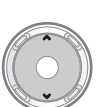

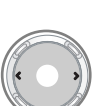

This function initializes all settings.

It is useful to initialize the product or when you move to other city.

When the Factory Reset is completed, you must restart the Initializing setup.

When the **Lock System** menu is "On", the message to enter the password appears.



- 1   Select **OPTION**.
- 2   Select **Factory Reset**.
- 3   Select **Yes**.
- 4  Start Factory Reset.

• In **Lock System "On"**, if you forget your password, press '7', '7', '7', '7' on the remote control handset.

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

# EPG (ELECTRONIC PROGRAMME GUIDE)(IN DIGITAL MODE)

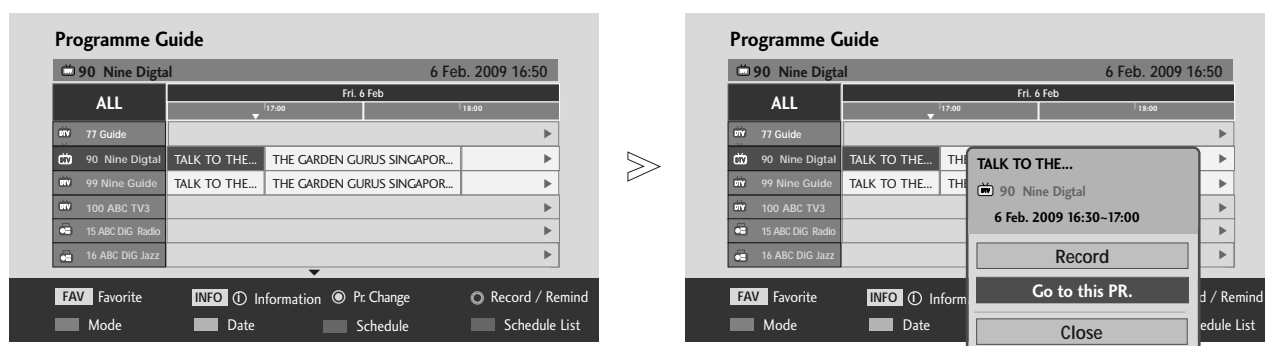
## EPG (ELECTRONIC PROGRAMME GUIDE) (IN DIGITAL MODE)






This system has an Electronic Programme Guide (EPG) to help your navigation through all the possible viewing options.


The EPG supplies information such as programme listings, start and end times for all available services. In addition, detailed information about the programme is often available in the EPG (the availability and amount of these programme details will vary, depending on the particular broadcaster).

This function can be used only when the EPG information is broadcast by broadcasting companies

The EPG displays the programme details for next 8 days.










- 1  Display the **Programme Guide**.
- 2  Select desired programme.
- 3  Show the Popup menu.
- 4   Select the desired Popup menu.

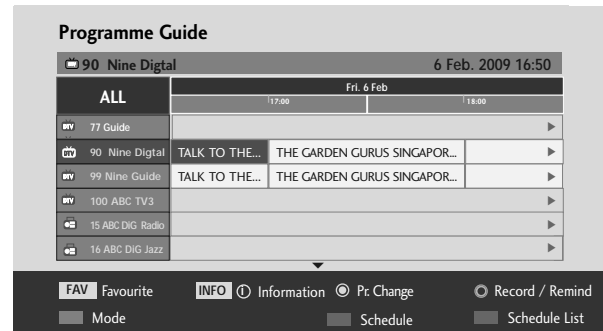
• If the TV is unplugged once or turn off with the  (power) button on the TV, the reserved programme reminding will not work.





- When you press the **YELLOW** button from the currently broadcasting programme, 'Record', 'Go to this PR.', 'Close' will be displayed.
- When you press the **YELLOW** button from the programme after the current time that is not reserved, 'Record', 'Remind', 'Close' will be displayed.
- When you press the **YELLOW** button from the reserved programme reminding, 'Record', 'Cancel Remind', 'Close' will be displayed.
- When you press the **YELLOW** button from the reserved programme recording, 'Cancel Record', 'Remind', 'Close' will be displayed.

# EPG (ELECTRONIC PROGRAMME GUIDE)(IN DIGITAL MODE)









## Button Function in NOW/NEXT Guide Mode

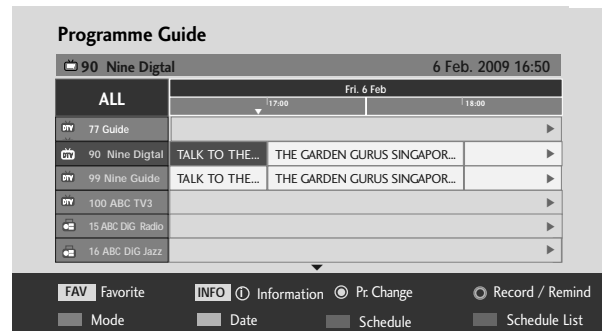
-  Change EPG mode.
-  Move to schedule option popup.
-  Switch the Schedule list On or off.
-  Change Programme (Go to this Programme).
-  Change NOW&NEXT Mode.
-  Set Record/Remind.
-  Select the Broadcast Programme.







-  Page Up/Down.
-  Switch off EPG.
-  The detail information on or off.
-  Change the favourite programme mode.




## Button Function in 8Day Guide Mode

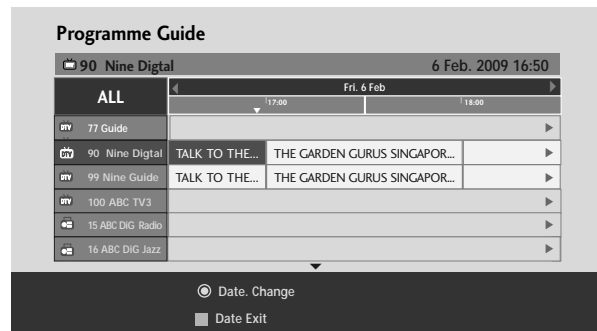
-  Change EPG mode.
-  Enter Date setting mode.
-  Move to schedule option popup.
-  Switch the Schedule list On or off.
-  Change Programme (Go to this Programme).
-  Select a Programme.
-  Select the Broadcast Programme.
-  Page Up/Down.







-  Switch off EPG.
-  The detail information on or off.
-  Change the favourite programme mode.
-  Set Record/Remind.

## Button Function in Date Change Mode

-  Switch off Date setting mode.
-  Select a date and change to the selected date.
-  Switch off EPG.





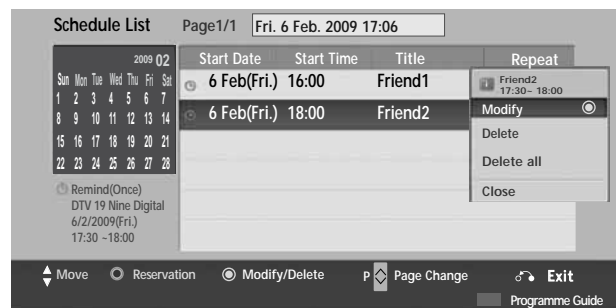
## Button Function in Extended Description Box

-  Move to schedule option popup.
-  Text Up/Down.
-  Switch off EPG.
-  The detail information on or off.



## Button Function in Schedule List Mode

-  Change to Guide mode.
-  Select Schedule list.



## Precautions when using the USB device

- ▶ Only a USB storage device is recognizable.
- ▶ If the USB storage device is connected through a USB hub, the device is not recognizable.
- ▶ A USB storage device using an automatic recognition programme may not be recognized.
- ▶ A USB storage device which uses its own driver may not be recognized.
- ▶ In case of a card reader, up to four memory cards are concurrently recognizable.
- ▶ The recognition speed of a USB storage device may depend on each device.
- ▶ Please do not unplug the power cord, turn off with the  $\phi/I$  (power) button on the TV or with remote control or unplug the USB device when the connected USB storage device is working. When such device is suddenly separated or unplugged, the stored files or the USB storage device may be damaged.
- ▶ Only use a USB storage device which has normal music files, image files or movie files.
- ▶ Please use only a USB storage device which was formatted as a FAT16, FAT32 or NTFS file system provided with the Windows operating system. In case of a storage device formatted as a different utility programme which is not supported by Windows, it may not be recognized.
- ▶ Please connect power to a USB storage device which requires an external power supply. If not, the device may not be recognized.
- ▶ Please connect a USB storage device with cable is offered by USB maker. If connected with cable is not offered by USB maker or an excessively long cable, the device may not be recognized.
- ▶ Some USB storage devices may not be supported or operate properly.
- ▶ The TV will display up to 128 characters of a files name.
- ▶ Please backup important files because data on USB device may be damaged. Data management is consumer's responsibility and as a result, the manufacturer does not cover data damage.
- ▶ The recommended capacity is 1 TB or less for a USB external hard disk and 40GB or less for USB memory. Any device with more than the recommended capacity may not work properly.
- ▶ Playing a movie via a USB connection that doesn't support high speed may not work properly.
- ▶ USB storage devices below USB 2.0 are supported as well. But they may not work properly in the movie list.
- ▶ If the USB HDD does not have an external power source, the USB device may not be detected. So be sure to connect the external power source. Please use a power adaptor for an external power source. We do not guarantee an USB cable for an external power source.
- ▶ In case of USB HDD Having bad sector, Time Machine may not work.
- ▶ Before removing the USB device, please use the Remove USB Device in Quick Menu to prevent software, data loss or damage to USB HDD.
- ▶ Please maintain the stability of external HDD by using the HDD benchmarking tool in order to guarantee smooth action of HDD.
- ▶ The HDD benchmarking tools is checking the performance of HDD that is read/write rate, access time, stability. It will be able to search at website and use easily it after download the HDD benchmarking tool.

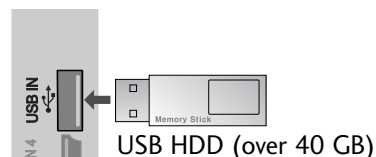
## TIME MACHINE(PAUSE & REPLAY OF LIVE TV)

This function allows the unit to automatically record live TV and make it available for viewing at any time. With the Time Machine turned on, you may pause and rewind normal TV viewing at any time without missing any of the live broadcast.

(Time Machine and Recording functions may not work if the signal strength is weak.)

**This function is only operated after initialising USB Device.**

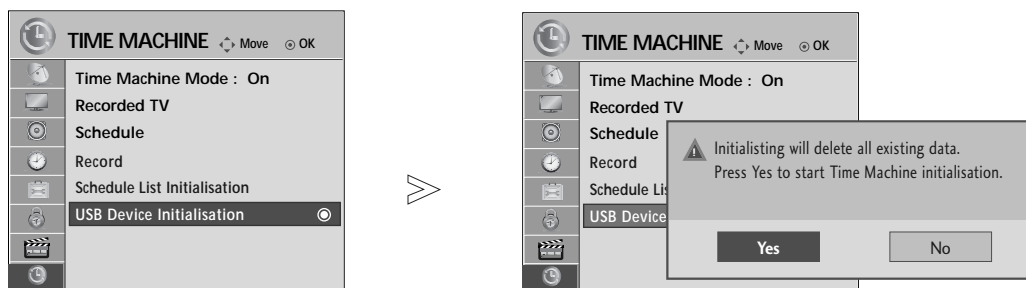
- 1 Connect the USB device to the **USB IN** jacks on the side(or back) of TV.



- 2 To use the USB device (over 40 GB) for USB Time Machine, execute **USB Device Initialisation**.

- It initializes the HDD connected to the USB as disk mode for Time Machine.
- It is activated only when the USB HDD available for Time Machine is connected.
- When **USB Device Initialisation** is executed, all the data stored in the USB device is deleted.
- While performing **USB Device Initialisation**, do not remove the USB device. It may cause error on the TV and the storage device.

### USB device Initialisation



- 1 Select **TIME MACHINE**.
- 2 Select **USB Device Initialisation**.
- 3 Select **Yes**.

- When initialisation is completed, a popup notice of completion is displayed and the connected USB HDD is available for Time Machine.







#### ! NOTE

- Depending on the capacity of the USB device, the initialisation time may vary.
- The initialised USB device is not recognized by the PC.
- When a USB device of less than 40 GB is connected, the USB Device Initialisation is not activated.
- Supported maximum USB HDD size for Time Machine is up to 1 TB.

# TIME MACHINE

## Time Machine Mode



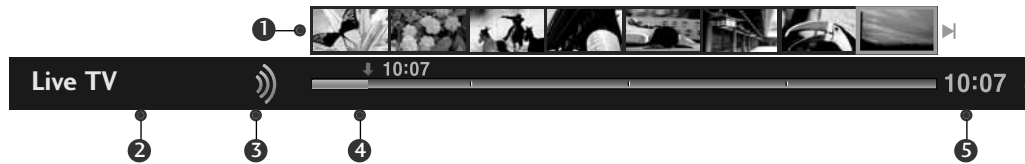
- 1   Select **TIME MACHINE**.
- 2   Select **Time Machine Mode**.
- 3   Select **On** or **Off**.

- Time Machine Mode is available in DTV mode.

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.



## Time Machine Progress



- 1 After selecting **Time Machine Mode On**, press the **OK** button.
  - As soon as Time Machine starts, a progress bar indicating the current recording status is displayed in the bottom of the screen.
  - Press the **OK** button to display the 'Progress Bar' or press the **RETURN** button to hide the 'Progress Bar'.
  - This function is preserved even change a programme on progressing the Time Machine.
- 2 When finished enter the **Time Machine Mode** menu and then turn **Time Machine Mode Off**.

### The 'Progress Bar'?

This function indicates what Time Machine reviewing is possible, a current on-screen and live broadcasting position.

- 1 Preview
- 2 Current Status while using the Time Machine
- 3 Current operating function while using the Time Machine
 

▶ Playback	↺ Direct view +
▶▶ Fast forward	↻ Direct view -
◀◀ Rewind	▢ By one screen
⏸ Pause	▶ Slow playback
- 4 Current location and progress time in playback
- 5 Total progress time of the Time Machine

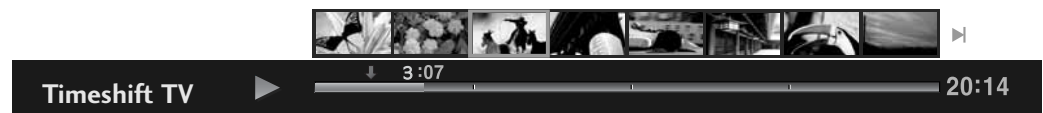
### ! NOTE

- ▶ In order to save hard-disk space, nothing is saved when there is no signal.
- ▶ Time Machine can be used for maximum of 2 hours.
- ▶ When turning power on, it may take up to a maximum of 3 minutes to initialize the HDD.
- ▶ The Time Machine function will not initiate for a copy-protected programme.
- ▶ Instant recording time is set to 3 hours and supported maximum time is up to 5 hours.
- ▶ Time Machine is not supported in the audio only channel, but recording is possible.

# TIME MACHINE

## Playback during the Time Machine

During the Time Machine play, the following options are available.



## Use of remote control

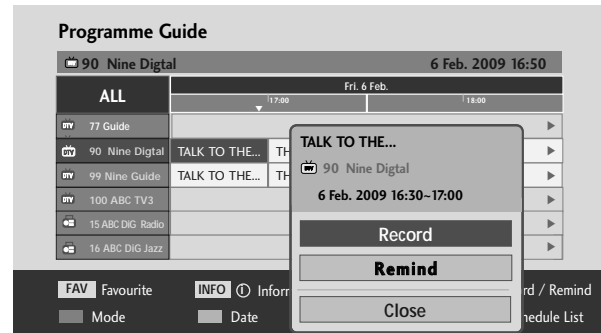
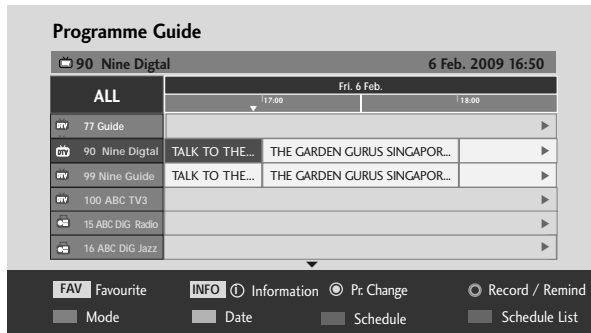
You can playback the temporarily saved part in various methods during the Time Machine.






	<p>During playback, repeatedly, press the <b>REW(◀◀)</b> or <b>FF(▶▶)</b> button to speed up.</p> <ul style="list-style-type: none"><li>• Every time you press the button, the search speed will increase by stage (up to 5 stages).</li></ul>
	<p>During playback, press the <b>Pause(II)</b> button.</p> <ul style="list-style-type: none"><li>• Pause screen is displayed.</li><li>• Every time you press the <b>Pause(II)</b> button from the pause screen, it will move screen by screen. (II▶)</li><li>• Press the <b>Pause(II)</b> button and then use the <b>FF(▶▶)</b> button for slow motion. (I▶)</li></ul>
	<p>When you move the cursor using the Time Machine (&lt;, &gt;) button during playback, and then press the <b>OK</b> button, the screen will directly play at the applicable screen where the cursor is located. (↶, ↷)</p>
	<p>To view the current live broadcast, press the <b>LIVE</b> button during playback.</p>

# RECORDING

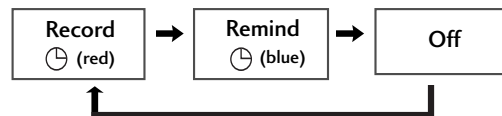
Use this function when you cannot watch the desired programme due to being out.

## Recording or Reminding function in the Programme Guide



- 1  Display the **Programme Guide**.
- 2  Select desired programme.
- 3    Select **Record** or **Remind**.

- You can also select **Record** or **Remind** by pressing the  button repeatedly on the remote control.



- Press the **RETURN** button to move to the previous menu screen.

### ! NOTE

- ▶ If you turn off the main power during the recording, the programme being recorded may not be saved. Therefore it is good to press the Stop (■) button and check the reserved/recorded list, and then turn off the power.
- ▶ Recording cannot be reserved for a period less than 10 seconds.
- ▶ Because the title and time of the programme for Record/Remind is based on the information transmitted from the broadcasting station, they may be different than the actual ones depending on the situation of the broadcasting station.
- ▶ When it is time for the reserved recording to start and the power of the TV is turned off, the TV will turn on the power of the part required for the recording and proceed to the reservation.
- ▶ When it is time for the reserved recording to start and the Immediate recording is in progress, the recording of the programme currently being recorded will be stopped and saved, and then proceed to the reserved recording.
- ▶ Broadcast materials are protected by copyright and that recording and playback of certain material would only be permissible by permission of the copyright owner. Audio and video recordings you make using this recorder are for your personal use only. You may not sell, lend or rent them to other people.
- ▶ If the TV is unplugged once or turn off with the ⏻ (power) button on the TV, the reserved recording will not work.


# TIME MACHINE

## Start/Stop record

You can record the channel you are watching for three hours.







1 When watching the programme, Select it you wish to record.

2  Display the recording setting.  
■ You can also select this setting in the **RECORD** menu.

3  or  Start the recording.

- During recording, **REC DTV 2** is displayed.  
Recording will be set up to 3 hours.

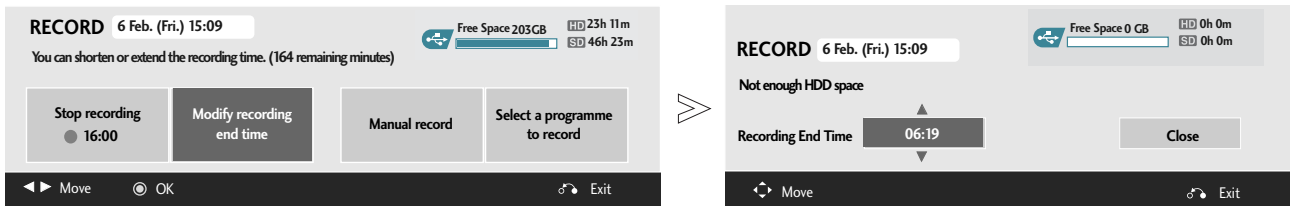
4    Select **Yes** to stop the recording.  
• You can also select **Stop recording** using the  button .









- Press the **RETURN** button to return to normal TV viewing.

## Modify recording end time

You can shorten or extend the recording time.



- 1    During recording ,  
Select the **Modify recording end time**.
- 2  Set the Recording End Time.
- 3   Select the **Close**.

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

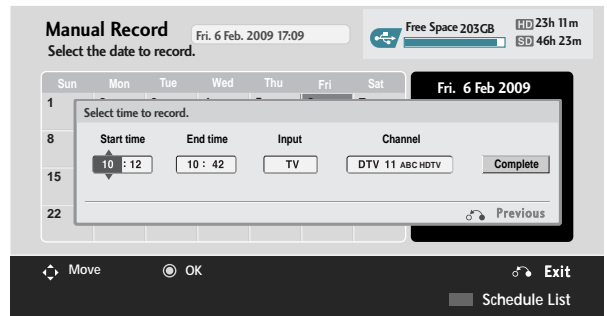
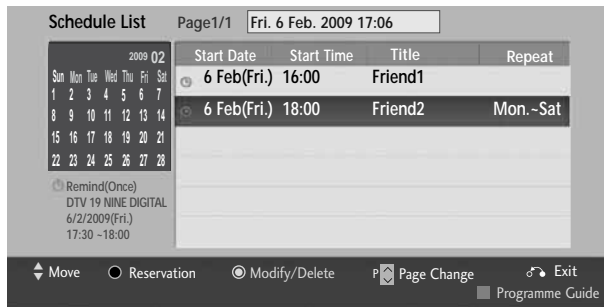
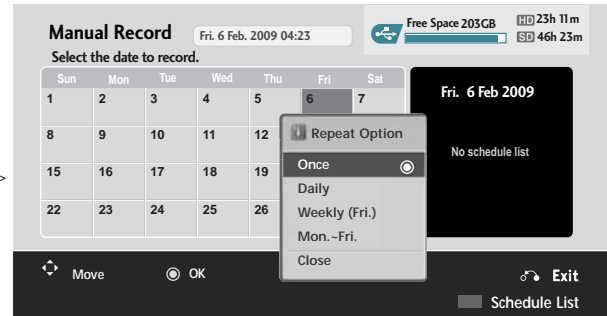
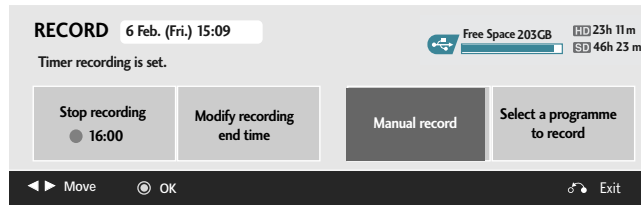
### ! NOTE

- ▶ When recording, if the available storage space is not sufficient, the recording will automatically Stop.
- ▶ Recordings of less than 10 seconds will not be saved.
- ▶ To save disk space while recording broadcasts, no data will be saved if there is no signal.
- ▶ The recording function will not initiate for a copy-protected programme.
- ▶ The displayed time may differ slightly from the actual time such as no signal.

