



LG

Life's Good

OWNER'S MANUAL

LCD TV

Please read this manual carefully before operating the set and retain it for future reference.

22LK310
26LK310
32LK310

22LK311
26LK311
32LK311

22LK311C
26LK311C
32LK311C

LICENSES

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7,295,673; 7,460,668; 7,515,710; 7,519,274


IMPORTANT SAFETY INSTRUCTIONS

Always comply with the following precautions to avoid dangerous situations and ensure peak performance of your product.





WARNING / CAUTION

**RISK OF ELECTRIC SHOCK
DO NOT OPEN**



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

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

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

WARNING/CAUTION

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

Read these instructions.
Keep these instructions.
Heed all warning.
Follow all instruction.



- Do not use this apparatus near water.



- Clean only with dry cloth.



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



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



- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet (Can differ by country).



- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.



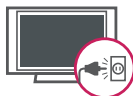
- Only use attachments/accessories specified by the manufacturer.



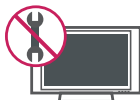
- Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.



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



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



- Never touch this apparatus or antenna during a thunder or lightning storm.
- When mounting a TV on the wall, make sure not to install the TV by hanging the power and signal cables on the back of the TV.

- Do not allow an impact shock or any objects to fall into the product, and do not drop anything onto the screen.

- CAUTION concerning the Power Cord (Can differ by country):

It is recommended that appliances be placed upon a dedicated circuit; that is, a single outlet circuit which powers only that appliance and has no additional outlets or branch circuits. Check the specification page of this owner's manual to be certain. Do not connect too many appliances to the same AC power outlet as this could result in fire or electric shock. Do not overload wall outlets. Overloaded wall outlets, loose or damaged wall outlets, extension cords, frayed power cords, or damaged or cracked wire insulation are dangerous. Any of these conditions could result in electric shock or fire. Periodically examine the cord of your appliance, and if its appearance indicates damage or deterioration, unplug it, discontinue use of the appliance, and have the cord replaced with an exact replacement part by an authorized service. Protect the power cord from physical or mechanical abuse, such as being twisted, kinked, pinched, closed in a door, or walked upon. Pay particular attention to plugs, wall outlets, and the point where the cord exits the appliance. Do not move the TV with the power cord plugged in. Do not use a damaged or loose power cord. Be sure do grasp the plug when unplugging the power cord. Do not pull on the power cord to unplug the TV.



- **Warning** - To reduce the risk of fire or electrical shock, do not expose this product to rain, moisture or other liquids. Do not touch the TV with wet hands. Do not install this product near flammable objects such as gasoline or candles, or expose the TV to direct air conditioning.

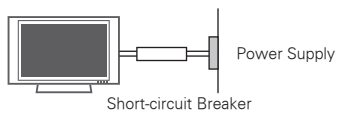


- Do not expose to dripping or splashing and do not place objects filled with liquids, such as vases, cups, etc. on or over the apparatus (e.g. on shelves above the unit).



Grounding

Ensure that you connect the earth ground wire to prevent possible electric shock (i.e. a TV with a three-prong grounded AC plug must be connected to a three-prong grounded AC outlet). If grounding methods are not possible, have a qualified electrician install a separate circuit breaker. Do not try to ground the unit by connecting it to telephone wires, lightning rods, or gas pipes.



DISCONNECTING DEVICE FROM THE MAIN POWER

The power outlet must remain readily accessed in the event the device needs to be unplugged.

- As long as this unit is connected to the AC wall outlet, it is not disconnected from the AC power source even if the unit is turned off.
- Do not attempt to modify this product in any way without written authorization from LG Electronics. Unauthorized modification could void the user’s authority to operate this product.

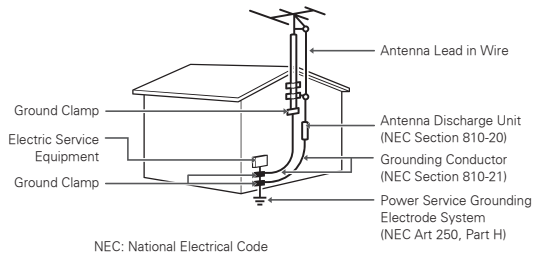
ANTENNAS Outdoor antenna grounding

(Can differ by country):

If an outdoor antenna is installed, follow the precautions below. An outdoor antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can come in contact with such power lines or circuits as death or serious injury can occur. Be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code (NEC) in the

U.S.A. provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes and requirements for the grounding electrode.