# TIME MACHINE

## Manual record

This function is easy to register to reserved recording. Timer recording is set.



- 1 Select the **Manual record**.
- 2 Select **Date**.
- 3 Select the repeat option.
- 4 Set the desired **Start Time, End Time, Input and Programme**.

- 5 Select the **Complete**.
- 6 Display the Schedule List.

- Press the **RETURN** button to return to normal TV viewing.

### ! NOTE

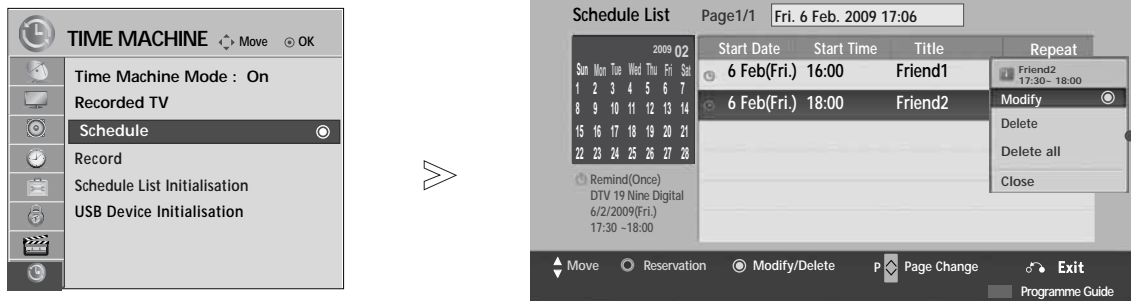
- ▶ Timeshift recording is not possible with copy-protected programmes.

Programme with copy protection fail to record.

- ▶ Manual Recording available time is maximum 3 hours and minimum 2 minutes.
- ▶ If different channels are set for the same time for on time and reserved recording, this TV is powered on to the reserved recording channel.
- ▶ When reserved recording started while watching DTV, you cannot change to the ATV programme.

# SCHEDULE LIST

This function is used to show scheduled recordings.



When you select a desired item, this PopUp menu is displayed.

- ▶ **Modify:** Edit the contents of **Start date/Start time/End time/Title/Repeat**.  
You must press the **RETURN** button to save the edited contents.
- ▶ **Delete:** Delete the selected item in the list.
- ▶ **Delete all:** Delete all items in the list.
- ▶ **Close:** Close the pop-up menu.

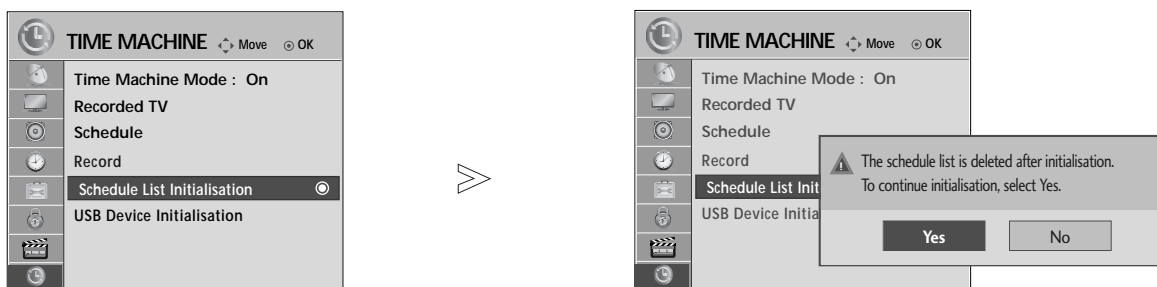
1. Select **Schedule**.
2. Select a desired item in the schedule list.
3. Show the Popup menu.
4. Select the desired Popup menu.







- Press the **RETURN** button to return to normal TV viewing.

# TIME MACHINE

## Schedule List Initialisation

This function is to reset the schedule list.



- 1   Select **TIME MACHINE**.
- 2   Select **Schedule List Initialisation**.
- 3   Select **Yes**.  
Start the Schedule List Initialisation.

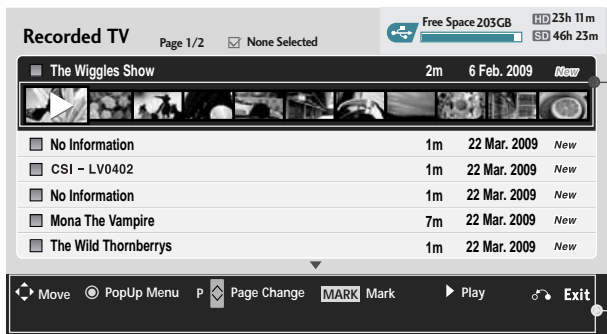
- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.



## RECORDED LIST

You can view the recorded programme list at a glance.

The recorded programme stored the USB device can be played.



Move to the desired scene and play the recorded programme.

[Use of remote control]



Show the popup menu.



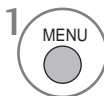
Move to last Item in next page. (First, it moves to last item in current page.)



Move to first item in previous page. (First, it moves to first item in current page.)



Check and un-check recorded programmes.



Select **TIME MACHINE**.



Select Recorded TV.



Select a recorded programme.

- Press the **RETURN** button to return to normal TV viewing.

### NOTE

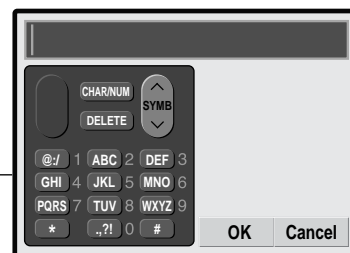
- ▶ If there is a bad sector in the disk, part or all of the items of the **Recording list** can be deleted.
- ▶ Maximum number of recordings within the Recording list is 200. When the number of recordings in the Recording list is 200, you cannot record any more.
- ▶ When the full duration of the recording is played back, the screen will stay in the stopped condition for 10 seconds and then automatically end the playback.
- ▶ The recording can be played back even during the recording/reserved recording.
- ▶ During the playback of the recording, the hard disk can generate a certain level of noise. This noise is irrelevant from the performance and reliability of the product and is normal for a hard drive to have a certain level of noise.
- ▶ The recording time will be different according to the programme resolution.










# TIME MACHINE

## Recorded programme Selection and Popup Menu



- ▶ **Play** : Playback of selected recorded programmes.
- ▶ **Play Previous** : Resumes playing at the previously stopped point.
- ▶ **Mark All** : Mark all recorded programmes in the list.
- ▶ **Unmark All** : Change marked recorded programmes to unmarked recorded programmes.
- ▶ **Delete** : Delete the selected recorded programmes.
- ▶ **Rename** : Edit recorded programme title.
- ▶ **Close** : Close the pop-up menu.



- 1   Select **TIME MACHINE**.
- 2   Select Recorded TV.
- 3   Select a desired recorded programme.
- 4  Show the Popup menu.
- 5   Select the desired Popup menu.

- Press the **RETURN** button to return to normal TV viewing.

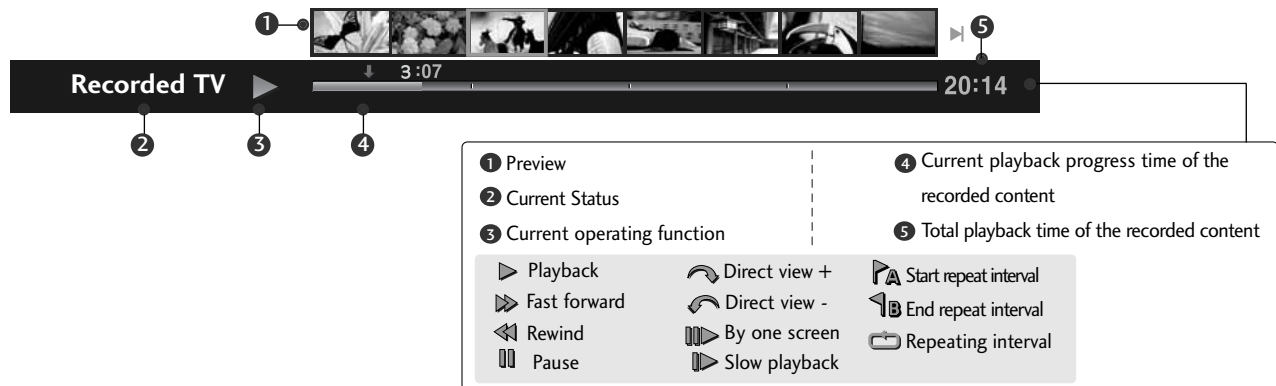
## Playing Recorded programmes

You can play a selected programme from the recorded list.

### 1 Play a recorded programme.

When you press the **OK** button during the playback, the information of the recorded programme you are current watching will be displayed at the top of the screen and a progress bar showing the current status of the playback at the bottom of the screen. (Playback status is displayed as follows.)

- To remove the progress bar, press the **OK** button.



## Use of remote control

You can adjust various method during the recorded programme play.

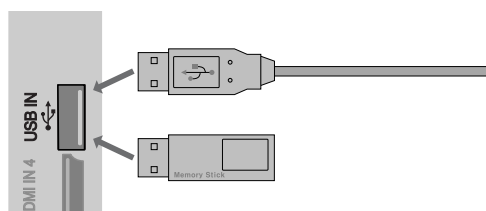
	<p>During playback, repeatedly, press the <b>REW(◀◀)</b> or <b>FF(▶▶)</b> button to speed up.</p> <ul style="list-style-type: none"> <li>Every time you press the button, the search speed will increase by stage. (up to 5 stages)</li> </ul>
	<p>During playback, press the <b>Pause(II)</b> button.</p> <ul style="list-style-type: none"> <li>Pause screen is displayed.</li> <li>Every time you press the <b>Pause(II)</b> button from the pause screen, it will move screen by screen. (II▶)</li> <li>Press the <b>Pause(II)</b> button and then use the <b>FF(▶▶)</b> button for slow motion. (II▶)</li> <li>If you don't press any button 10 minutes after the pause, it will return to the playback.</li> </ul>
	<p>When you move the cursor using the Time Machine (◀, ▶) button during playback, and then press the <b>OK</b> button, the screen will directly play at the applicable screen where the cursor is located. (↶, ↷)</p>
	<p>When you press the <b>LIVE</b> button, the playback will end and you can watch the TV.</p>
	<p>* This function is available only the playback of a recorded programme.</p> <p>Press the <b>REPEAT</b> button at the starting point where you want to set the Interval repeat and press it again at the ending point. To cancel the playback for the interval repeat, press the <b>REPEAT</b> button one more time.</p> <ul style="list-style-type: none"> <li>The start of the Interval repeat is displayed as ▶A and end of the Interval repeat as ▶B in the recording progress bar at the bottom of the screen. Start and end of the Interval repeat can be set both in forward and reverse direction.</li> <li>Interval shorter than 10 seconds cannot be set.</li> <li>When the Interval repeat is cancelled, it will return to normal playback from the end point of the interval.</li> </ul>
	<p>To return to normal playback, press the <b>PLAY(▶)</b> button.</p>

# MULTIMEDIA

## ENTRY MODES

When you connect a USB device, this screen is displayed automatically.  
In USB device, you can not add a new folder or delete the existing folder.

- 1 Connect the USB device to the **USB IN** jacks on the side of TV.



- 2 Select **PHOTO LIST**, **MUSIC LIST** or **MOVIE LIST**.



### When removing the USB device

Select the **Remove USB device** menu before removing the USB device.

- 1   Select **Remove USB device**.

- 2  Select **Remove**.

## ! NOTE

- ▶ The screen saver feature runs when the moving, deleting operation of a photo, music or movie file continues for a long time.

## PHOTO LIST

You can view .JPG files from the USB devices.

The On Screen Display on your model may be slightly different.

This function is not operated after initialising USB Device.

### Supported photo(\*.JPEG) file

Baseline: 15360 × 8640

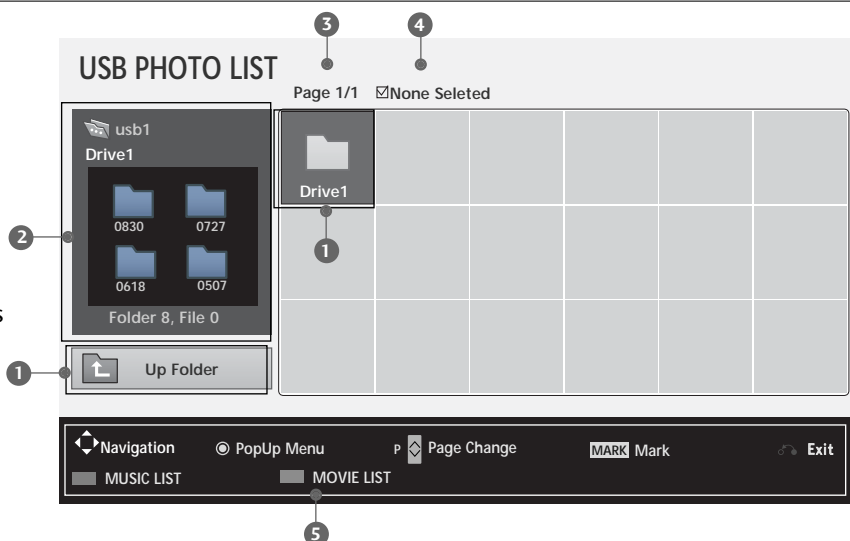
- You can play JPEG files only.
- This TV will not be able to decode some JPG images saved using the progressive option.
- Non-supported files are displayed in the form of bitmap.
- When you are watching the photo by the **Photo List** function, you can not change the picture mode.



1. Select **MULTIMEDIA**.
2. Select **Photo List**.
- 3.

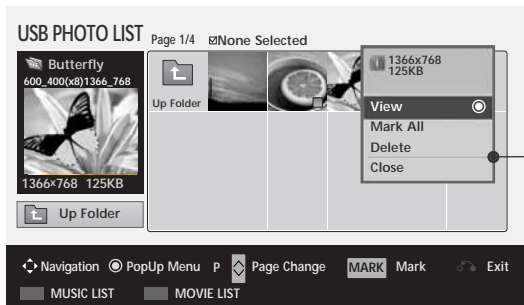
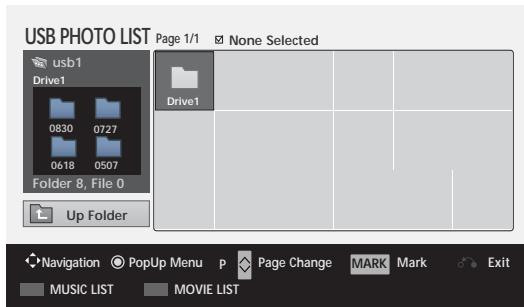
## Screen Components

1. Moves to upper level folder
2. Preview: Display the thumbnail/folder name of the photo in the selected folder
3. Current page/Total pages
4. Total number of marked photos
5. Corresponding buttons on the remote control



# MULTIMEDIA

## Photo Selection and PopUp Menu

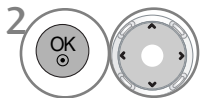


When you select a file (not folder), this PopUp menu is displayed.

- ▶ **View:** Display the selected item.
- ▶ **Mark All:** Mark all photos on the screen.
- ▶ **Unmark All:** Deselect all marked photos.
- ▶ **Delete:** Delete the selected photo item(except NTFS file system).
- ▶ **Delete Marked :** Delete the marked photo item(except NTFS file system)
- ▶ **Close:** Close the pop-up menu.



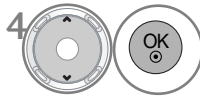
1 Select the target folder or drive.



2 Select the desired photos.



3 Show the pop-up menu.

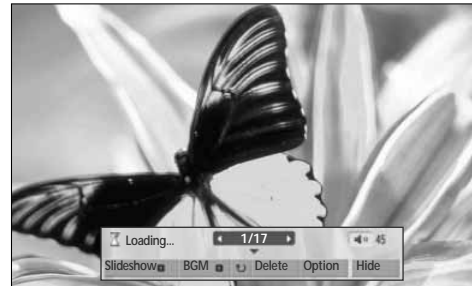
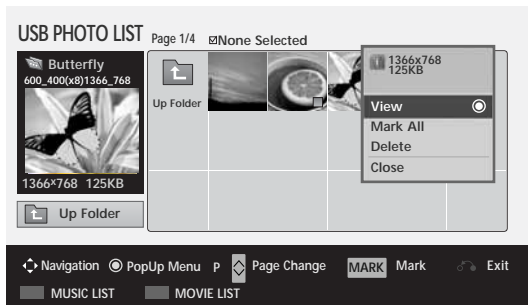
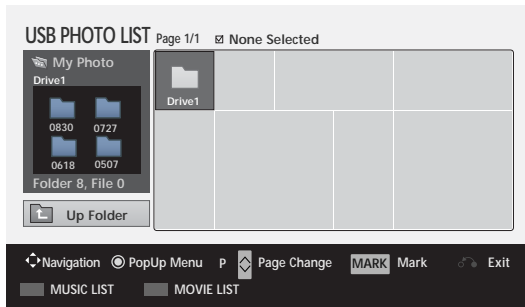


4 Select the desired Popup menu.







- Use the **P** ^ v button to navigate in the photo page.
- Use the **MARK** button to mark or unmark a photo. When one or more photos are marked, you can view individual photos or a slide show of the marked photos. If no photos are marked, you can view all photos individually or all photos in the folder in a slide show.



## Full Screen Menu

You can change the Photo List view so that it fills the screen. More operations are available in full screen mode.

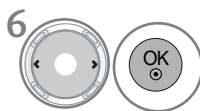
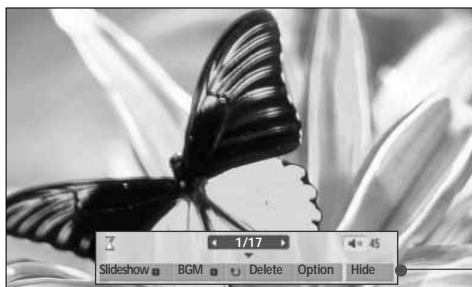


The aspect ratio of a photo may change the size of the photo displayed on the screen in full size.

- 1  Select the target folder or drive.
- 2   Select the desired photos.
- 3  Show the pop-up menu.
- 4  Select **View**.
- 5  The selected photo is displayed in full size.



■ Use the **P**   button to navigate in the photo page.

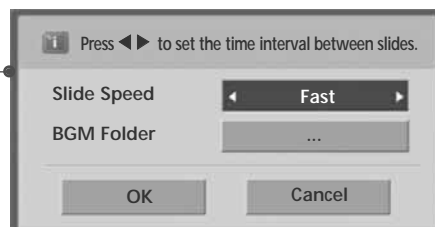
# MULTIMEDIA



6 Select the **Slideshow**, **BGM**,  (**Rotate**), **Delete**, **Option**, or **Hide**.

- Use < > button to select the previous or next photo.
- Use ^ v < > button to select and control the menu on the full-sized screen.

- ▶ **Slideshow**: Selected photos are displayed during the slide show. If no photo is selected, all photos in the current folder are displayed during slide show.
  - Set the time interval of the slide show in **Option**.
- ▶ **BGM**: Listen to music while viewing photos in full size.
  - Set the BGM device and folder in **Option**.
- ▶  (**Rotate**): Rotate photos.
  - Rotates the photo 90°, 180°, 270°, 360° clockwise.
- ▶ **Delete**: Delete a photo.
- ▶ **Option**: Set values for **Slide Speed**, **BGM Device** and **BGM Folder**.
  - Use < > button and **OK** button to set values. Then go to  and press **OK** to save the settings.
  - You cannot change **BGM Folder** while BGM is playing.
- ▶ **Hide** : Hide the menu on the full-sized screen.
  - To see the menu again on the full-sized screen, press **OK** button to display.





# MUSIC LIST

You can use the Music List menu to play MP3 files form.

This TV cannot play back copy-protected files.

The On Screen Display on your model may be slightly different.

Supported music file: \*.MP3

- Bit rate range 40Kbps ~ 320Kbps
- Sampling rate (Sampling Frequency)

MPEG1 : 32000, 44100, 48000Hz

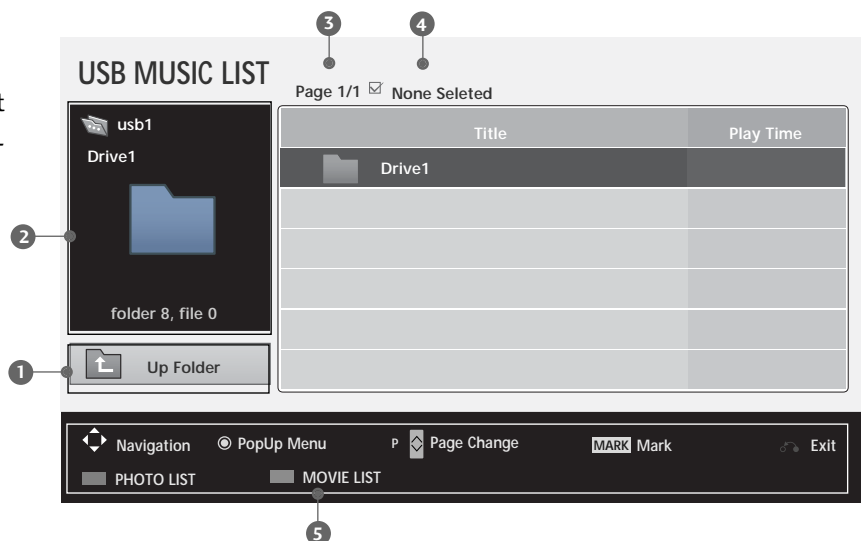
MPEG2 : 16000, 24000, 22050Hz



1. MENU button and D-pad arrow (up) to select **MULTIMEDIA**.
2. OK button and D-pad arrow (down) to select **Music List**.
3. OK button to confirm selection.

## Screen Components

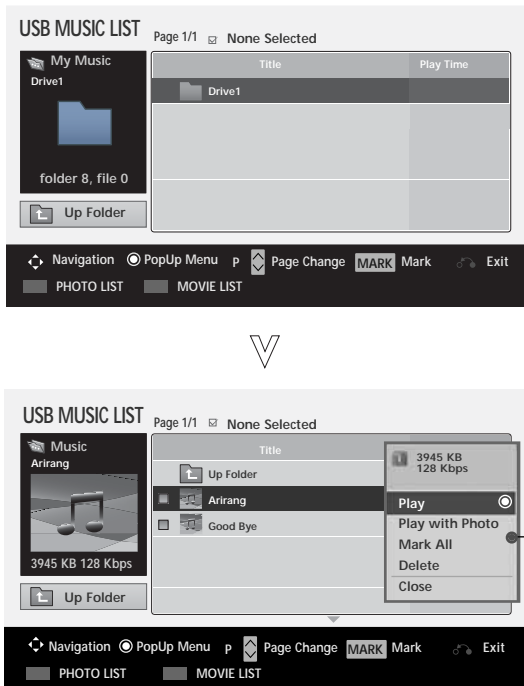
1. Moves to upper level folder
2. Preview: If any album jacket for the file exists, this jacket is displayed.
3. Current page/Total pages
4. Total number of marked music.
5. Corresponding buttons on the remote control



# MULTIMEDIA

## Music Selection and Popup Menu

Up to 6 music titles are listed per page.



- **Play** (During stop): Play the selected music.  
Once a song finishes playing, the next selected one will be played. When there is no selected music to play, the next one in the current folder will be played. If you go to a different folder and press the **OK** button, the current music in playback will stop.
- **Stop Play** (During playback): Stop playing music.
- **Play with Photo**: Start playing the selected music and then move to the Photo List.
- **Mark All**: Mark all music in the folder.
- **Unmark All**: Deselect all marked music.
- **Delete**: Delete the selected music.
- **Close**: Close the pop-up menu.

- 1 Select the target folder or drive.
- 2 Select the desired music.
- 3 Show the pop-up menu.
- 4 Select the desired Popup menu.

- Use the **P** ^ v button to navigation in the music page.
- Use **MARK** button to mark or unmark a music file. If no music is marked, all the music in the folder will be played in sequence. When one or more music files are marked, the marked music files will be played in sequence. If you want to listen to only one song repeatedly, just mark that one file and play.

• Press the **RETURN** button to return to normal TV viewing.

- The play information box (as shown below) will automatically move across the screen when there is no user input to prevent a fixed image remaining on the screen for a extended period of time.



## ! NOTE

- ▶ When music is playing, is displayed in front of the music play time.
- ▶ A damaged or corrupted music file that cannot be played displays 00:00 as the play time.
- ▶ Music files with copy-protection will not play.
- ▶ Press **OK**, , or **RETURN** button to stop the screen saver.
- ▶ This TV can not play music files less than 16 Kbytes.

## MOVIE LIST

The movie list is activated once external HDD or USB devices are detected.

It is used when playing movie files on TV.

Displays the movies in the external HDD or USB devices and supports play.

Allows playback of all movies in the folder and user desired files.

It is a movie list that displays folder information and Divx file.



1. Select **MULTIMEDIA**.
2. Select **Movie List**.
- 3.

# MULTIMEDIA

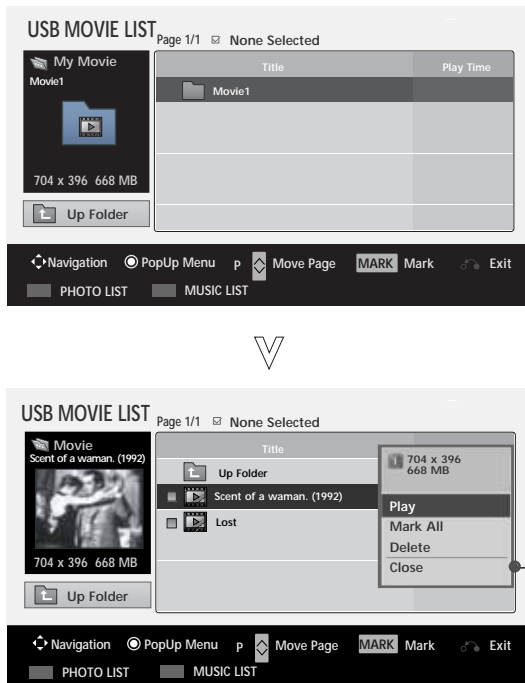
## Screen Components

- 1 Moves to upper level folder
- 2 Preview: Selected movies are played at X4 speed. And sound is mute.
- 3 Current page/Total pages
- 4 Total number of marked movies
- 5 Corresponding buttons on the remote control



## Movie Selection and Popup Menu

Up to 6 movie titles are listed per page.



- **Play** (During stop): Play the selected movie.

Once a movie finishes playing, the next selected one will be played. When there are no selected movies to play, the next one in the current folder and will be not played. While playing the movie, activating the movie list will stop playing the movie. If you go to a different folder and press the **OK** button, the current movie in playback will stop.

- **Mark All**: Mark all movies in the folder.
- **Unmark All**: Deselect all marked movie.
- **Delete**: Delete the selected movie.
- **Close**: Close the pop-up menu.

- 1 Select the target folder or drive.

- 2 Select the desired movies.

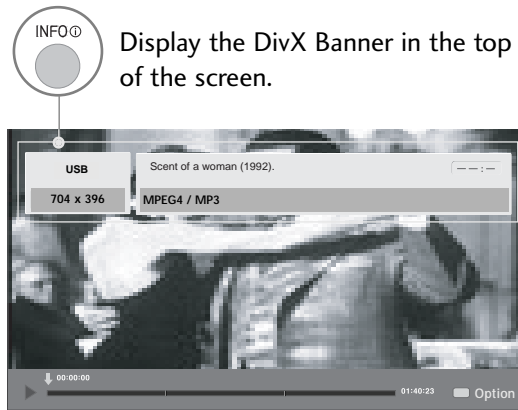
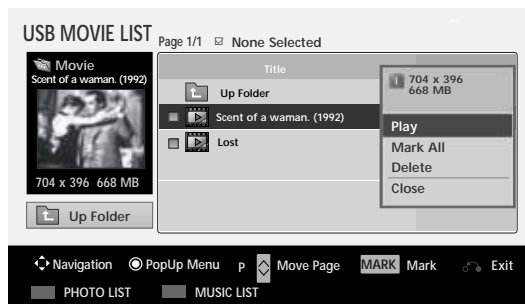
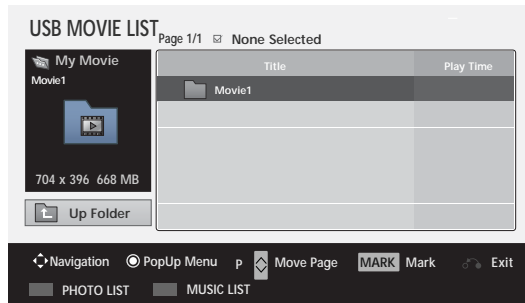
- 3 Show the Popup menu.






- 4 Select the desired Popup menu.

- Use the **P** ^ v button to navigate in the movie page.
- Use **MARK** button to mark or unmark a movie file. When one or more movie files are marked, the marked movie files will be played in sequence.

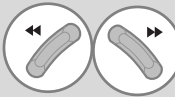



## Playing the Movie

You can adjust various method during the movie play.




- 1  Select the target folder or drive.
- 2   Select the desired movies.
- 3  Show the pop-up menu.
- 4  Select **Play**.

### [Use of remote control]

- |   |   |
|---|---|
|  | Press the <b>REW(◀◀)</b> button to rewind.<br>Press the <b>FF(▶▶)</b> button to forward fast. |
|  | Press the <b>Pause(II)</b> button to pause the screen.  |
|  | Press the <b>Stop(■)</b> button to stop.  |
|  | Press the <b>Pause(II)</b> button and then use the <b>FF(▶▶)</b> button for slow motion.      |

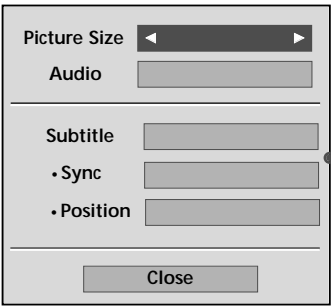
### ! NOTE

- ▶ Some special files are not supported in subtitles.

- 5  Display the current movie status progress bar in the bottom of the screen.

Option Menu Selection

During the movie play, the following options are available.



► **Picture Size:** Select the Full screen or Original size.

► **Audio:** Select the language.

But, the file with only one audio can not be selected.

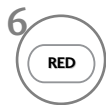
► **Subtitle:** The subtitle can be turned on or off.

If there are two or more subtitles, you can select one of them.

Subtitle Language	Support Language
Latin1	English, Spanish, French, German

• **Sync:** Adjusts the time synchronisation of the subtitle from -10 secs ~ +10 secs by steps of 0.5 secs during movie play.

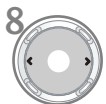
• **Position:** Changes the position of the subtitle either up or down during movie play. Select position from -2 secs ~ +2 secs by steps of 1 secs during movie play.



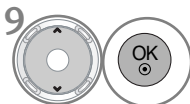
Display the **Option** menu.



Select the desired movie option.



Make appropriate adjustments.



Select **Close**.

! NOTE

► During the movie play, the repeat key is not supported.

## Precautions when playing the DivX

Subtitle format : \*.smi/ \*.srt/ \*.sub(MicroDVD, SubViewer 1.0/ 2.0)/ \*.ass/  
\*.ssa/\*.txt(TMPlayer), \*.psb(PowerDivx)

Maximum supported DivX bitrate : 20Mbps(Mega bit per second)

Audio supported bit rate : within 32~320 kbps(MP3)

Maximum supported display resolution : 1920 x1080

- ▶ Specific subtitles created by the user may not be operated normally.
- ▶ Some special characters are not supported in subtitles.
- ▶ HTML tags are not supported in subtitles.
- ▶ Subtitles in languages other than the supported languages are not available.
- ▶ Time information in an external subtitle file should be arranged in ascending order to be played.
- ▶ Damaged movie files may not be played, and certain functions could be limited during the playback.
- ▶ Playback for movie file exceeding 30GB (Giga Byte) is not supported.
- ▶ If the video and audio structure of recorded file is not interleaved, either video or audio is outputted.
- ▶ H.264/ AVC codec is supported up to profile level 4.1.
- ▶ Files encoded with GMC(Global Motion Compensation) or quarter pel motion estimation may not be played.
- ▶ The video file and the subtitle file must be located in the same folder.
- ▶ The name of the video file and the subtitle file must be the same to view the subtitles normally.
- ▶ Even the supported codec may not be played depending on the encoded condition.
- ▶ Files had with not index may not be operated normally.
- ▶ Only the files saved in ASCII CODE is supported for the external subtitles of the movie.
- ▶ A subtitle of font , size and position may be not changed.
- ▶ Only 150 alphabets and 150 numbers are supported for each line of the subtitle.
- ▶ Subtitles are displayed up to 5 lines on the screen.
- ▶ An abnormal picture(still, fast) or an audio mute for a while may be occurred in case of change the audio language.
- ▶ Depend on the packet structure of video or audio files, it may support only audio or video.
- ▶ when some frame in a movie file have higher resolution than maximum supporting resolution, it may not guarantee smooth playback.
- ▶ It may not guarantee some playing movie files except for specified format .
- ▶ DTS Audio codec is not supported.
- ▶ Some file format which are \*.ts, \*.trp, \*.tp, \*.mpe, \*.mpeg, \*.mpe doesnot support trick mode except for ►►.
- ▶ Trick play except for ►► is not available when the movie file has not index information.
- ▶ Some movie files having special character may not playback.
- ▶ When you are watching the movie by **Movie List** function, you can adjust an image by **ENERGY SAVING** and **AV MODE** key on the remote control. User setup for each image mode does not operate.

## Supported Movie File

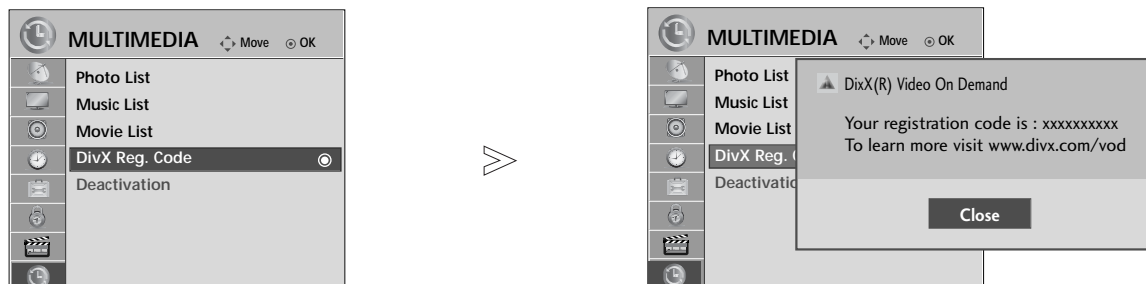
File Extensions	A/V	Codec	Profile/Level Support
.asf .wmv .wma	Video	VC-1 Advanced Profile	Advanced Profile@Level 3 (e.g. 720p60, 1080i60, 1080p30) Only streams compliant to SMPTE 421 M VC-1 standard are supported.
		VC-1 Simple and Main Profiles	Simple Profile@Medium Level (e.g. CIF, QVGA) Main Profile@High Level (e.g. 1080p30) Only streams compliant to SMPTE 421 M VC-1 standard are supported.
	Audio	WMA Standard	
		WMA 9 Professional	
.divx .avi	Video	Divx3.11	Advanced Simple Profile (720p/1080i)
		Divx4	
		Divx5	
		Divx6	
	Audio	XViD	
		MPEG-1 Layer I, II	
		MPEG-1 Layer III (MP3)	
		AC-3	
.mp4 .m4a .m4v	Video	H.264 / AVC	Main Profile@ Level 4.1 High Profile@ Level 4.1 (e.g. 720p60, 1080i60, 1080p30)
		MPEG-4 Part 2	Advanced Simple Profile (720p/1080i)
	Audio	AAC	AAC-LC and AAC-HE
.mkv	Video	H.264 / AVC	Main Profile@ Level 4.1 High Profile@ Level 4.1 (e.g. 720p60, 1080i60, 1080p30)
	Audio	AAC	AAC-LC and AAC-HE
		AC-3	
.ts .trp .tp	Video	H.264 / AVC	Main Profile@ Level 4.1 High Profile@ Level 4.1 (e.g. 720p60, 1080i60, 1080p30)
		MPEG-2	Main Profile@High Level (e.g. 720p60, 1080i60)
	Audio	MPEG-1 Layer I, II	AAC-LC and AAC-HE
		MPEG-1 Layer III (MP3) AC-3 AAC	
.vob	Video	MPEG-1	Main Profile@High Level (e.g. 720p60, 1080i60)
		MPEG-2	
	Audio	AC-3	
		LPCM MPEG-1 Layer I, II	
.mpg .mpeg .mpe	Video	MPEG-1	Only streams compliant configured properly for TS, PS or ES
	Audio	MPEG-1 Layer I, II	



# DIVX REGISTRATION CODE

Confirm the DivX registration code number of the TV.

Using the registration number, movies can be rented or purchased at [www.divx.com/vod](http://www.divx.com/vod).



1   Select **MULTIMEDIA**.

2   Select **DivX Reg.Code**.

3 

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.



“DivX Certified to play DivX video up to HD 1080p, including premium content”

**ABOUT DIVX VIDEO:** DivX® is a digital video format created by DivX, Inc. This is an official DivX Certified device that plays DivX video. Visit [www.divx.com](http://www.divx.com) for more information and software tools to convert your files into DivX video.

**ABOUT DIVX VIDEO-ON-DEMAND:** This DivX Certified® device must be registered in order to play DivX Video-on-Demand (VOD) content. To generate the registration code, locate the DivX VOD section in the device setup menu. Go to [vod.divx.com](http://vod.divx.com) with this code to complete the registration process and learn more about DivX VOD.

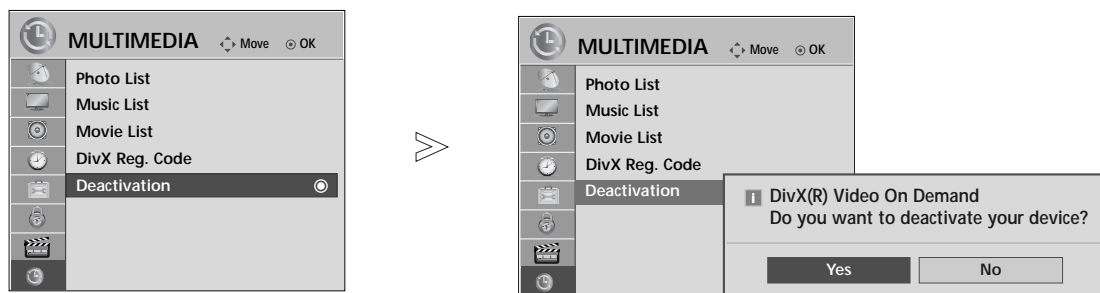
## ! NOTE








- ▶ With a DivX registration code from another TV, playback of rented or purchased DivX file is not allowed. (Only DivX files matched with the registration code of the purchased TV are playable.)
- ▶ The video or audio of a file converted based on a standard other than the DivX codec standard may be corrupted or unable to be played.

# MULTIMEDIA

## DEACTIVATION

Delete the existing authentication information to receive a new DivX user authentication for TV.  
Once this function is executed, a DivX user authentication is required again to see DivX DRM files.



- 1   Select **MULTIMEDIA**.
- 2   Select **Deactivation**.
- 3   Select **Yes** or **No**.
- 4  Display **Deactivation**.

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

# PICTURE CONTROL

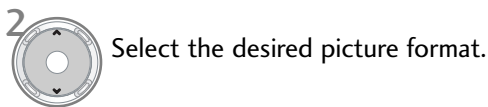
## PICTURE SIZE (ASPECT RATIO) CONTROL

You can watch the screen in various picture formats; 16:9, Just Scan, Original, 4:3, 14:9, Zoom, Cinema Zoom1.

If a fixed image is displayed on the screen for a long time, that fixed image may become imprinted on the screen and remain visible.

You can adjust the enlarge proportion using  $\wedge \vee$  button.

This function works in the following signal.



- You can also adjust **Aspect Ratio** in the **PICTURE** menu.
- For Zoom Setting, select 14:9, Zoom and **Cinema Zoom1** in Ratio Menu. After completing Zoom Setting, the display goes back to Q.Menu.

### • 16:9

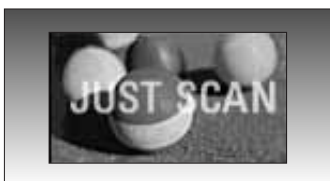
The following selection will allow you to adjust the picture horizontally, in linear proportion, to fill the entire screen (useful for viewing 4:3 formatted DVDs)



### • Just Scan

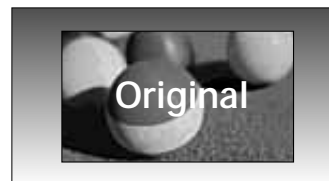
Following Selection will lead to you view the picture of best quality without loss of original picture in high resolution image.

Note : If there is noise in original Picture, You can see the noise at the edge.



### • Original

When your TV receives a wide screen signal it will automatically change to the picture format broadcast.



### • 4:3

The following selection will allow you to view a picture with an original 4:3 aspect ration, gray bars will appear on both the left and right of the screen.



# PICTURE CONTROL

## • 14:9

You can view a picture format of 14:9 or a general TV programme in the 14:9 mode. The 14:9 screen is viewed in the same way as in 4:3, but is magnified to the left and right.



## • Zoom

The following selection will allow you to view the picture without any alteration, while filling the entire screen. However, the top and bottom of the picture will be cropped.



## • Cinema Zoom1

Choose Cinema Zoom1 when you want to enlarge the picture in correct proportion.

Note: When enlarging or reducing the picture, the image may become distorted.



## ! NOTE

- ▶ You can only select **4:3**, **16:9 (Wide)**, **14:9**, **Zoom/Cinema Zoom** in Component mode.
- ▶ You can only select **4:3**, **Original**, **16:9 (Wide)**, **14:9**, **Zoom/Cinema Zoom** in HDMI mode.
- ▶ You can only select **4:3**, **16:9 (Wide)** in RGB/ HDMI PC mode only.
- ▶ In DTV(over 576p)/HDMI/Component (over 720p) mode, **Just Scan** is available.

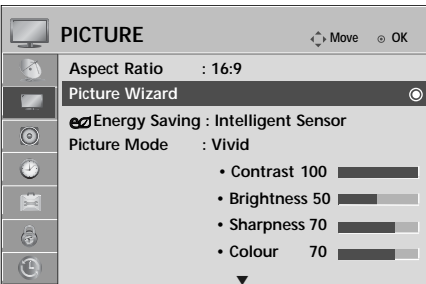
# PICTURE WIZARD

This feature lets you adjust the picture quality of the original image.

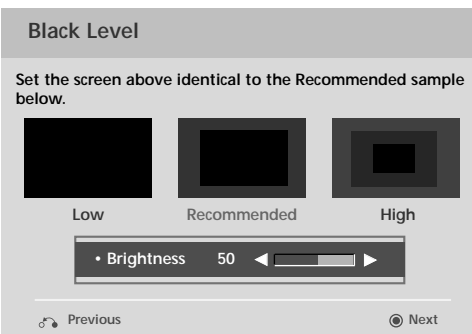
Use this to calibrate the screen quality by adjusting the Black and White Level etc. You can calibrate the screen quality by easily following each step.

When you adjust the image to **Low**, **Recommended** or **High**, you can see the example of the changes you made.

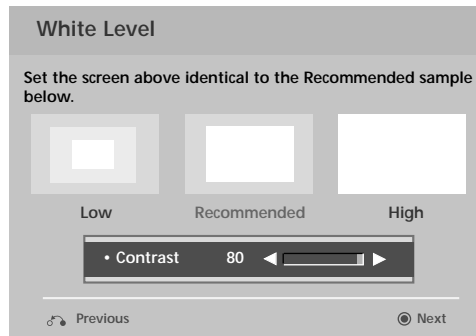
In RGB-PC/HDMI-PC/DVI-PC mode, the changed **Colour**, **Tint** and **H/V Sharpness** values are not applied.