Antenna grounding according to the National Electrical Code, ANSI/NFPA 70



Cleaning

When cleaning, unplug the power cord and wipe gently with a soft cloth to prevent scratching. Do not spray water or other liquids directly on the TV as electric shock may occur. Do not clean with chemicals such as alcohol, thinners or benzine.

Moving

Make sure the product is turned off, unplugged and all cables have been removed. It may take 2 or more people to carry larger TVs. Do not press or put stress on the front panel of the TV.

Ventilation

Install your TV where there is proper ventilation. Do not install in a confined space such as a bookcase. Do not cover the product with cloth or other materials while plugged. Do not install in excessively dusty places.

- If you smell smoke or other odors coming from the TV, unplug the power cord contact an authorized service center.
- Do not press strongly upon the panel with hand or sharp object such as nail, pencil or pen, or make a scratch on it.
- Keep the product away from direct sunlight.



- **Dot Defect**

The Plasma or LCD panel is a high technology product with resolution of two million to six million pixels. In a very few cases, you could see fine dots on the screen while you're viewing the TV. Those dots are deactivated pixels and do not affect the performance and reliability of the TV.

- **Generated Sound**

"Cracking" noise: A cracking noise that occurs when watching or turning off the TV is generated by plastic thermal contraction due to temperature and humidity. This noise is common for products where thermal deformation is required.

Electrical circuit humming/panel buzzing: A low level noise is generated from a high-speed switching circuit, which supplies a large amount of current to operate a product. It varies depending on the product.

This generated sound does not affect the performance and reliability of the product.

- Take care not to touch the ventilation openings. When watching the TV for a long period, the ventilation openings may become hot. This does not affect the performance of the product or cause defects in the product.
- If the TV feels cold to the touch, there may be a small "flicker" when it is turned on. This is normal, there is nothing wrong with TV. Some minute dot defects may be visible on the screen, appearing as tiny red, green, or blue spots. However, they have no adverse effect on the TV's performance. Avoid touching the LCD screen or holding your finger(s) against it for long periods of time. Doing so may produce some temporary distortion effects on the screen.

DISPOSAL (Only Hg lamp used LCD TV)

The fluorescent lamp used in this product contains a small amount of mercury. Do not dispose of this product with general household waste. Disposal of this product must be carried out in accordance to the regulations of your local authority.

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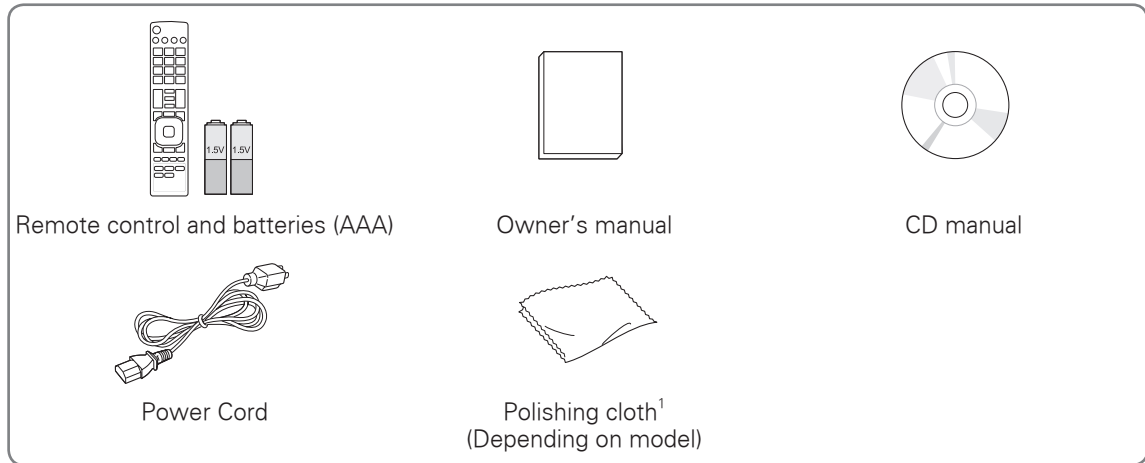
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ASSEMBLING AND PREPARING

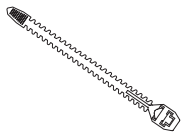
Unpacking

Check your product box for the following items. If there are any missing accessories, contact the local dealer where you purchased your product. The illustrations in this manual may differ from the actual product and item.