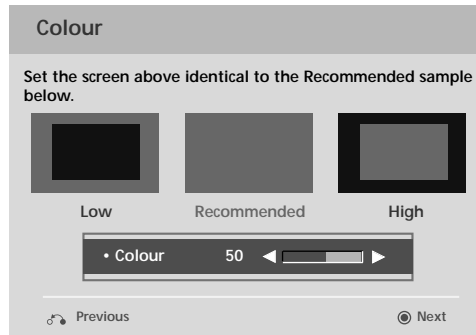
1. Select **PICTURE**.
2. Select **PICTURE**.
3. Select **Picture Wizard**.



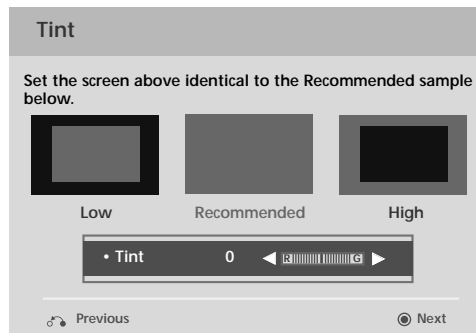
5. Adjust **Black Level**.



6. Adjust **White Level**.

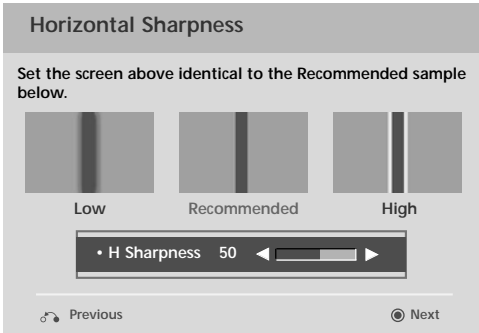


7. Adjust **Colour**.

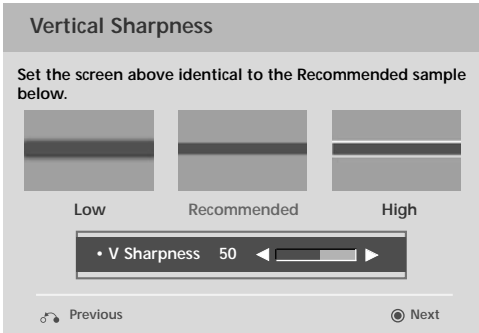


8. Adjust **Tint**.

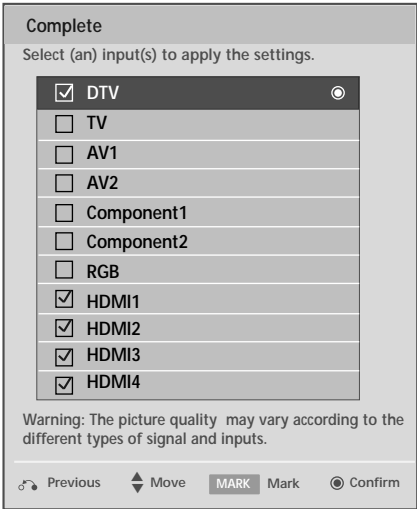
# PICTURE CONTROL

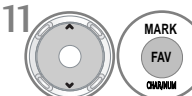


9  **Adjust Horizontal Sharpness.**

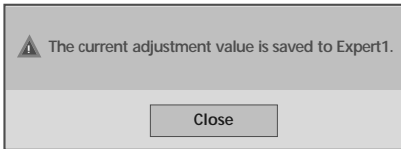



10  **Adjust Vertical Sharpness.**



11  **Select input source to apply the settings.**

12  **Save.**



13  **Finish the Picture Wizard.**

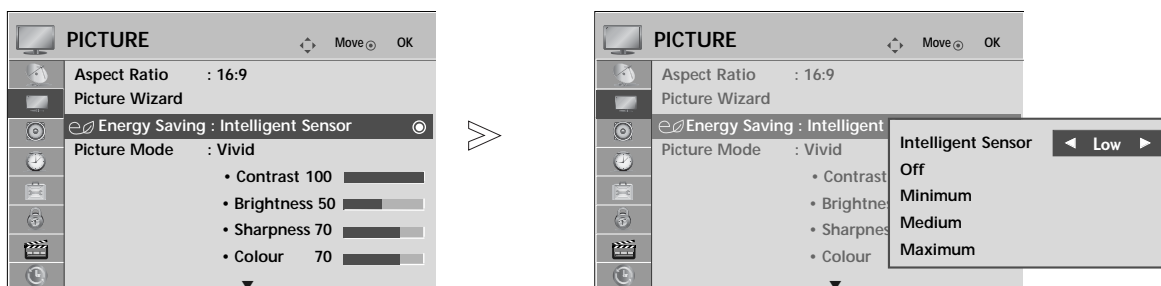
- If you stop the setting before the final step, the changes will not be saved to the TV.







## e ENERGY SAVING

It reduces the plasma display's power consumption.

The default factory setting complies with the **Energy Star** requirements and is adjusted to the comfortable level to be viewed at home.

You can increase the brightness of your screen by adjusting the **Energy Saving** level or by setting the **Picture Mode**.



- 1   Select **PICTURE**.
- 2   Select **e Energy Saving**.
- 3   Select **Intelligent Sensor, Off, Minimum, Medium or Maximum**.

When the **Intelligent Sensor** is selected,

- 4   Select **Low, Middle or High**.

- When the Intelligent sensor function is on, the most suitable picture is automatically adjusted according to the surrounding conditions.
- **Intelligent Sensor** : Adjusts picture according to the surrounding conditions.

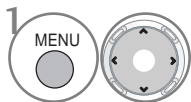
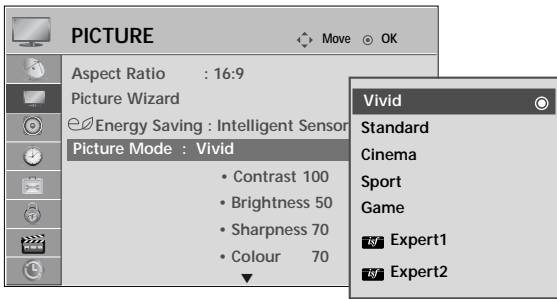
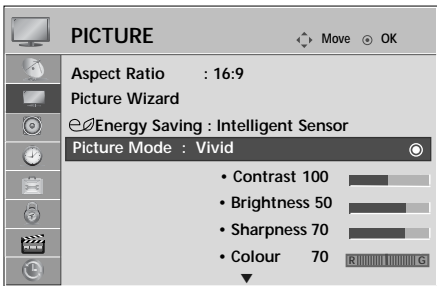
- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

# PICTURE CONTROL

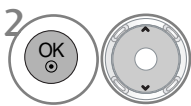
## PRESET PICTURE SETTINGS

### Picture Mode-Preset

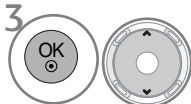
- **Picture Mode** adjusts the TV for the best picture appearance. Select the preset value in the **Picture Mode** menu based on the programme category.
- **Vivid, Standard, Cinema, Sport, and Game** Settings are preset for the optimum picture quality at the factory.
- **Vivid:** This is the mode to maximize the effect of the video in the retail store. Strengthen the contrast, brightness, colour and sharpness for vivid picture.
- **Standard:** This is the mode to realize optimum viewing condition for the general user.
- **Cinema:** This mode optimizes video for watching movies.
- **Sport:** This is the video mode to emphasize dynamic video and primary colour (e.g. white, uniform, grass, sky blue etc.) by realizing the optimal screen for sports.
- **Game:** This is the mode to realize fast response speed in a fast gaming screen.
- **Expert:** This is the mode to adjust the video in detail for video quality expert and general user.



Select **PICTURE**.



Select **Picture Mode**.



Select **Vivid, Standard, Cinema, Sport, Game, Expert1 and Expert2**.

- **Picture Mode** adjusts the TV for the best picture appearance. Select the preset value in the **Picture Mode** menu based on the programme category.
- You can also adjust **Picture Mode** in the **Q. Menu**.

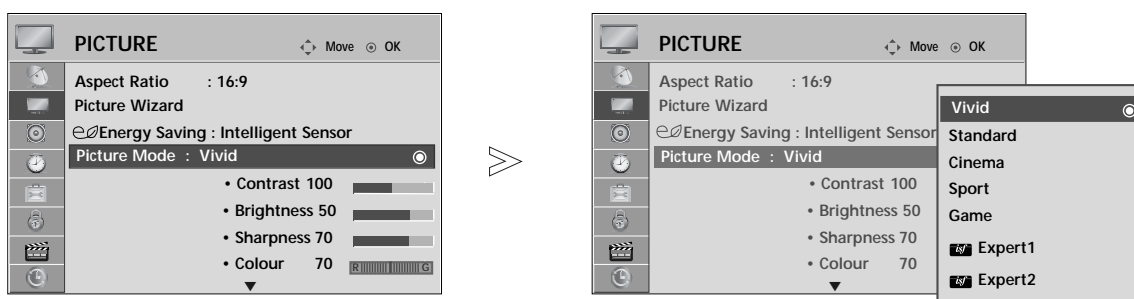
- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.



# MANUAL PICTURE ADJUSTMENT

## Picture Mode-User option

- **Contrast**  
Adjusts the difference between light and dark levels in the picture.
- **Brightness**  
Increases or decreases the amount of white in the picture.
- **Sharpness**  
Adjusts the level of crispness in the edges between the light and dark areas of the picture.  
The lower the level, the softer the image.
- **Colour**  
Adjusts intensity of all colours.
- **Tint**  
Adjusts the balance between red and green levels.



1. Select **PICTURE**.
2. Select **Picture Mode**.
3. Select **Vivid, Standard, Cinema, Sport, Game, Expert1 or Expert2**.
4. Select **Contrast, Brightness, Sharpness, Colour or Tint**.
5. Make appropriate adjustments.

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

### ! NOTE

- ▶ You cannot adjust colour, sharpness and tint in the RGB/HDMI[PC] mode.
- ▶ When the **Expert 1/2** is selected, you can select **Contrast, Brightness, H Sharpness, V Sharpness, Colour** or **Tint**.

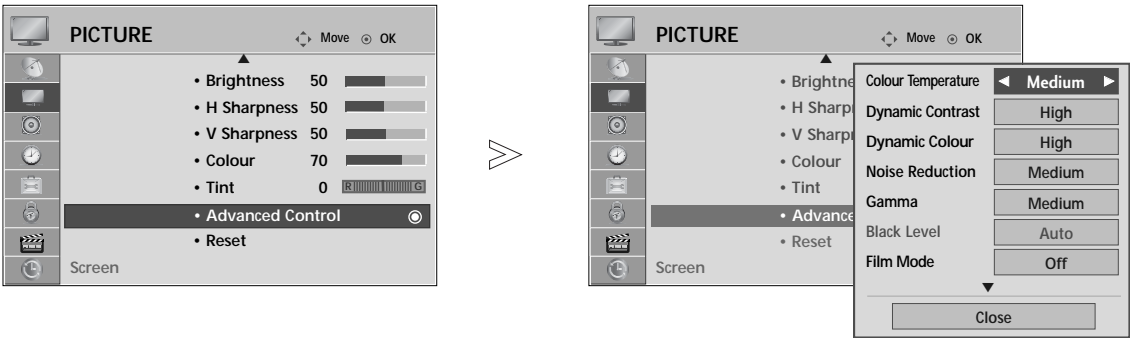
# PICTURE CONTROL


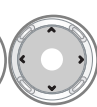

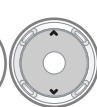

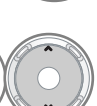

## PICTURE IMPROVEMENT TECHNOLOGY

You can calibrate the screen for each Picture Mode or set the video value according to the special video screen.

You can set the video value differently for each input.

To reset to the factory default screen after making adjustment to each video mode, execute the “Picture Reset” function for each Picture Mode.



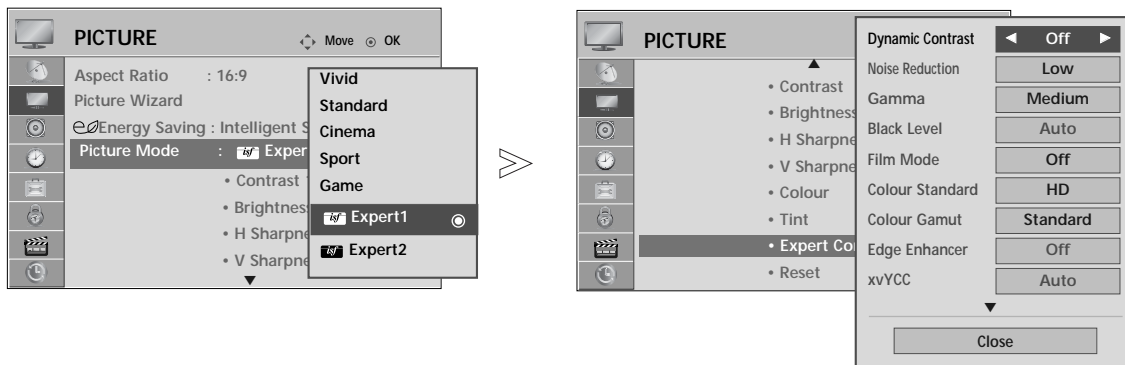
1.   Select **PICTURE**.
2.   Select **Advanced Control**.
3.   Select your desired Source. : **Colour Temperature, Dynamic Contrast, Dynamic Colour, Noise Reduction, Gamma, Black Level, Film Mode, Colour Gamut, Edge Enhancer or xvYCC.**
4.  Make appropriate adjustments.









- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

# Expert Picture Control

By segmenting categories, **tsf Expert1** and **tsf Expert2** provide more categories which users can set as they see fit, offering the optimal picture quality for users.

This may also be used to help a professional optimize the TV performance using specific videos.



- 1   Select **PICTURE**.
- 2   Select **Picture Mode**.
- 3   Select **Expert1** or **Expert2**.
- 4   Select **Expert Control**.
- 5   Select your desired Source.
- 6  Make appropriate adjustments.

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

# PICTURE CONTROL

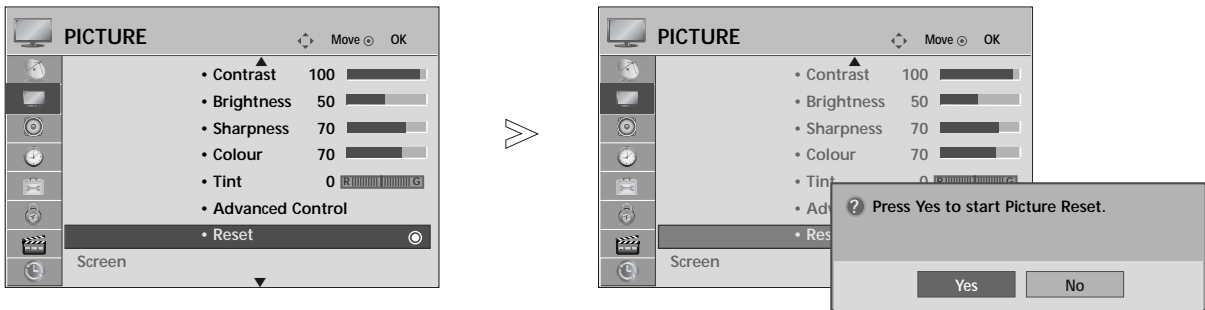
Colour Temperature (Warm/Medium/Cool)	<ul style="list-style-type: none"> <li>■ Choose one of three automatic colour adjustments. Set to warm to enhance hotter colours such as red, or set to cool to make picture bluish.</li> </ul>
Dynamic Contrast (Off/Low/High)	<ul style="list-style-type: none"> <li>■ Adjusts the contrast to keep it at the best level according to the brightness of the screen. The picture is improved by making bright parts brighter and dark parts darker.</li> </ul>
Dynamic Colour (Off/Low/High )	<ul style="list-style-type: none"> <li>■ Adjusts screen colours so that they look livelier, richer and clearer. This feature enhances hue, saturation and luminance so that red, blue, green and white look more vivid.</li> </ul>
Noise Reduction (Off/Low/Medium/High)	<ul style="list-style-type: none"> <li>■ Reduces screen noise without compromising video quality.</li> </ul>
Gamma (Low/Medium/High)	<ul style="list-style-type: none"> <li>■ You can adjust brightness of dark area and middle gray level area of the picture.                             <ul style="list-style-type: none"> <li>• <b>Low</b> : Make dark and middle gray level area of the picture brighter.</li> <li>• <b>Medium</b>: Express original picture levels.</li> <li>• <b>High</b>: Make dark and middle gray level area of the picture darker.</li> </ul> </li> </ul>
Black Level (Low/High)	<ul style="list-style-type: none"> <li>• <b>Low</b> : The picture of the screen gets darker.</li> <li>• <b>High</b> : The picture of the screen gets brighter.</li> <li>• <b>Auto</b> : Realizing the black level of the screen and set it to High or Low automatically.</li> <li>■ Set black level of the screen to proper level.</li> <li>■ This function enables to select 'Low' or 'High' in the following mode: AV(NTSC-M), HDMI or Component. Otherwise, 'Black level' is set to 'Auto'.</li> </ul>
Film Mode (On/Off)	<ul style="list-style-type: none"> <li>■ You can watch a cinema-like video by eliminating judder effect.</li> <li>■ Use this function when you watch movies.</li> </ul>
Colour Gamut (Wide/Standard)	<ul style="list-style-type: none"> <li>• <b>Standard</b> : Mode to reproduce original colour according to the standard of input signal independent of the display characteristics.</li> <li>• <b>Wide</b>: Mode to use and set the rich colour area of the display.</li> <li>■ Maximize the utilization for colour area that can be expressed.</li> </ul>
Edge Enhancer (On/Off)	<ul style="list-style-type: none"> <li>■ Shows clearer and distinctive yet natural corners of the video.</li> </ul>
xvYCC (Auto/off/on)	<ul style="list-style-type: none"> <li>■ This is the function to express richer colour.</li> <li>■ This function is enabled in "Picture mode - Cinema, Expert" when xvYCC signal is inputted through HDMI, 1080p.</li> </ul>
Colour Standard (SD/HD)	<ul style="list-style-type: none"> <li>■ Converts the colour of a different video to HD colour. This function is set for SD video (BT-601) and HD video (BT-709) colour format.</li> </ul>
Expert Pattern (Off/Pattern1/Pattern2)	<ul style="list-style-type: none"> <li>■ This is the pattern necessary for expert adjustment.</li> <li>■ This function is enabled in "Picture Mode - Expert" when you watch DTV.</li> </ul>






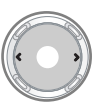

<b>Colour Filter</b> <b>(Off/Red/Green/Blue)</b>	<ul style="list-style-type: none"> <li>■ This is the function to filter the specific colours of the video. You can use the RGB filter to set colour saturation and hue accurately.</li> </ul>
<b>White Balance</b> <b>(Medium/Warm/Cool)</b>	<ul style="list-style-type: none"> <li>■ This is the function to adjust the overall colour of the screen to the feeling you want.               <ol style="list-style-type: none"> <li>• Method : 2 Points                   <ul style="list-style-type: none"> <li>• Pattern: Inner, Outer</li> <li>• Red/Green/Blue Contrast, Red/Green/Blue Brightness: The adjustment range is -50 ~ +50.</li> </ul> </li> <li>• Method : 20 Point IRE                   <ul style="list-style-type: none"> <li>• Pattern: Inner / Outer</li> <li>• IRE (Institute of Radio Engineers) is the unit to display the size of the video signal and can be set among 5, 10, 15 ~ 100. You can adjust Red, Green or Blue according to each setting.</li> <li>• Red/Green/Blue: The adjustment range is -50 ~ +50.</li> </ul> </li> </ol> </li> </ul>
<b>Colour Management System</b>	<ul style="list-style-type: none"> <li>■ As the tool used by the experts to make adjustments by using the test patterns, this does not affect other colours but can be used to selectively adjust the 6 colour areas (Red/Green/Blue/Cyan/Magenta/Yellow). Colour difference may not be distinctive even when you make the adjustments for the general video.</li> <li>■ Adjusts Red/Green/Blue/Yellow/Cyan/Magenta.</li> <li>• Red/Green/Blue/Yellow/Cyan, Magenta Colour : The adjustment range is -30 ~ +30.</li> <li>• Red/Green/Blue/Yellow/Cyan/Magenta Tint : The adjustment range is -30 ~ +30.</li> <li>■ This feature is disable in RGB-PC and HDMI (PC) mode.</li> </ul>

# PICTURE CONTROL

## PICTURE RESET

Settings of the selected picture modes return to the default factory settings.



1.   Select **PICTURE**.
2.   Select **Reset**.
3.   Select **Yes**.
4.  Initialize the adjusted value.

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

## IMAGE STICKING MINIMIZATION (ISM) METHOD

A frozen or still picture displayed on the screen for prolonged periods will result in a ghost image remaining even when you change the image. Avoid allowing a fixed image to remain on the screen for prolonged periods.

### Orbiter

Orbiter may help prevent ghost images. However, it is best not to allow any fixed image to remain on the screen. To avoid a permanent image on the screen, the screen will move every 2 minutes.

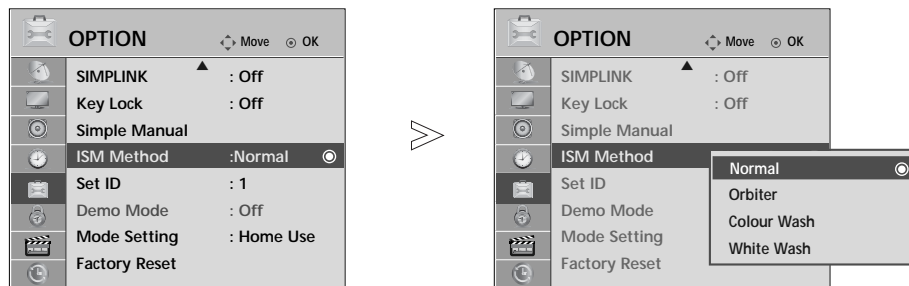
### Colour Wash

The colour block with the screen moved a little and the white pattern are alternately displayed. It is difficult to sense the afterimage occurred while the temporary afterimage is removed and the colour pattern is operating.

### White Wash

White wash removes permanent images from the screen.

**Note:** An excessive permanent image may be impossible to clear entirely with White Wash.



1 Select **OPTION**.

2 Select **ISM Method**.

3 Select **Normal, Orbiter, Colour Wash or White Wash**.

4 Save.

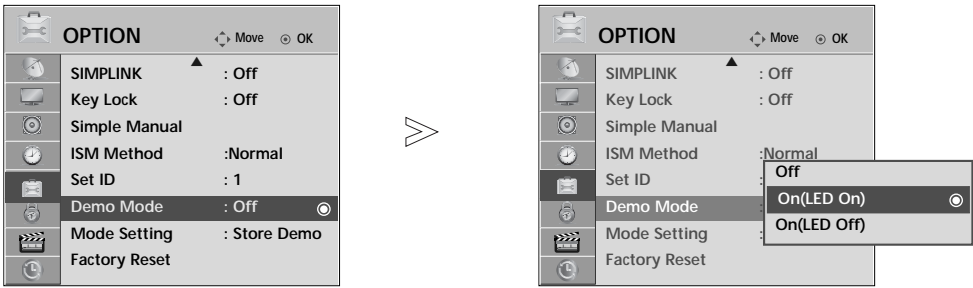
• If you do not need this function, set **Normal**.


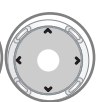

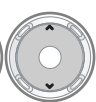

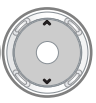


- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

# PICTURE CONTROL

## DEMO MODE

Display the slide show to explain the various logo of this TV.  
It is not possible to use **Demo Mode** in **Home Use** mode.  
In **Store Demo**, **Demo Mode** is automatically set to **On**.  
Once **Demo Mode** is set to **Off** in **Store Demo**, **Demo Mode** does not run and only the screen is reset.  
The screen is reset automatically after 5 minutes in **Demo Mode**.



- 1   Select **OPTION**.
- 2   Select **Demo Mode**.
- 3   Select **On** to show the various feature of the TV.
- 4  After a while, **Demo Mode** starts.  
If you want to stop the demo, press any button (Except  + or - and MUTE button).

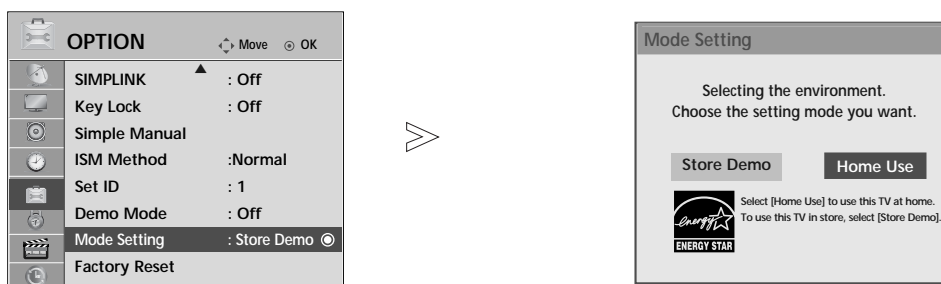
- **On(LED On)** : The LED at the bottom of TV operates in Store Mode.
- **On(LED Off)** : The LED at the bottom of TV does not operate in Store Mode.








- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.



# MODE SETTING

We recommend setting the TV to “Home Use” mode for the best picture in your home environment.  
“Store Demo” mode is an optimal setting for displaying at stores.



- 1   Select **OPTION**.
- 2   Select **Mode Setting**.
- 3   Select **Store Demo** or **Home Use**.
- 4  Save.

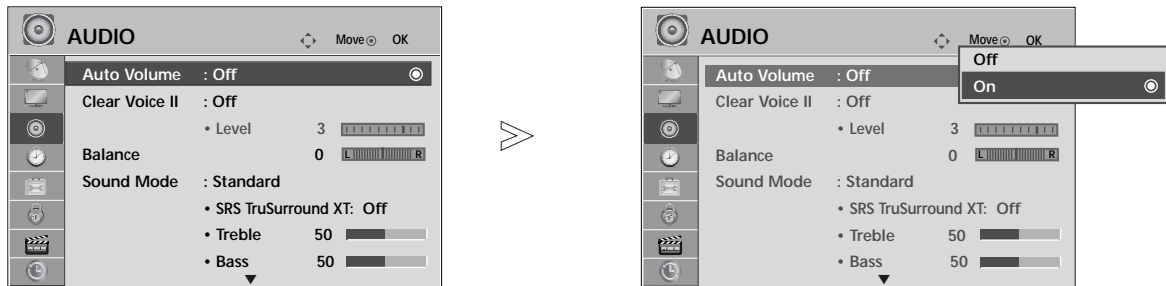
- Press the **RETURN** button to return to normal TV viewing.




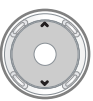

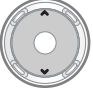

# SOUND & LANGUAGE CONTROL

## AUTO VOLUME LEVELLER (AUTO VOLUME)

Auto Volume makes sure that the volume level remains consistent whether you are watching a commercial or a regular TV programme.

Because each broadcasting station has its own signal conditions, volume adjustment may be needed every time the channel is changed. This feature allows users to enjoy stable volume levels by making automatic adjustments for each programme.

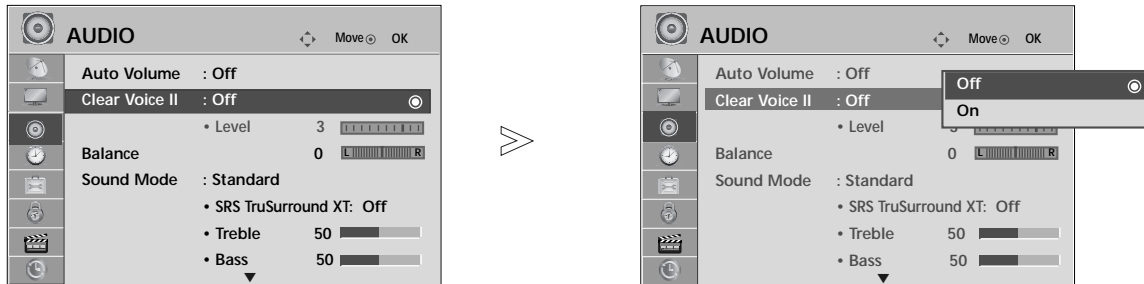


- 1   Select **AUDIO**.
- 2   Select **Auto Volume**.
- 3   Select **On** or **Off**.
- 4  Save.

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

## CLEAR VOICE II

By differentiating the human sound range from others, it improves the sound quality of voices.

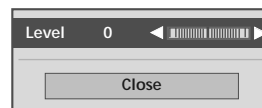


- 1   Select **AUDIO**.
- 2   Select **Clear Voice II**.
- 3   Select **On** or **Off**.

- If you select “Clear Voice II-On”, SRS TruSurround XT feature will not work.
- Select levels from ‘-6’ to ‘+6’.

### Adjustment for Clear Voice II Level With selecting On

- 4   Select **Level**.
- 5   Make appropriate adjustments.



- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

# SOUND & LANGUAGE CONTROL

## PRESET SOUND SETTINGS (SOUND MODE)

Sound Mode lets you enjoy the best sound without any special adjustment as the TV sets the appropriate sound options based on the programme content.

**Standard, Music, Cinema, Sport, and Game** are preset for optimum sound quality at the factory.

**Standard, Music, Cinema, Sport, and Game** are preset for optimum sound quality at the factory.

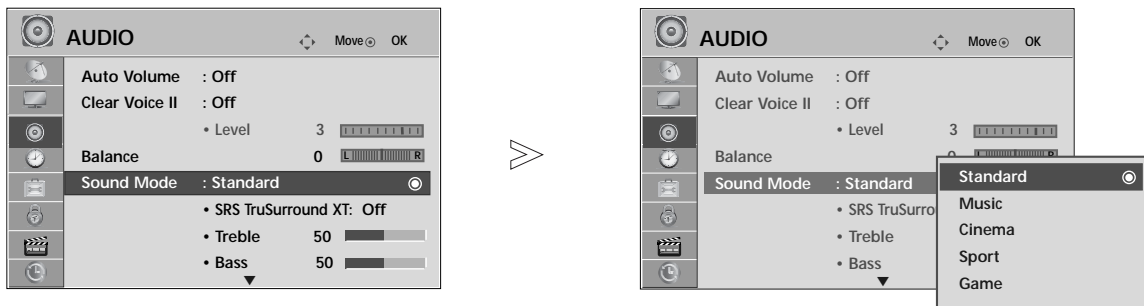
**Standard:** Offers standard-quality sound.

**Music:** Optimizes sound for listening to music.

**Cinema:** Optimizes sound for watching movies.

**Sport:** Optimizes sound for watching sports events.

**Game:** Optimizes sound for playing games.

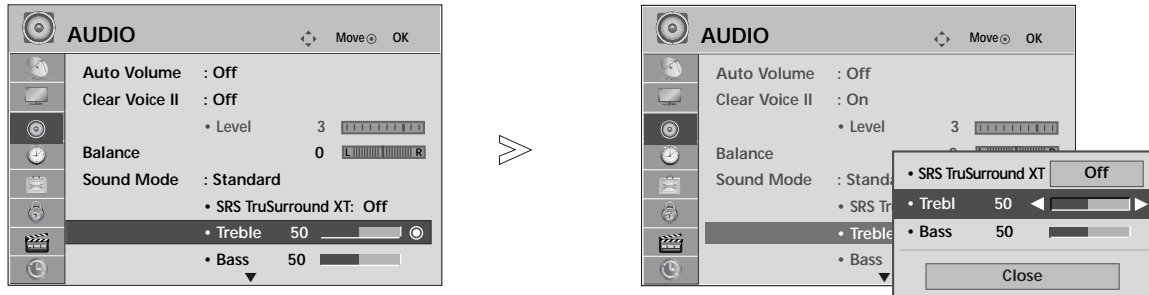


1. Select **AUDIO**.
2. Select **Sound Mode**.
3. Select **Standard, Music, Cinema, Sport or Game**.

• You can also adjust **Sound Mode** in the **Q.MENU**.

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

## SOUND SETTING ADJUSTMENT - USER MODE



- 1 Select **AUDIO**.
- 2 Select **Sound Mode**.
- 3 Select **Standard, Music, Cinema, Sport, or Game**.

- 4 Select **Treble or Bass**.
- 5 Make appropriate adjustments.

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

## SRS TRUSURROUND XT

- 1 Select **AUDIO**.
- 2 Select **SRS TruSurround XT**
- 3 Select **On or Off**.

- **SRS TruSurround XT:** TruSurround XT takes advantage of any multi-channel format without needing to add extra speakers or equipment. Dialog clarity, bass enrichment, and the addition of stereo audio enhancement produces an immersive sound experience from standard stereo material.
- If sound quality or volume is not at the level you want, it is recommended to use a separate home theatre system or amplifier to cope with different user environments.

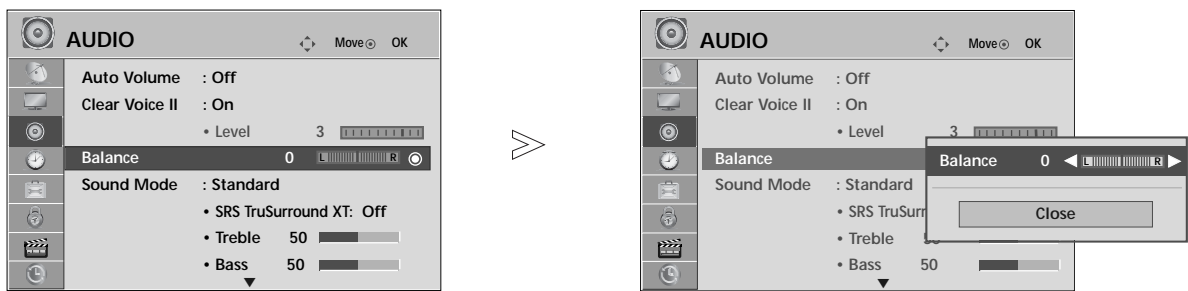
- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.



▶ is a trademark of SRS Labs, Inc.  
 ▶ TruSurround XT technology is incorporated under license from SRS Labs, Inc.

# SOUND & LANGUAGE CONTROL

## BALANCE

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



1.   Select **AUDIO**.
2.   Select **Balance**.
3.   Make appropriate adjustments.

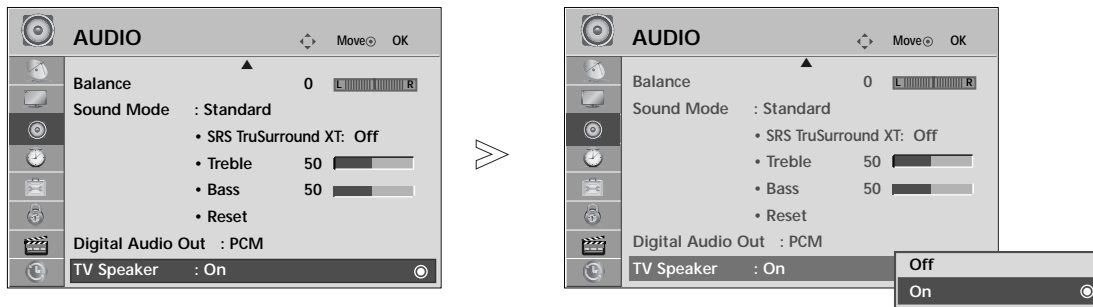
- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.


## TV SPEAKERS ON/OFF SETUP

You can adjust the TV internal speaker status.

In **AV1**, **AV2**, **COMPONENT1**, **COMPONENT2**, **RGB** and **HDMI1**, **HDMI2**, **HDMI3**, **HDMI4** with HDMI to DVI cable, the TV speaker can be operational even when there is no video signal.

If you wish to use an external Hi-Fi system, turn off the TV's internal speakers.



- 1   Select **AUDIO**.
- 2   Select **TV Speaker**.
- 3   Select **On** or **Off**.

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

### ! NOTE

- ▶ When the TV speaker is turned off while the Simplink home theatre is operating, the sound output automatically switches to the Home theatre speaker, but when the TV speaker is turned on, the sound output the TV speaker.
- ▶ Some menus in **AUDIO** are disabled when TV Speaker is set to Off.

# SOUND & LANGUAGE CONTROL

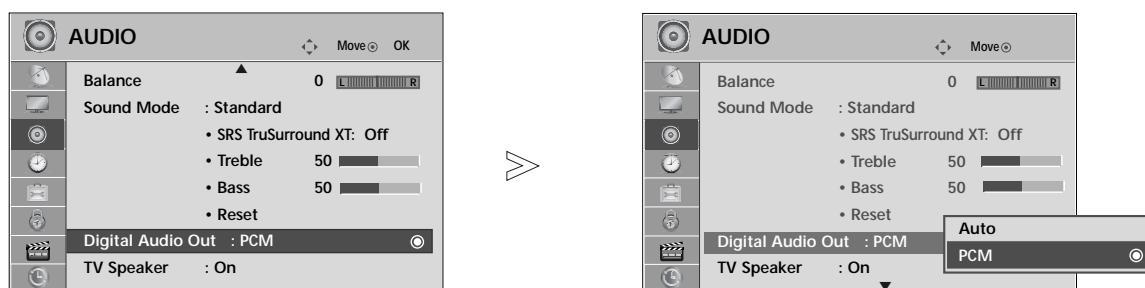
## SELECTING DIGITAL AUDIO OUT

This function allows you to select your preferred Digital Audio Output.

The TV can only output DOLBY Digital if a programme is broadcast with Dolby Digital audio.

When Dolby digital is available, selecting Dolby Digital in the Digital Audio Out menu will set SPDIF(Sony Philips Digital Interface) output to Dolby Digital.

If Auto is selected in the digital audio out menu when only PCM is available, SPDIF output will be PCM(Pulse-code modulation).



1. Select **AUDIO**.
2. Select **Digital Audio Out**.
3. Select **Auto** or **PCM**.



Manufactured under license from Dolby Laboratories. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories.

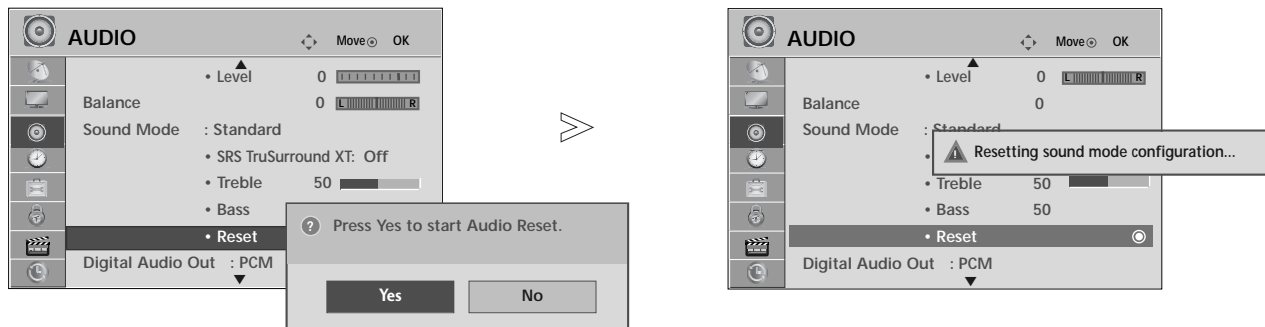
- There is a possibility that when HDMI mode, some DVD player do not make SPDIF sound, At that time, set the output of the digital audio of the DVD player to PCM.(In HDMI, Dolby Digital Plus is not supported).
- During recording or playback of audio only channel , Digital Audio Out is disabled.








- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.



# AUDIO RESET

Settings of the selected Sound Mode return to the default factory settings.



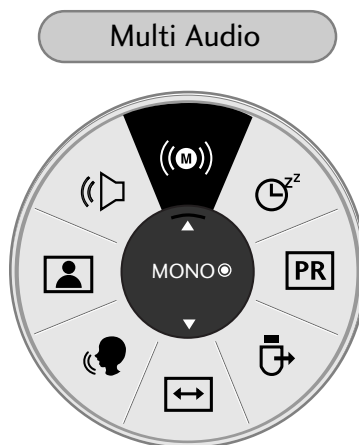
- 1   Select **AUDIO**.
- 2   Select **Reset**.
- 3   Select **Yes** or **No**.
- 4  Initialize the adjusted value.

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

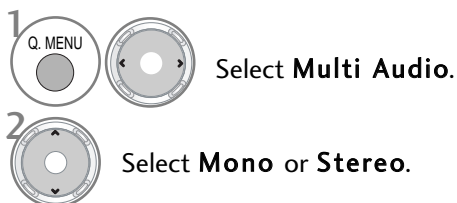
# SOUND & LANGUAGE CONTROL

## STEREO RECEPTION (IN ANALOGUE MODE ONLY)

When a programme is selected, the sound information for the station appears with the programme number and station name.



### Analogue TV



- Press the **RETURN** button to return to normal TV viewing.

## SPEAKER SOUND OUTPUT SELECTION

In AV, Component, RGB and HDMI mode, you can select output sound for the left and right loudspeakers.

Select the sound output.

**L+R:** Audio signal from audio L input is sent to the left loudspeaker and audio signal from audio R input is sent to the right loudspeaker.

**L+L:** Audio signal from audio L input is sent to left and right loudspeakers.

**R+R:** Audio signal from audio R input is sent to left and right loudspeakers.

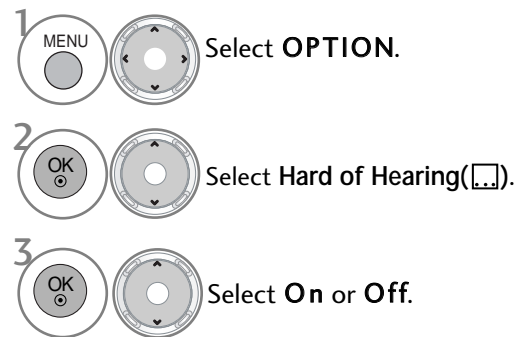
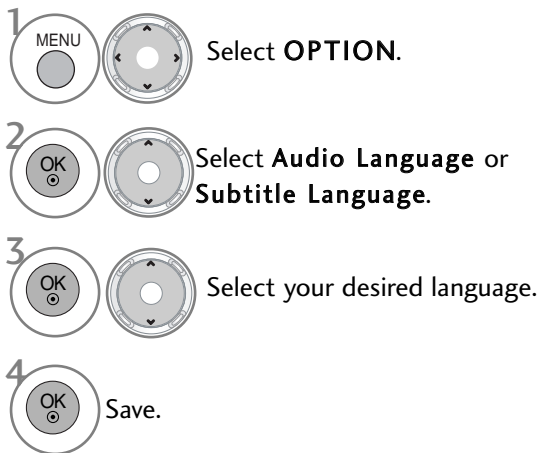
## LANGUAGE SELECTION (IN DIGITAL MODE ONLY)

The Audio function allows selection of a preferred language.

If audio data in a selected language is not broadcast, the default language audio will be played.

Use the Subtitle function when two or more subtitle languages are broadcast. If subtitle data in a selected language is not broadcast, the default language subtitle will be displayed.

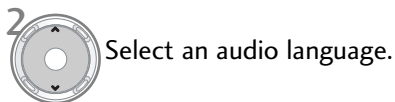
When the languages you selected as the primary for Audio Language and Subtitle Language are not supported, you can select desired language in OPTION Menu.



- Press the **RETURN** button to move to the previous menu screen.

### < Audio Language Selection >

- ▶ When two or more audio languages are broadcast, you can select the audio language.



- ▶ During recording or playback audio only channel, Audio Language Selection is disabled.

### < Subtitle Language Selection >

- ▶ When two or more subtitle languages are broadcast, you can select the subtitle language with the **SUBTITLE** button on the remote control.

- ▶ Press the  $\wedge \vee$  button to select a subtitle language.

- The audio/subtitles can be displayed in a simpler form with 1 to 3 characters broadcast by the service provider.
- When you select supplementary Audio (Audio for "Visual/Hearing Impaired") the TV may output a part of the Main audio.