- 1 Gently wipe the spots on the cabinet with the polishing cloth

22LK310, 22LK311, 22LK311C



Cable tie



Protection cover

26/32LK310, 26/32LK311, 26/32LK311C



M4 x 20

Screw for assembly



Screw for fixing



Protection cover



CAUTION

- Do not use any unapproved items to ensure the safety and product life span.
- Any damages or injuries by using unapproved items are not covered by the warranty.

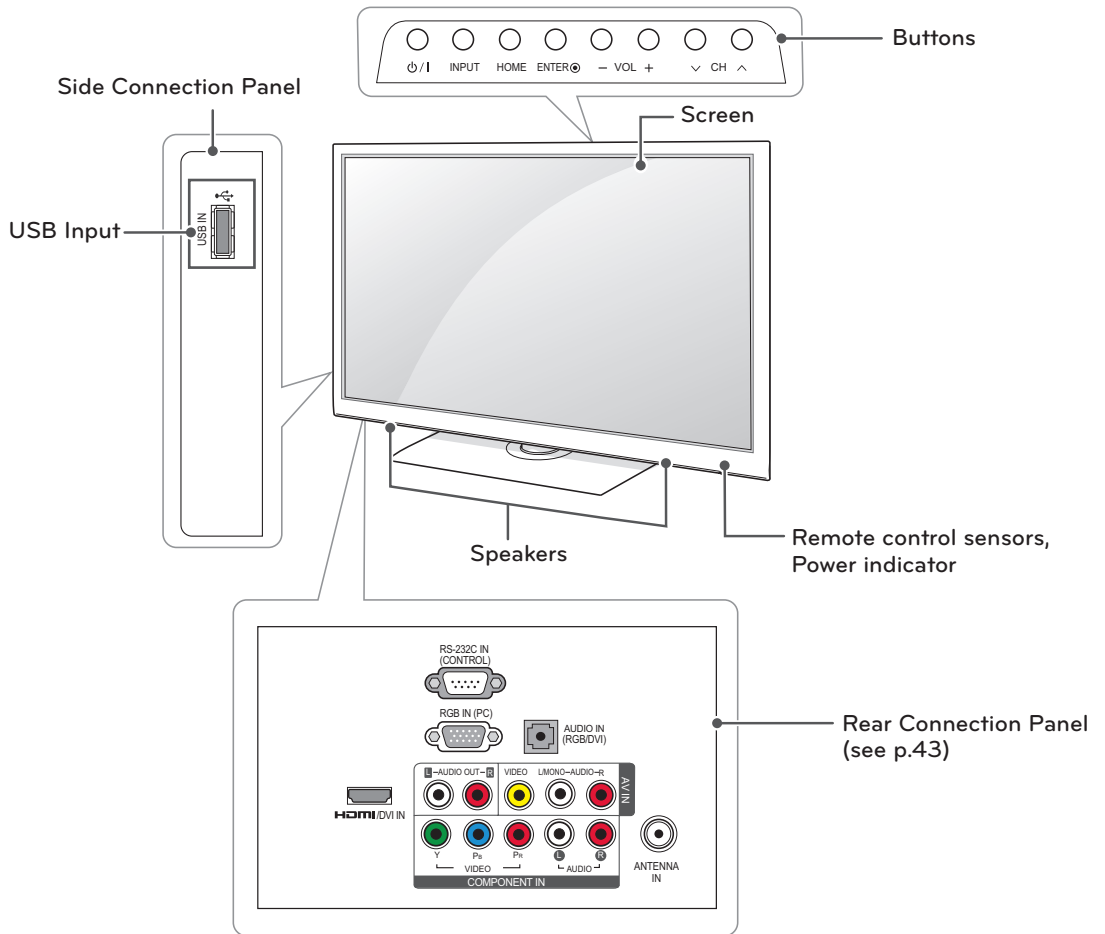


NOTE

- The items supplied with your product may vary depending on the model.
- Product specifications or contents of this manual may be changed without prior notice due to upgrade of product functions.