### Audio Language OSD Information

Display	Status
N.A	Not Available
MPEG	MPEG Audio
Dolby Digital	Dolby Digital Audio
Visual Impaired	Audio for "Visual Impaired"
Hearing Impaired	Audio for "Hearing Impaired"

### Subtitle Language OSD Information

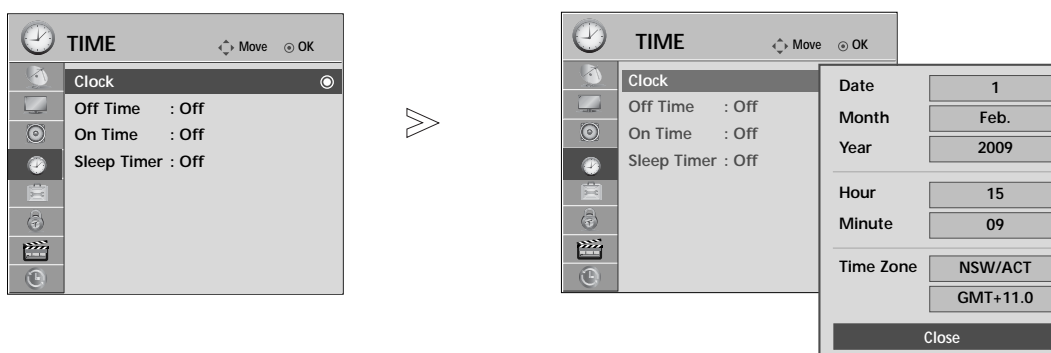
Display	Status
N.A	Not Available
Teletext	Teletext Subtitle
Hearing Impaired	Subtitle for "Hard of Hearing"

# TIME SETTING

## CLOCK SETUP

The clock is set automatically when receiving a digital signal. (You can set the clock manually only if the TV has no DTV signal.)

You must set the time correctly before using on/off timer function or schedule recording.



1. Select **TIME**.
2. Select **Clock**.
3. Select either the year, date, or time option.
4. Set the year, date, and time options.

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

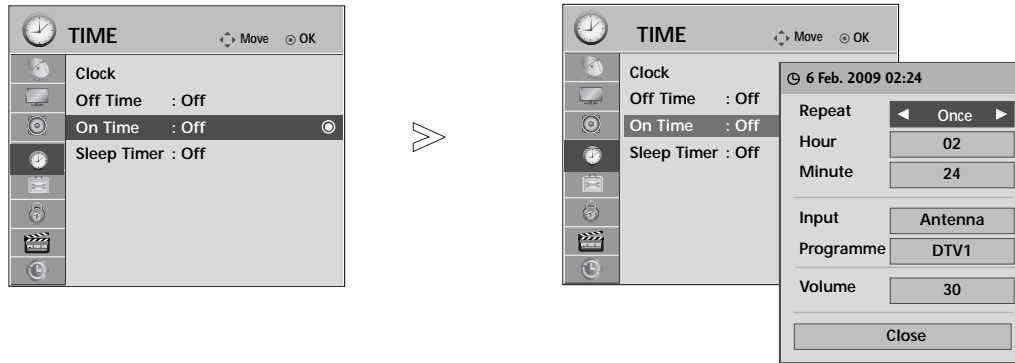
## AUTO ON/OFF TIME SETTING

The Off time function automatically switches the TV to standby at a preset time.

Two hours after the TV is switched on by the on time function it will automatically switch back to standby mode unless a button has been pressed.

The Off time function overrides the On timer function if both are set to the same time.

The TV must be in standby mode for the On timer to work.



- 1 Select **TIME**.
- 2 Select **Off Time** or **On Time**.
- 3 Select **Repeat**.
- 4 Select **Off, Once, Daily, Mon.~Fri., Mon.~Sat., Sat.~Sun., or Sunday**.
- 5 Select and set **Hour** or **Minute**.

- To cancel **On/Off Time** function, select **Off**.
- Only for On Time function

- 1 Select **Input**.
- 2 Select the desired input source.
- 3 When Selecting **Antenna**: set the programme at turn-on.
- 4 Adjust to sound level at turn-on.

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

## SLEEP TIMER SETTING

You do not have to remember to switch the TV off before you go to sleep.

The sleep timer automatically switches the TV to standby after the preset time has elapsed.

- 1 Select **Sleep Timer**.
- 2 Select **Off, 10, 20, 30, 60, 90, 120, 180 or 240 min..**

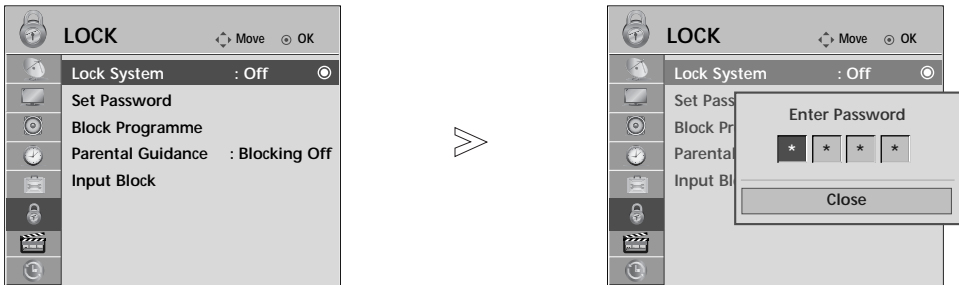
- When you switch the TV off, the preset sleep timer is cancelled.
- You can also adjust **Sleep Timer** in the **TIME** menu.





# PARENTAL CONTROL / RATINGS

## SET PASSWORD & LOCK SYSTEM

### Setting up Your Password

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

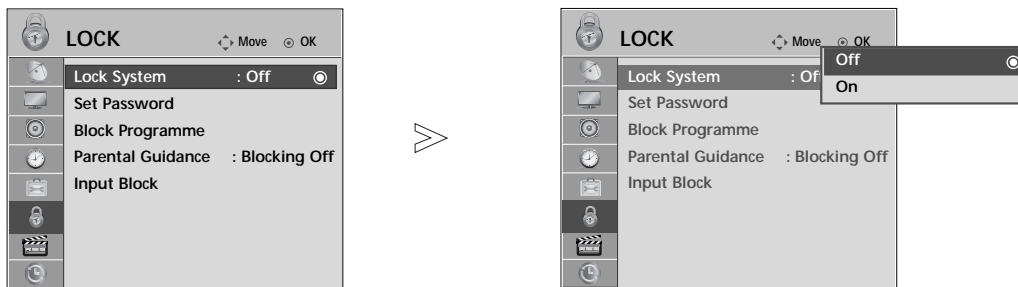









1.   Select **LOCK**.
2.   Input the password.

- Enter the password as requested.
- The TV is set up with the initial password “0-0-0-0”.

## Lock System

Revitalize **Block Programme**, **Parental Guidance** and **Input Block** function.



- 1   Select **LOCK**.
- 2   Input the password.
- 3  Select **Lock System**.
- 4   Select **On** or **Off**.

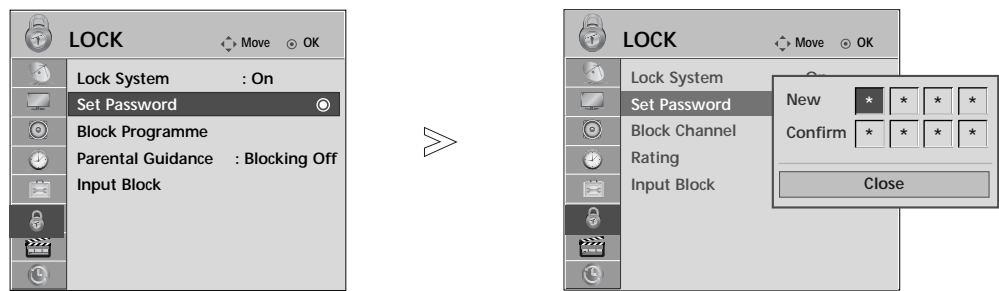
• If selecting **On**, **Block Programme**, **Parental Guidance** and **Input Block** operates.

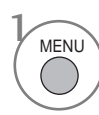
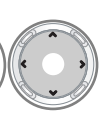

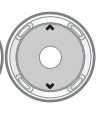

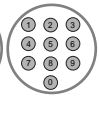

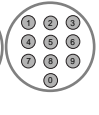
- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

# PARENTAL CONTROL / RATINGS

## Set Password

Change the password by inputting a new password twice.



-   Select **LOCK**.
-   Select **Set password**.
-   Input the password.
-   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**.

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

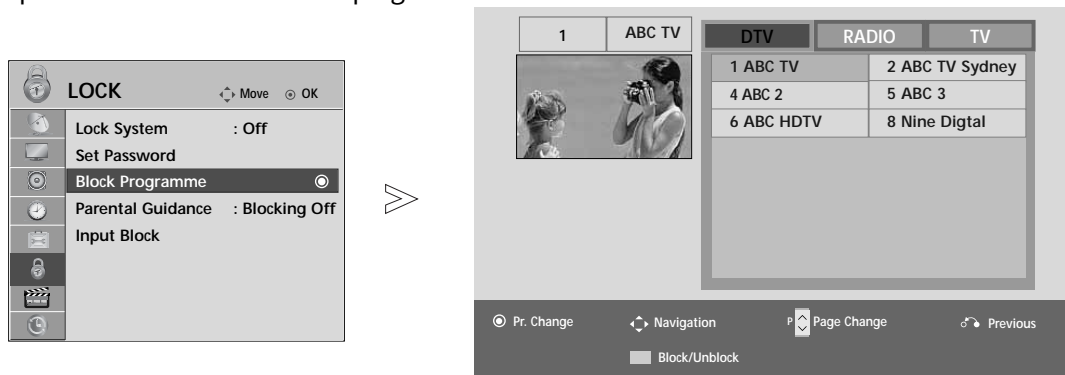










# BLOCK PROGRAMME

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

It is available to use this function in **Lock System "On"**.

Enter the password to watch a blocked programme.



- 1   Select **LOCK**.
- 2   Input the password.
- 3  Select **Block Programme**.
- 4   Select a programme to block or unblock.
- 5  Block or unblock a programme.

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

# PARENTAL CONTROL / RATINGS

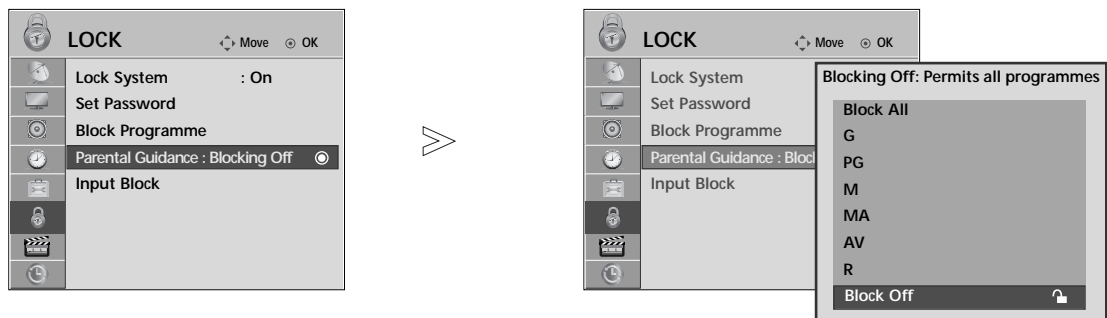
## Parental Guidance

This function operates according to information from the broadcasting station. Therefore if the signal has incorrect information, this function does not operate.

A password is required to gain access to this menu.

This set is programmed to remember which option it was last set to even if you switch the set off.

Prevents children from watching certain adult's TV programmes, according to the ratings limit set.

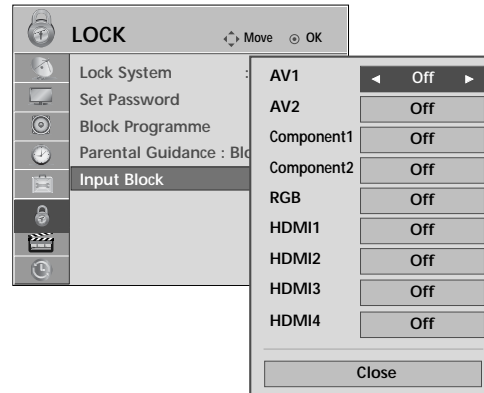
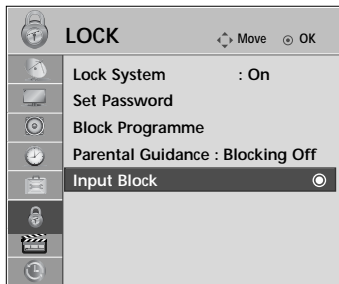












1. Select **LOCK**.
2. Input the password.
3. Select **Parental Guidance**.
4. Make appropriate adjustments.
5. Save.

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

# EXTERNAL INPUT BLOCKING

Enables you to block an input.



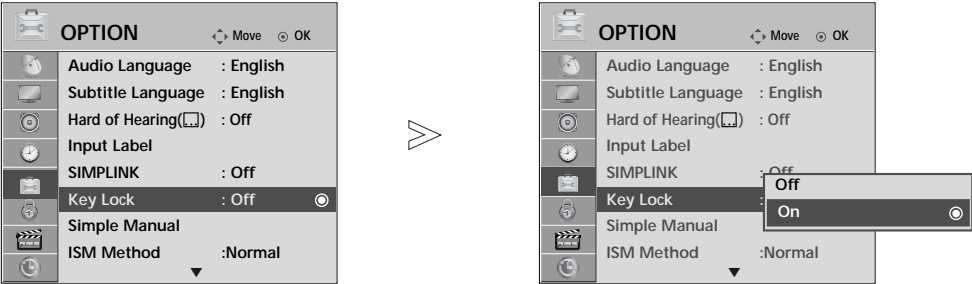
- 1   Select **LOCK**.
- 2   Input the password.
- 3   Select **Input Block**.
- 4   Select input source.
- 5  Select **On** or **Off**.
- 6  Save.

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

# PARENTAL CONTROL / RATINGS

## KEY LOCK

The TV can be set so that the remote control is required to control it. This feature can be used to prevent unauthorized viewing.



1. Select **OPTION**.
2. Select **Key Lock**.
3. Select **On** or **Off**.
4. Save.

- In **Key Lock 'On'**, if the TV is turned off, press the / **I**, **INPUT**, **P** or button on the TV or **POWER**, **INPUT**, **P** or **NUMBER** buttons on the remote control then the set will be turned on.
- With the **Key Lock On**, the display ' **Key Lock** ' appears on the screen if any button on the front panel is pressed while viewing the TV. (Except for / **I** button)

- Press the **MENU** button to return to normal TV viewing.
- Press the **RETURN** button to move to the previous menu screen.

# TELETEXT

**This feature is not available in all countries.**

Teletext is a free service broadcast by most TV stations which gives up-to-the-minute information on news, weather, television programmes, share prices and many other topics.

The teletext decoder of this TV can support the SIMPLE, TOP and FASTEXT systems. SIMPLE (standard teletext) consists of a number of pages which are selected by directly entering the corresponding page number. TOP and FASTEXT are more modern methods allowing quick and easy selection of teletext information.

## SWITCH ON/OFF

Press the **TEXT** button to switch to teletext. The initial page or last page viewed appears on the screen.

Two page numbers, TV station name, date and time are displayed on the screen headline. The first page number indicates your selection, while the second shows the current page displayed.

Press the **TEXT** button to switch off teletext. The previous mode reappears.



## SIMPLE TEXT

### ■ Page selection

- 1 Enter the desired page number as a three digit number with the NUMBER buttons. If during selection you press a wrong number, you must complete the three digit number and then re-enter the correct page number.
- 2 The **P**  $\wedge$   $\vee$  button can be used to select the preceding or following page.

## TOP TEXT

The user guide displays four fields-red, green, yellow and blue at the bottom of the screen. The yellow field denotes the next group and the blue field indicates the next block.

### ■ Block / group / page selection

- 1 With the blue button you can progress from block to block.
- 2 Use the yellow button to proceed to the next group with automatic overflow to the next block.
- 3 With the green button you can proceed to the next existing page with automatic overflow to the next group. Alternatively the **P**  $\wedge$  button can be used.
- 4 The red button returns to the previous selection. Alternatively the **P**  $\vee$  button can be used.

### ■ Direct page selection


As with SIMPLE teletext mode, you can select a page by entering it as a three digit number using the NUMBER buttons in TOP mode.

# TELETEXT

## FASTEXT

The teletext pages are colour coded along the bottom of the screen and are selected by pressing the corresponding coloured button.

### ■ Page selection

- 1 Press the **T.OPT** button and then use  $\wedge \vee$  button to select  menu. Display the index page.
- 2 You can select the pages which are colour coded along the bottom line with corresponding coloured buttons.
- 3 AS with SIMPLE teletext mode, you can select a page by entering its three digit page number with the **NUMBER** buttons in FASTEXT mode.
- 4 The **P  $\wedge \vee$**  button can be used to select the preceding or following page.

## SPECIAL TELETEXT FUNCTIONS

- Press the **T. OPT** button and then use  $\wedge \vee$  button to select the **Text Option** menu.



### ■ Index

Select the each index page.



### ■ Time

When viewing a TV programme, select this menu to display the time at the top right hand corner of the screen.

In the teletext mode, press this button to select a sub page number. The sub page number is displayed at the bottom of the screen. To hold or change the sub page, press the **RED/GREEN**, **< >** or **NUMBER** buttons.



### ■ Hold

Stops the automatic page change which will occur if a teletext page consists of 2 or more sub pages. The number of sub pages and the sub page displayed is, usually, shown on the screen below the time. When this menu is selected the stop symbol is displayed at the top left-hand corner of the screen and the automatic page change is inactive.



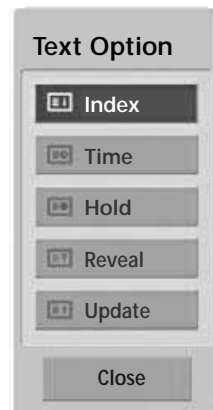
### ■ Reveal

Select this menu to display concealed information, such as solutions to riddles or puzzles.



### ■ Update

Displays the TV picture on the screen while waiting for a new teletext page. The display will appear at the top left hand corner of the screen. When the updated page is available then display will change to the page number. Select this menu again to view the updated teletext page.



# APPENDIX

## TROUBLESHOOTING

### The TV does not operate properly.


The remote control does not work	<ul style="list-style-type: none"> <li>■ Check to see if there is any object between the TV and the remote control causing an obstruction. Ensure you are pointing the remote control directly at the TV.</li> <li>■ Ensure that the batteries are installed with correct polarity (+ to +, - to -).</li> <li>■ Install new batteries.</li> </ul>
Power is suddenly turned off	<ul style="list-style-type: none"> <li>■ Is the sleep timer set?</li> <li>■ Check the power control settings. Has the Power supply been interrupted.</li> <li>■ The TV goes into Standby mode automatically if no signal is received and no operation is performed for 15 minutes.</li> </ul>

### The video function does not work.

No picture & No sound	<ul style="list-style-type: none"> <li>■ Check whether the TV is switched on.</li> <li>■ Try another channel. The problem may be with the broadcast.</li> <li>■ Is the power cord inserted correctly into the mains?</li> <li>■ Check your antenna direction and/or location.</li> <li>■ Test the mains outlet by plugging another TV into the same outlet.</li> </ul>
Picture appears slowly after switching on	<ul style="list-style-type: none"> <li>■ This is normal, the image is muted during the TV startup process. Please contact your service centre, if the picture has not appeared after five minutes.</li> </ul>
No or poor colour or poor picture	<ul style="list-style-type: none"> <li>■ Adjust Colour in menu option.</li> <li>■ Allow a sufficient distance between the TV and the VCR.</li> <li>■ Try another channel. The problem may be with the broadcast.</li> <li>■ Are the video cables installed properly?</li> <li>■ Activate any function to restore the brightness of the picture.</li> </ul>
Horizontal/vertical bars or picture shaking	<ul style="list-style-type: none"> <li>■ Check for local interference such as an electrical appliance or power tool.</li> </ul>
Poor reception on some channels	<ul style="list-style-type: none"> <li>■ Station or cable channel experiencing problems, tune to another station.</li> <li>■ Station signal is weak, reposition the antenna to receive weaker stations.</li> <li>■ Check for sources of possible interference.</li> </ul>
Lines or streaks in pictures	<ul style="list-style-type: none"> <li>■ Check antenna (Change the position of the antenna).</li> </ul>
No picture when connecting HDMI	<ul style="list-style-type: none"> <li>■ Check that your HDMI cable is version 1.3 or higher. If the HDMI cables don't support HDMI version 1.3, flickering or no screen display can result. Please use the latest cables that support at least HDMI version 1.3.</li> </ul>

# APPENDIX

## The audio function does not work.

Picture OK & No sound	<ul style="list-style-type: none"> <li>■ Press the  + or - button.</li> <li>■ Sound muted? Press <b>MUTE</b> button.</li> <li>■ Try another channel. The problem may be with the broadcast.</li> <li>■ Are the audio cables installed properly?</li> </ul>
No output from one of the speakers	<ul style="list-style-type: none"> <li>■ Adjust <b>Balance</b> in menu option.</li> </ul>
Unusual sound from inside the TV	<ul style="list-style-type: none"> <li>■ A change in ambient humidity or temperature may result in an unusual noise when the TV is switched on or off and does not indicate a fault with the TV.</li> </ul>
No sound when connecting HDMI or USB	<ul style="list-style-type: none"> <li>■ Check HDMI cable over version 1.3.</li> <li>■ Check USB cable over version 2.0.</li> </ul>

\*This feature is not available for all models.

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

The signal is out of range (Invalid format)	<ul style="list-style-type: none"> <li>■ Adjust resolution, horizontal frequency, or vertical frequency.</li> <li>■ Check the input source.</li> </ul>
Vertical bar or stripe on background & Horizontal Noise & Incorrect position	<ul style="list-style-type: none"> <li>■ Use Auto configure or adjust size, phase, or H/V position. (Option)</li> </ul>
Screen colour is unstable or single colour	<ul style="list-style-type: none"> <li>■ Check the signal cable.</li> <li>■ Reinstall the PC video card.</li> </ul>

## There is a problem with PICTURE settings.

When the user changes the picture settings, the TV automatically converts back to the initial settings after a certain period of time.	<ul style="list-style-type: none"> <li>■ It means that the TV is currently set to <b>Store Demo</b> mode. To switch to <b>Home Use</b> mode you should do the followings: From the TV Menu, choose <b>OPTION</b> -&gt; Choose <b>Mode Setting</b> -&gt; Choose <b>Home Use</b>. Now, you have completed switching to the <b>Home Use</b> mode.</li> </ul>
--	---



# MAINTENANCE

Early malfunctions can be prevented. Careful and regular cleaning can prolong the life of your new TV.

Caution: Be sure to switch the power off and unplug the power cord before you begin any cleaning.

## Cleaning the Screen

- 1 A good way to keep the dust off your screen for a while is to wet a soft cloth in a mixture of lukewarm water and a little fabric softener or dish washing detergent. Wring the cloth until it is almost dry, and then use it to wipe the screen.
- 2 Ensure there is no excess water on the screen. Allow any water or dampness to evaporate before switching on.

## Cleaning the Cabinet

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

## Extended Absence

### CAUTION

- If you expect to leave your TV dormant for prolonged periods (such as a holiday), unplug the power cord to protect against possible damage from lightning or power surges.

# APPENDIX

## PRODUCT SPECIFICATIONS

MODELS		50PS7*** 50PS70FD-AA	60PS7*** 60PS70FD-AA
Dimensions (Width x Height x Depth)	with stand	1228.8 x 835.8 x 309 mm 48.4 x 32.9 x 12.2 inches	1465.4 x 986.4 x 371 mm 57.7 x 38.9 x 14.6 inches
	without stand	1228.8 x 784.5 x 78.9 mm 48.4 x 30.9 x 3.1 inches	1465.4 x 932.2 x 82.1 mm 57.7 x 36.7 x 3.2 inches
Weight	with stand	38.1 kg / 84.0 lbs	53.3 kg / 117.5 lbs
	without stand	34.1 kg / 75.2 lbs	46.3 kg / 102.1 lbs
Power requirement		AC100-240V~ 50/60Hz	AC100-240V~ 50/60Hz
Television System Programme Coverage External Antenna Impedance		PAL B/B, DVB-T VHF 0-12, UHF 20-75, CATV 02-44, DTV 06-12, 27-69 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%	
Supported movie files		Refer to p. 77 ~ 78	

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

This function is not available for all models.

## PROGRAMMING THE REMOTE CONTROL

The remote control is a multi brand or universal remote. It can be programmed. to operate most remote controlled devices from other manufacturers.

Note that the remote control may not control all models from other brands.

### Programming a code into a remote mode

- 1 Testing your remote control.  
To find out whether your remote control can operate other components without programming, turn on a component such as a STB and press the corresponding mode button (such as **STB**) on the remote control, while pointing at the component. Test the **POWER** and **P** ^ v buttons to see if the component responds correctly. If the component does not operate correctly, the remote control requires programming to operate the device.
- 2 Switch on the component to be programmed, then press the corresponding mode button (such as **STB**) on the remote control. The remote control button of the desired device is illuminated.
- 3 Press the **MENU** and **MUTE** buttons simultaneously, the remote control is ready to be programmed with the code.
- 4 Enter a code number using the number buttons on the remote control. Programming code numbers for the corresponding component can be found on the following pages. If the code is correct, the device will turn off.
- 5 Press the **MENU** button to store the code.
- 6 Test the remote control functions to see if the component responds correctly. If not, repeat from step 2.

### HDSTB

Brand	Codes	Brand	Codes	Brand	Codes
ALPHASTAR DSR	123	HOUSTON TRACKER	033 037 039 051	PROSAT	072
AMPLICA	050		057 104	RCA	066 106
BIRDVIEW	051 126 129	HUGHES	068	REALISTIC	043 074
CHANNEL MASTER	013 014 015 018	JANIEL	060 147	SAMSUNG	123
	036 055	JERROLD	061	SATELLITE SERVICE CO	028 035 047 057
CHAPARRAL	008 009 012 077	KATHREIN	108		085
CITOH	054	LEGEND	057	SCIENTIFIC ATLANTA	032 138
CURTIS MATHES	050 145	LG	001	SONY	103
DRAKE	005 006 007 010	LUTRON	132	STARCAST	041
	011 052 112 116	LUXOR	062 144	SUPER GUIDE	020 124 125
	141	MACOM	010 059 063 064	TEECOM	023 026 075 087
DX ANTENNA	024 046 056 076		065		088 090 107 130
ECHOSTAR	038 040 057 058	MEMOREX	057		137
	093 094 095 096	NEXTWAVE	028 124 125	TOSHIBA	002 127
	097 098 099 100	NORSAT	069 070	UNIDEN	016 025 042 043
	122	PACE SKY SATELLITE	143		044 045 048 049
ELECTRO HOME	089	PANASONIC	060 142		078 079 080 086
EUROPLUS	114	PANSAT	121		10 135 136
FUJITSU	017 021 022 027	PERSONAL CABLE	117	VIEWSTAR	115
	133 134	PHILIPS	071	WINEGARD	128 146
GENERAL INSTRUMENT	003 004 016 029	PICO	105	ZENITH	081 082 083 084
	031 059 101	PRESIDENT	019 102		091 120
HITACHI	139 140	PRIMESTAR	030 110 111		

IR CODES

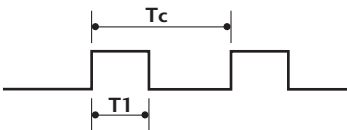
1. How to Connect

- Connect your wired remote control to the Remote Control port on the TV.

2. Remote Control IR Codes

■ Output waveform

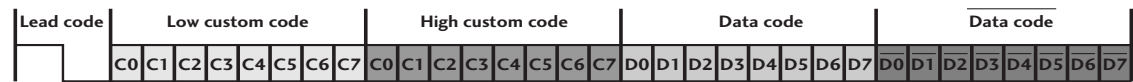
Single pulse, modulated with 37.917KHz signal at 455KHz



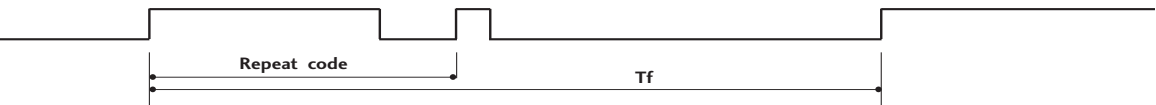
Carrier frequency  
 $FCAR = 1/T_c = f_{OSC}/12$   
Duty ratio =  $T_1/T_c = 1/3$

■ Configuration of frame

1st frame



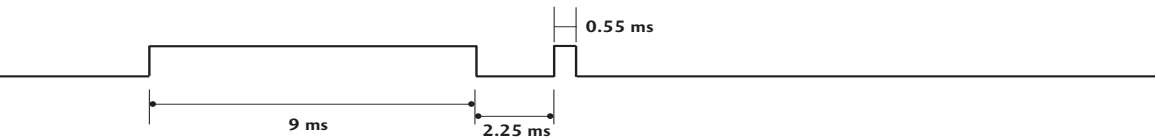
Repeat frame



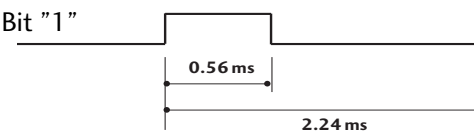
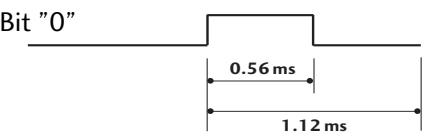
■ Lead code



■ Repeat code

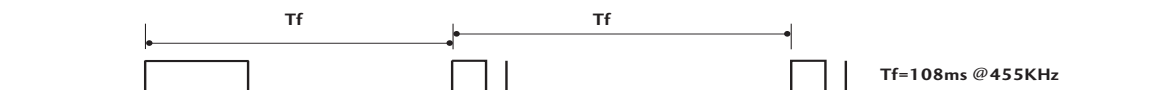


■ Bit description



■ Frame interval:  $T_f$

The waveform is transmitted as long as a key is depressed.



Code (Hexa)	Function	Note
95	Energy Saving	R/C BUTTON
08	POWER	R/C BUTTON(POWER ON/OFF)
0B	INPUT	R/C BUTTON
79	RATIO	R/C BUTTON
F0	TV/RAD	R/C BUTTON
45	Q.MENU	R/C BUTTON
43	MENU	R/C BUTTON
AB	GUIDE	R/C BUTTON
40	Up (^)	R/C BUTTON
41	Down (v)	R/C BUTTON
07	Left (<)	R/C BUTTON
06	Right (>)	R/C BUTTON
44	OK(⊙)	R/C BUTTON
28	RETURN/EXIT	R/C BUTTON
AA	INFO ⓘ	R/C BUTTON
30	AV MODE	R/C BUTTON
02	⏮ +	R/C BUTTON
03	⏮ -	R/C BUTTON
1E	FAV	R/C BUTTON
09	MUTE	R/C BUTTON
00	P ^	R/C BUTTON
01	P v	R/C BUTTON
10~19	Number Key 0~9	R/C BUTTON
53	LIST	R/C BUTTON
1A	Q.VIEW	R/C BUTTON
72	RED Key	R/C BUTTON
71	GREEN Key	R/C BUTTON
63	YELLOW Key	R/C BUTTON
61	BLUE Key	R/C BUTTON
20	TEXT	R/C BUTTON
21	T.OPT(T.Option)	R/C BUTTON
39	SUBTITLE	R/C BUTTON
7E	SIMPLINK	R/C BUTTON
B1	Stop/Live	R/C BUTTON
BD	Record	R/C BUTTON
8F	⏮	R/C BUTTON
8E	⏭	R/C BUTTON
B0	▶	R/C BUTTON
BA	II	R/C BUTTON

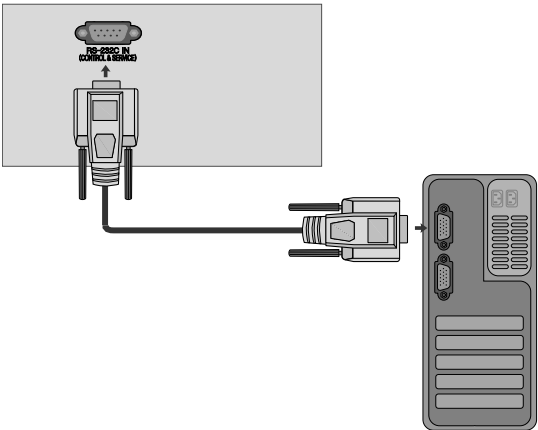
EXTERNAL CONTROL DEVICE SETUP

RS-232C Setup

Connect the RS-232C (serial port) input jack to an external control device (such as a computer or an A/V control system) to control the product’s functions externally.

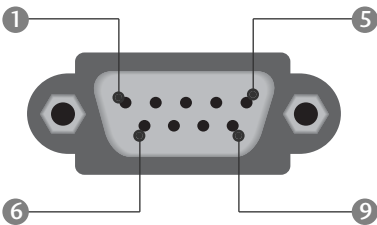
Connect the serial port of the control device to the RS-232C jack on the product back panel.

Note: RS-232C connection cables are not supplied with the product.



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

7-Wire Configurations (Standard RS-232C cable)

	PC	TV	
RXD	2	3	TXD
TXD	3	2	RXD
GND	5	5	GND
DTR	4	6	DSR
DSR	6	4	DTR
RTS	7	8	CTS
CTS	8	7	RTS
	D-Sub 9	D-Sub 9	

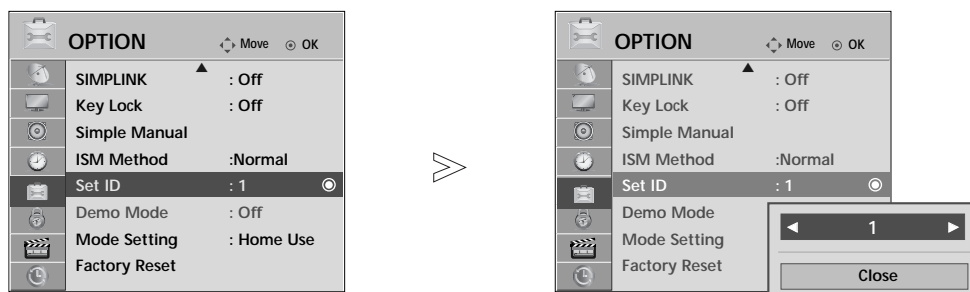
3-Wire Configurations(Not standard)







	PC	TV	
RXD	2	3	TXD
TXD	3	2	RXD
GND	5	5	GND
DTR	4	6	DTR
DSR	6	4	DSR
RTS	7	7	RTS
CTS	8	8	CTS
	D-Sub 9	D-Sub 9	

## Set ID

Use this function to specify a set ID number.

Refer to 'Real Data Mapping' ► p.129



- 1   Select **OPTION**.
- 2   Select **Set ID**.
- 3   Adjust **Set ID** to choose the desired TV ID number.  
The adjustment range of SET ID is 1~99.

• Press **RETURN** to move to the previous menu screen.

# APPENDIX

## 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.

### Command Reference List

	COMMAND 1	COMMAND 2	DATA (Hexadecimal)
01. Power Control	k	a	00 ~ 01
02. Aspect Ratio	k	c	Refer to p.127
03. Screen Mute	k	d	00 ~ 01
04. Volume Mute	k	e	00 ~ 01
05. Volume Control	k	f	00 ~ 64
06. Contrast	k	g	00 ~ 64
07. Brightness	k	h	00 ~ 64
08. Colour	k	i	00 ~ 64
09. Tint	k	j	00 ~ 64
10. Sharpness	k	k	00 ~ 64
11. OSD Select	k	l	00 ~ 01
12. Remote control lock mode	k	m	00 ~ 01
13. Treble	k	r	00 ~ 64
14. Bass	k	s	00 ~ 64
15. Balance	k	t	00 ~ 64
16. Colour Temperature	k	u	00 ~ 02
17. ISM Method	j	p	Refer to p.129
18. Lower Power	j	q	00 ~ 12
19. Auto Configure	j	u	01
20. Tune Command	m	a	Refer to p.130
21. Programme Memory/ Skip	m	b	00 ~ 01
22. Key	m	c	Key Code
23. Input select	x	b	Refer to p.130

- \* When setting the 17 ~ 23, a menu does not appear on screen.
- \* Note: During USB operations such as Dvix or EMF, all commands except Power (ka) and Key (mc) are not executed and treated as NG.

### Transmission / Receiving Protocol

#### Transmission

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

- \* [Command 1] : First command to control the TV.  
(j, k, m or x)
- \* [Command 2] : Second command to control the TV.
- \* [Set ID] : You can adjust the set ID to choose desired monitor ID number in option menu. Adjustment range is 1 ~ 99. When selecting Set ID '0', every connected set 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.
- \* [Cr] : Carriage Return  
ASCII code '0x0D'
- \* [ ] : ASCII code 'space (0x20)'

#### OK Acknowledgement

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

- \* The set 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.

#### Error Acknowledgement

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

- \* The set transmits ACK (acknowledgement) based on this format when receiving abnormal data from non-viable functions or communication errors.

Data 00: Illegal Code



**01. Power Control (Command: k a)**

To control Power On/Off of the TV.

Transmission

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

Data 00: Power Off                      Data 01: Power On

Ack

```
[a][ ][Set ID][ ][OK][Data][x]
```

**02. Aspect Ratio (Command: k c)**

To adjust the screen format.

Transmission

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

Data 01: 4 : 3	07: 14 : 9
02: 16 : 9	09: Just Scan
04: Zoom	10: Cinema Zoom1
06: Original	⋮
	1F: Cinema Zoom16

Ack

```
[c][ ][Set ID][ ][OK][Data][x]
```

**03. Screen Mute (Command: k d)**

To select screen mute on/off.

Transmission

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

Ack

```
[d][ ][Set ID][ ][OK][Data][x]
```

Data 00: Screen Mute off (Picture On)

Data 01: Screen Mute on (Picture Off)

\* In case of screen mute on, TV will not display On Screen Display (OSD).

**04. Volume Mute (Command: ke)**

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 00: Volume Mute On (Volume Off)

Data 01: Volume Mute Off (Volume On)

Ack

```
[e][ ][Set ID][ ][OK][Data][x]
```

**05. Volume Control (Command: k 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: 00H ~ Max: 64H

(\*transmit by Hexadecimal code)

\*Refer to 'Real data mapping'. ► p.129.

Ack

```
[f][ ][Set ID][ ][OK][Data][x]
```

**06. Contrast (Command: k g)**

To adjust screen contrast.

You can also adjust contrast in the PICTURE Menu.

Transmission

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

Data Min: 00H ~ Max: 64H

(\*transmit by Hexadecimal code)

\*Refer to 'Real data mapping'. ► p.129.

Ack

```
[g][ ][Set ID][ ][OK][Data][x]
```

**07. Brightness (Command: k h)**

To adjust screen brightness.

You can also adjust brightness in the PICTURE Menu.

Transmission

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

Data Min: 00H ~ Max: 64H

(\*transmit by Hexadecimal code)

\*Refer to 'Real data mapping'. ► p.129.

Ack

```
[h][ ][Set ID][ ][OK][Data][x]
```

# APPENDIX

## 08. Colour (Command: k i)

To adjust screen colour.

You can also adjust colour in the PICTURE Menu.

### *Transmission*

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

Data Min: 00H ~ Max: 64H

(\*transmit by Hexadecimal code)

\*Refer to 'Real data mapping'. ► p.129.

### *Ack*

```
[i][ ][Set ID][ ][OK][Data][x]
```

## 09. Tint (Command: k j)

To adjust screen tint.

You can also adjust tint in the PICTURE Menu.

### *Transmission*

```
[k][j][ ][Set ID][ ][Data][Cr]
```

Data Red: 00H ~ Green: 64H

(\*transmit by Hexadecimal code)

\*Refer to 'Real data mapping'. ► p.129.

### *Ack*

```
[j][ ][Set ID][ ][OK][Data][x]
```

## 10. Sharpness (Command: k k)

To adjust screen sharpness.

You can also adjust sharpness in the PICTURE Menu.

### *Transmission*

```
[k][k][ ][Set ID][ ][Data][Cr]
```

Data Min: 00H ~ Max: 64H

(\*transmit by Hexadecimal code)

\*Refer to 'Real data mapping'. ► p.129.

### *Ack*

```
[k][ ][Set ID][ ][OK/NG][Data][x]
```

## 11. OSD Select (Command: k l)

To select OSD (On Screen Display) on/off.

### *Transmission*

```
[k][l][ ][Set ID][ ][Data][Cr]
```

Data 00: OSD Off

Data 01: OSD On

### *Ack*

```
[l][ ][Set ID][ ][OK][Data][x]
```

## 12. Remote Control Lock Mode (Command: k m)

To lock the remote control and the front panel controls on the set.

### *Transmission*

```
[k][m][ ][Set ID][ ][Data][Cr]
```

Data 00: off

Data 01: on

### *Ack*

```
[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.

## 13. Treble (Command: k r)

To adjust treble.

You can also adjust treble in the AUDIO menu.

### *Transmission*

```
[k][r][ ][Set ID][ ][Data][Cr]
```

Data Min: 00H ~ Max: 64H

(\*transmit by Hexadecimal code)

\*Refer to 'Real data mapping'. ► p.129.

### *Ack*

```
[r][ ][Set ID][ ][OK][Data][x]
```

## 14. Bass (Command: k s)

To adjust bass.

You can also adjust bass in the AUDIO menu.

### *Transmission*

```
[k][s][ ][Set ID][ ][Data][Cr]
```

Data Min: 00H ~ Max: 64H

(\*transmit by Hexadecimal code)

\*Refer to 'Real data mapping'. ► p.129.

### *Ack*

```
[s][ ][Set ID][ ][OK][Data][x]
```

### 15. Balance (Command: k t)

To adjust balance.

You can also adjust balance in the AUDIO menu.

*Transmission*

[k][t][ ][Set ID][ ][Data][Cr]

Data Min: 00H ~ Max: 64H

(\*transmit by Hexadecimal code)

\*Refer to 'Real data mapping' ► p.129.

*Ack*

[t][ ][Set ID][ ][OK][Data][x]

### 16. Colour Temperature (Command: k u)

To adjust colour temperature.

You can also adjust colour temperature in the PICTURE menu.

*Transmission*

[k][u][ ][Set ID][ ][Data][Cr]

Data 00: Medium 01: Cool 02: Warm

*Ack*

[u][ ][Set ID][ ][OK][Data][x]

### 17. ISM Method (Command: j p)

To avoid having a fixed image remain on screen.

[j][p][ ][Set ID][ ][Data][Cr]

0	0	0	0	0	0	0	0
└ 2 th Byte ─┘				└ 1 th Byte ─┘			

7	6	5	4	3	2	1	0	Data	Function
0	0	0	0	0	0	1	0	2H	Orbiter
0	0	0	0	0	1	0	0	4H	White Wash
0	0	0	0	1	0	0	0	8H	Normal
0	0	1	0	0	0	0	0	20H	Colour Wash
X	X	X	X						Reserved

*Ack*

[p][ ][Set ID][ ][OK][Data][x]

Data : 2H, 4H, 8H, 20H

\* More two kinds of function can not be set at a time.

### 18. Low Power(Energy Saving) (Command: j q)

To control the low power function.

[j][q][ ][Set ID][ ][Data][Cr]

0	0	0	0	0	0	0	0
└ 5 <sup>th</sup> bit : 0 : Low Power				└ Level : 0~15			
1 : Intelligent Power							
6~8 <sup>th</sup> bit : Reserved bit							

7	6	5	4	3	2	1	0	Data	Function
X	x	X	0	0	0	0	0	00H	Off
X	X	x	0	0	0	0	1	01H	Minimum
X	X	x	0	0	0	1	0	02H	Medium
x	x	X	0	0	0	1	1	03H	Maximum
x	x	x	1	0	0	0	0	10H	Intelligent(Low)
x	x	x	1	0	0	0	1	11H	Intelligent(Mid)
x	x	x	1	0	0	1	0	12H	Intelligent(High)

*Ack*

[q][ ][Set ID][ ][OK][Data][x]

Data : Low Power : 0H, 1H, 2H, 3H

Intelligent : 10H~12H(\*transmit by Hexadecimal code)

#### \* Real data mapping 1

00 : Step 0  
 ...  
 A : Step 10 (Set ID 10)  
 ...  
 F : Step 15 (Set ID 15)  
 10 : Step 16 (Set ID 16)  
 ...  
 64 : Step 100  
 ...  
 6E : Step 110  
 ...  
 73 : Step 115  
 74 : Step 116  
 ...  
 C7 : Step 199  
 ...  
 FE : Step 254  
 FF : Step 255

#### \* Real data mapping 2

00 :-40  
 01 :-39  
 02 :-38  
 ...  
 28 :0  
 ...  
 4E : +38  
 4F : +39  
 50 : +40

# APPENDIX

## 19. Auto Configuration (Command: j u)

To adjust picture position and minimize image shaking automatically. Auto configuration only works in RGB-PC mode.

*Transmission*

[j][u][ ][Set ID][ ][Data][Cr]

Data 1

*Ack*

[u][ ][Set ID][ ][OK/NG][Data][x]

Data 1H

## 20. Tune Command (Command: m a)

Tune channel to following physical number.

*Transmission*

[m][a][ ][Set ID][ ][Data0][ ][Data1][ ][Data2][Cr]

Data 00 : High channel data

Data 01 : Low channel data ex. No. 47 -> 00 2F(2FH)

No. 394 -> 018A(18AH) No. 0 -> Don't care

Data 02 : 0x00 : ATV, 0x10 : DTV, 0x20 : Radio

Channel data range

Analogue - Min : 00 ~ Max : 63(0 ~ 99)

Digital - Min : 00 ~ Max : 3E7(0 ~ 999)

*Ack*

[a][ ][Set ID][ ][OK][ ][Data0][x]

Data Min : 00H ~ Max :ff

## 21. Programme Memory/Skip(Command: m b)

To set skip status for the current Programme.

*Transmission*

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

Data 00 : Skip 01 : Memory

*Ack*

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

## 22. Key (Command: m c)

IR remote key code.

*Transmission*

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

Data: Key code - Refer to page 123.

*Ack*

[c][ ][Set ID][ ][OK][Data][x]

## 23. Input select (Command: x b)

To select input source for TV.

*Transmission*

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

Data Structure

MSB				LSB			
0	0	0	0	0	0	0	0
└ External Input ┘				└ Input Number ┘			

External Input				Data
0	0	0	0	DTV
0	0	0	1	Analogue
0	0	1	0	AV
0	1	0	0	Component
0	1	1	0	RGB
1	0	0	1	HDMI

Input Number				Data
0	0	0	0	Input1
0	0	0	1	Input2
0	0	1	0	Input3
0	0	1	1	Input4

*Ack*

[b][ ][Set ID][ ][OK][Data][x]

# Open source software notice

The following GPL executables and LGPL/MPL libraries used in this product are subject to the GPL2.0/LGPL2.1/MPL1.1 License Agreements:

## **GPL EXECUTABLES:**

- Linux kernel 2.6
- busybox
- lzo

## **LGPL LIBRARIES:**

- uClibc

## **MPL LIBRARIES:**

- Nanox

LG Electronics offers to provide source code to you on CD-ROM for a charge covering the cost of performing such distribution, such as the cost of media, shipping and handling upon e-mail request to LG Electronics at: [opensource@lge.com](mailto:opensource@lge.com)

This offer is valid for a period of three(3) years from the date of the distribution of this product by LG Electronics.

You can obtain a copy of the GPL, LGPL, MPL licenses from <http://www.gnu.org/licenses/old-licenses/gpl-2.0.html>, <http://www.gnu.org/licenses/old-licenses/lgpl-2.1.html>, <http://www.mozilla.org/MPL/MPL-1.1.html>. Also you can obtain the translation of GPL, LGPL licenses from <http://www.gnu.org/licenses/old-licenses/gpl-2.0-translations.html>, <http://www.gnu.org/licenses/old-licenses/lgpl-2.1-translations.html>.

This software is based in part on the work of the Independent JPEG Group copyright © 1991 – 1998, Thomas G. Lane.

## **This product includes**

- libpng library : copyright © 2004 Glenn Randers-Pehrson
- Zlib compression library: Copyright © 1995-2002 Jean-loup Gailly and Mark Adler.
- Tinyxml library : copyright (c) 2000-2006 Lee Thomason

# APPENDIX

## OPEN SOURCE LICENSE

### GNU GENERAL PUBLIC LICENSE

Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA  
Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

#### Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

#### GNU GENERAL PUBLIC LICENSE

#### TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.
- b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.
- c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

- a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
- b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
- c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for non-commercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

# APPENDIX

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.



## NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

## END OF TERMS AND CONDITIONS

### How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

```
<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>
```

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

```
Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY;
for details type `show w'. This is free software, and you are
welcome to redistribute it under certain conditions;
type `show c' for details.
```

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample; alter the names:

```
Yoyodyne, Inc., hereby disclaims all copyright interest in the
program `Gnomovision' (which makes passes at compilers)
written by James Hacker.
```

```
<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice
```

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Lesser General Public License instead of this License.

## GNU LESSER GENERAL PUBLIC LICENSE

Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc. 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA. Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]

### Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

## GNU LESSER GENERAL PUBLIC LICENSE TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- a) The modified work must itself be a software library.
- b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.
- c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.
- d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

# APPENDIX

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

- c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.
- d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.
- e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

- a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.
- b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

# APPENDIX

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

## NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

## END OF TERMS AND CONDITIONS

### How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>  
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990  
Ty Coon, President of Vice

# MOZILLA PUBLIC LICENSE

Version 1.1

-----

## 1. Definitions.

1.0.1. "Commercial Use" means distribution or otherwise making the Covered Code available to a third party.

1.1. "Contributor" means each entity that creates or contributes to the creation of Modifications.

1.2. "Contributor Version" means the combination of the Original Code, prior Modifications used by a Contributor, and the Modifications made by that particular Contributor.

1.3. "Covered Code" means the Original Code or Modifications or the combination of the Original Code and Modifications, in each case including portions thereof.

1.4. "Electronic Distribution Mechanism" means a mechanism generally accepted in the software development community for the electronic transfer of data.

1.5. "Executable" means Covered Code in any form other than Source Code.

1.6. "Initial Developer" means the individual or entity identified as the Initial Developer in the Source Code notice required by Exhibit A.

1.7. "Larger Work" means a work which combines Covered Code or portions thereof with code not governed by the terms of this License.

1.8. "License" means this document.

1.8.1. "Licensable" means having the right to grant, to the maximum extent possible, whether at the time of the initial grant or subsequently acquired, any and all of the rights conveyed herein.

1.9. "Modifications" means any addition to or deletion from the substance or structure of either the Original Code or any previous Modifications. When Covered Code is released as a series of files, a Modification is:

A. Any addition to or deletion from the contents of a file containing Original Code or previous Modifications.

B. Any new file that contains any part of the Original Code or previous Modifications.

1.10. "Original Code" means Source Code of computer software code which is described in the Source Code notice required by Exhibit A as Original Code, and which, at the time of its release under this License is not already Covered Code governed by this License.

1.10.1. "Patent Claims" means any patent claim(s), now owned or hereafter acquired, including without limitation, method, process, and apparatus claims, in any patent Licensable by grantor.

1.11. "Source Code" means the preferred form of the Covered Code for making modifications to it, including all modules it contains, plus any associated interface definition files, scripts used to control compilation and installation of an Executable, or source code differential comparisons against either the Original Code or another well known, available Covered Code of the Contributor's choice. The Source Code can be in a compressed or archival form, provided the appropriate decompression or de-archiving software is widely available for no charge.

1.12. "You" (or "Your") means an individual or a legal entity exercising rights under, and complying with all of the terms of, this License or a future version of this License issued under Section 6.1. For legal entities, "You" includes any entity which controls, is controlled by, or is under common control with You. For purposes of this definition, "control" means (a) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (b) ownership of more than fifty percent (50%) of the outstanding shares or beneficial ownership of such entity.

## 2. Source Code License.

### 2.1. The Initial Developer Grant.

The Initial Developer hereby grants You a world-wide, royalty-free, non-exclusive license, subject to third party intellectual property claims:

(a) under intellectual property rights (other than patent or trademark) Licensable by Initial Developer to use, reproduce, modify, display, perform, sublicense and distribute the Original Code (or portions thereof) with or without Modifications, and/or as part of a Larger Work; and

# APPENDIX

(b) under Patents Claims infringed by the making, using or selling of Original Code, to make, have made, use, practice, sell, and offer for sale, and/or otherwise dispose of the Original Code (or portions thereof).

(c) the licenses granted in this Section 2.1(a) and (b) are effective on the date Initial Developer first distributes Original Code under the terms of this License.

(d) Notwithstanding Section 2.1(b) above, no patent license is granted: 1) for code that You delete from the Original Code; 2) separate from the Original Code; or 3) for infringements caused by: i) the modification of the Original Code or ii) the combination of the Original Code with other software or devices.

## 2.2. Contributor Grant.

Subject to third party intellectual property claims, each Contributor hereby grants You a world-wide, royalty-free, non-exclusive license

(a) under intellectual property rights (other than patent or trademark) Licensable by Contributor, to use, reproduce, modify, display, perform, sublicense and distribute the Modifications created by such Contributor (or portions thereof) either on an unmodified basis, with other Modifications, as Covered Code and/or as part of a Larger Work; and

(b) under Patent Claims infringed by the making, using, or selling of Modifications made by that Contributor either alone and/or in combination with its Contributor Version (or portions of such combination), to make, use, sell, offer for sale, have made, and/or otherwise dispose of: 1) Modifications made by that Contributor (or portions thereof); and 2) the combination of Modifications made by that Contributor with its Contributor Version (or portions of such combination).

(c) the licenses granted in Sections 2.2(a) and 2.2(b) are effective on the date Contributor first makes Commercial Use of the Covered Code.

(d) Notwithstanding Section 2.2(b) above, no patent license is granted: 1) for any code that Contributor has deleted from the Contributor Version; 2) separate from the Contributor Version; 3) for infringements caused by: i) third party modifications of Contributor Version or ii) the combination of Modifications made by that Contributor with other software (except as part of the Contributor Version) or other devices; or 4) under Patent Claims infringed by Covered Code in the absence of Modifications made by that Contributor.

## 3. Distribution Obligations.

### 3.1. Application of License.

The Modifications which You create or to which You contribute are governed by the terms of this License, including without limitation Section 2.2. The Source Code version of Covered Code may be distributed only under the terms of this License or a future version of this License released under Section 6.1, and You must include a copy of this License with every copy of the Source Code You distribute. You may not offer or impose any terms on any Source Code version that alters or restricts the applicable version of this License or the recipients' rights hereunder. However, You may include an additional document offering the additional rights described in Section 3.5.

### 3.2. Availability of Source Code.

Any Modification which You create or to which You contribute must be made available in Source Code form under the terms of this License either on the same media as an Executable version or via an accepted Electronic Distribution Mechanism to anyone to whom you made an Executable version available; and if made available via Electronic Distribution Mechanism, must remain available for at least twelve (12) months after the date it initially became available, or at least six (6) months after a subsequent version of that particular Modification has been made available to such recipients. You are responsible for ensuring that the Source Code version remains available even if the

Electronic Distribution Mechanism is maintained by a third party.

### 3.3. Description of Modifications.

You must cause all Covered Code to which You contribute to contain a file documenting the changes You made to create that Covered Code and the date of any change. You must include a prominent statement that the Modification is derived, directly or indirectly, from Original Code provided by the Initial Developer and including the name of the Initial Developer in (a) the Source Code, and (b) in any notice in an Executable version or related documentation in which You describe the origin or ownership of the Covered Code.

### 3.4. Intellectual Property Matters

#### (a) Third Party Claims.

If Contributor has knowledge that a license under a third party's intellectual property rights is required to exercise the rights granted by such Contributor under Sections 2.1 or 2.2, Contributor must include a text file with the Source Code distribution titled "LEGAL" which describes the claim and the party making the claim in sufficient detail that a recipient will know whom to contact. If Contributor obtains such knowledge after the Modification is made available as described in Section 3.2, Contributor shall promptly modify the LEGAL file in all copies Contributor makes available thereafter and shall take other steps (such as notifying appropriate mailing lists or newsgroups) reasonably calculated to inform those who received the Covered Code that new knowledge has been obtained.



(b) Contributor APIs.

If Contributor's Modifications include an application programming interface and Contributor has knowledge of patent licenses which are reasonably necessary to implement that API, Contributor must also include this information in the LEGAL file.

(c) Representations.

Contributor represents that, except as disclosed pursuant to Section 3.4(a) above, Contributor believes that Contributor's Modifications are Contributor's original creation(s) and/or Contributor has sufficient rights to grant the rights conveyed by this License.

### 3.5. Required Notices.

You must duplicate the notice in Exhibit A in each file of the Source Code. If it is not possible to put such notice in a particular Source Code file due to its structure, then You must include such notice in a location (such as a relevant directory) where a user would be likely to look for such a notice. If You created one or more Modification(s) You may add your name as a Contributor to the notice described in Exhibit A. You must also duplicate this License in any documentation for the Source Code where You describe recipients' rights or ownership rights relating to Covered Code. You may choose to offer, and to charge a fee for, warranty, support, indemnity or liability obligations to one or more recipients of Covered Code. However, You may do so only on Your own behalf, and not on behalf of the Initial

Developer or any Contributor. You must make it absolutely clear that any such warranty, support, indemnity or liability obligation is offered by You alone, and You hereby agree to indemnify the Initial Developer and every Contributor for any liability incurred by the Initial Developer or such Contributor as a result of warranty, support, indemnity or liability terms You offer.

### 3.6. Distribution of Executable Versions.

You may distribute Covered Code in Executable form only if the requirements of Section 3.1-3.5 have been met for that Covered Code, and if You include a notice stating that the Source Code version of the Covered Code is available under the terms of this License, including a description of how and where You have fulfilled the obligations of Section 3.2. The notice must be conspicuously included in any notice in an Executable version, related documentation or collateral in which You describe recipients' rights relating to the Covered Code. You may distribute the Executable version of Covered Code or ownership rights under a license of Your choice, which may contain terms different from this License, provided that You are in compliance with the terms of this License and that the license for the Executable version does not attempt to limit or alter the recipient's rights in the Source Code version from the rights set forth in this

License. If You distribute the Executable version under a different license You must make it absolutely clear that any terms which differ from this License are offered by You alone, not by the Initial Developer or any Contributor. You hereby agree to indemnify the Initial Developer and every Contributor for any liability incurred by the Initial Developer or such Contributor as a result of any such terms You offer.

### 3.7. Larger Works.

You may create a Larger Work by combining Covered Code with other code not governed by the terms of this License and distribute the Larger Work as a single product. In such a case, You must make sure the requirements of this License are fulfilled for the Covered Code.

## 4. Inability to Comply Due to Statute or Regulation.

If it is impossible for You to comply with any of the terms of this License with respect to some or all of the Covered Code due to statute, judicial order, or regulation then You must: (a) comply with the terms of this License to the maximum extent possible; and (b) describe the limitations and the code they affect. Such description must be included in the LEGAL file described in Section 3.4 and must be included with all distributions of the Source Code. Except to the extent prohibited by statute or regulation, such description must be sufficiently detailed for a recipient of ordinary skill to be able to understand it.

## 5. Application of this License.

This License applies to code to which the Initial Developer has attached the notice in Exhibit A and to related Covered Code.

## 6. Versions of the License.

### 6.1. New Versions.

Netscape Communications Corporation ("Netscape") may publish revised and/or new versions of the License from time to time. Each version will be given a distinguishing version number.

### 6.2. Effect of New Versions.

Once Covered Code has been published under a particular version of the License, You may always continue to use it under the terms of that version. You may also choose to use such Covered Code under the terms of any subsequent version of the License published by Netscape. No one other than Netscape has the right to modify the terms applicable to Covered Code created under this License.

# APPENDIX

## 6.3. Derivative Works.

If You create or use a modified version of this License (which you may only do in order to apply it to code which is not already Covered Code governed by this License), You must (a) rename Your license so that the phrases "Mozilla", "MOZILLAPL", "MOZPL", "Netscape", "MPL", "NPL" or any confusingly similar phrase do not appear in your license (except to note that your license differs from this License) and (b) otherwise make it clear that Your version of the license contains terms which differ from the Mozilla Public License and Netscape Public License. (Filling in the name of the Initial Developer, Original Code or Contributor in the notice described in Exhibit A shall not of themselves be deemed to be modifications of this License.)

## 7. DISCLAIMER OF WARRANTY.

COVERED CODE IS PROVIDED UNDER THIS LICENSE ON AN "AS IS" BASIS, WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES THAT THE COVERED CODE IS FREE OF DEFECTS, MERCHANTABLE, FIT FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE COVERED CODE IS WITH YOU. SHOULD ANY COVERED CODE PROVE DEFECTIVE IN ANY RESPECT, YOU (NOT THE INITIAL DEVELOPER OR ANY OTHER CONTRIBUTOR) ASSUME THE COST OF ANY NECESSARY SERVICING, REPAIR OR CORRECTION. THIS DISCLAIMER OF WARRANTY CONSTITUTES AN ESSENTIAL PART OF THIS LICENSE. NO USE OF ANY COVERED CODE IS AUTHORIZED HEREUNDER EXCEPT UNDER THIS DISCLAIMER.

## 8. TERMINATION.

8.1. This License and the rights granted hereunder will terminate automatically if You fail to comply with terms herein and fail to cure such breach within 30 days of becoming aware of the breach. All sublicenses to the Covered Code which are properly granted shall survive any termination of this License. Provisions which, by their nature, must remain in effect beyond the termination of this License shall survive.

8.2. If You initiate litigation by asserting a patent infringement claim (excluding declaratory judgment actions) against Initial Developer or a Contributor (the Initial Developer or Contributor against whom You file such action is referred to as "Participant") alleging that:

(a) such Participant's Contributor Version directly or indirectly infringes any patent, then any and all rights granted by such Participant to You under Sections 2.1 and/or 2.2 of this License shall, upon 60 days notice from Participant terminate prospectively, unless if within 60 days after receipt of notice You either: (i) agree in writing to pay Participant a mutually agreeable reasonable royalty for Your past and future use of Modifications made by such Participant, or (ii) withdraw Your litigation claim with respect to the Contributor Version against such Participant. If within 60 days of notice, a reasonable royalty and payment arrangement are not mutually agreed upon in writing by the parties or the litigation claim is not withdrawn, the rights granted by Participant to You under Sections 2.1 and/or 2.2 automatically terminate at the expiration of the 60 day notice period specified above.

(b) any software, hardware, or device, other than such Participant's Contributor Version, directly or indirectly infringes any patent, then any rights granted to You by such Participant under Sections 2.1(b) and 2.2(b) are revoked effective as of the date You first made, used, sold, distributed, or had made, Modifications made by that Participant.

8.3. If You assert a patent infringement claim against Participant alleging that such Participant's Contributor Version directly or indirectly infringes any patent where such claim is resolved (such as by license or settlement) prior to the initiation of patent infringement litigation, then the reasonable value of the licenses granted by such Participant under Sections 2.1 or 2.2 shall be taken into account in determining the amount or value of any payment or license.

8.4. In the event of termination under Sections 8.1 or 8.2 above, all end user license agreements (excluding distributors and resellers) which have been validly granted by You or any distributor hereunder prior to termination shall survive termination.

## 9. LIMITATION OF LIABILITY.

UNDER NO CIRCUMSTANCES AND UNDER NO LEGAL THEORY, WHETHER TORT (INCLUDING NEGLIGENCE), CONTRACT, OR OTHERWISE, SHALL YOU, THE INITIAL DEVELOPER, ANY OTHER CONTRIBUTOR, OR ANY DISTRIBUTOR OF COVERED CODE, OR ANY SUPPLIER OF ANY OF SUCH PARTIES, BE LIABLE TO ANY PERSON FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY CHARACTER INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF GOODWILL, WORK STOPPAGE, COMPUTER FAILURE OR MALFUNCTION, OR ANY AND ALL OTHER COMMERCIAL DAMAGES OR LOSSES, EVEN IF SUCH PARTY SHALL HAVE BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. THIS LIMITATION OF LIABILITY SHALL NOT APPLY TO LIABILITY FOR DEATH OR PERSONAL INJURY RESULTING FROM SUCH PARTY'S NEGLIGENCE TO THE EXTENT APPLICABLE LAW PROHIBITS SUCH LIMITATION. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THIS EXCLUSION AND LIMITATION MAY NOT APPLY TO YOU.

## 10. U.S. GOVERNMENT END USERS.

The Covered Code is a "commercial item," as that term is defined in 48 C.F.R. 2.101 (Oct. 1995), consisting of "commercial computer software" and "commercial computer software documentation," as such terms are used in 48 C.F.R. 12.212 (Sept. 1995). Consistent with 48 C.F.R. 12.212 and 48 C.F.R. 227.7202-1 through 227.7202-4 (June 1995), all U.S. Government End Users acquire Covered Code with only those rights set forth herein.

## 11. MISCELLANEOUS.

This License represents the complete agreement concerning subject matter hereof. If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable. This License shall be governed by California law provisions (except to the extent applicable law, if any, provides otherwise), excluding its conflict-of-law provisions. With respect to disputes in which at least one party is a citizen of, or an entity chartered or registered to do business in the United States of America, any litigation relating to this License shall be subject to the jurisdiction of the Federal Courts of the Northern District of California, with venue lying in Santa Clara County, California, with the losing party responsible for costs, including without limitation, court costs and reasonable attorneys' fees and expenses. The application of the United Nations Convention on Contracts for the International Sale of Goods is expressly excluded. Any law or regulation which provides that the language of a contract shall be construed against the drafter shall not apply to this License.

## 12. RESPONSIBILITY FOR CLAIMS.

As between Initial Developer and the Contributors, each party is responsible for claims and damages arising, directly or indirectly, out of its utilization of rights under this License and You agree to work with Initial Developer and Contributors to distribute such responsibility on an equitable basis. Nothing herein is intended or shall be deemed to constitute any admission of liability.

## 13. MULTIPLE-LICENSED CODE.

Initial Developer may designate portions of the Covered Code as "Multiple-Licensed". "Multiple-Licensed" means that the Initial Developer permits you to utilize portions of the Covered Code under Your choice of the NPL or the alternative licenses, if any, specified by the Initial Developer in the file described in Exhibit A.

### EXHIBIT A -Mozilla Public License.

``The contents of this file are subject to the Mozilla Public License Version 1.1 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License at <http://www.mozilla.org/MPL/>

Software distributed under the License is distributed on an "AS IS" basis, WITHOUT WARRANTY OF ANY KIND, either express or implied. See the License for the specific language governing rights and limitations under the License.

The Original Code is \_\_\_\_\_.

The Initial Developer of the Original Code is \_\_\_\_\_.

Portions created by \_\_\_\_\_ are Copyright (C) \_\_\_\_\_  
\_\_\_\_\_. All Rights Reserved.

Contributor(s): \_\_\_\_\_.

Alternatively, the contents of this file may be used under the terms of the \_\_\_\_\_ license (the "[ ] License"), in which case the provisions of [ ] License are applicable instead of those above. If you wish to allow use of your version of this file only under the terms of the [ ] License and not to allow others to use your version of this file under the MPL, indicate your decision by deleting the provisions above and replace them with the notice and other provisions required by the [ ] License. If you do not delete the provisions above, a recipient may use your version of this file under either the MPL or the [ ] License."

[NOTE: The text of this Exhibit A may differ slightly from the text of the notices in the Source Code files of the Original Code. You should use the text of this Exhibit A rather than the text found in the Original Code Source Code for Your Modifications.]

**LG Electronics Inc.**