Parts and buttons

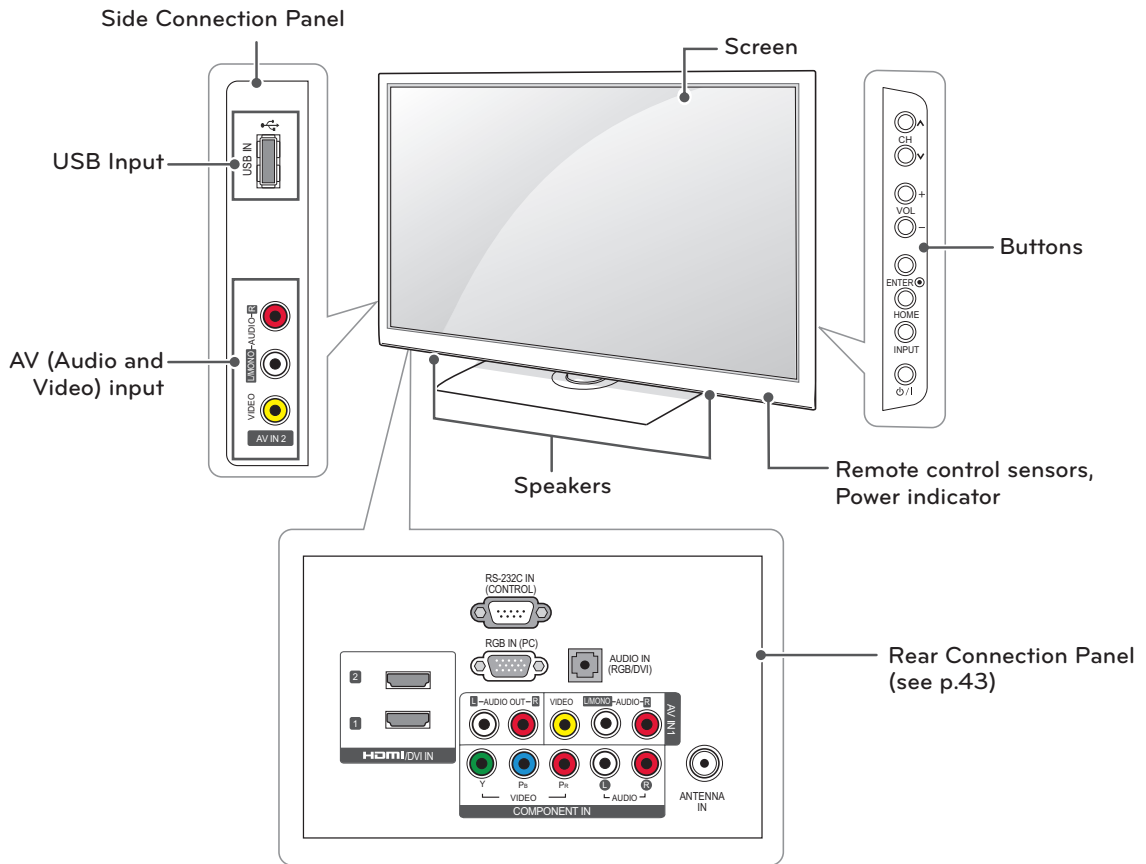
22LK310, 22LK311, 22LK311C



ENGLISH

Button	Description
⏻/⏪	Turns the power on or off.
INPUT	Changes the input source.
HOME	Accesses the main menus, or saves your input and exits the menus.
ENTER ⊙	Selects the highlighted menu option or confirms an input.
- VOL +	Adjusts the volume level.
v CH ^	Scrolls through the saved channels.

26/32LK310, 26/32LK311, 26/32LK311C



ENGLISH

Button	Description
⏻/I	Turns the power on or off.
INPUT	Changes the input source.
HOME	Accesses the main menus, or saves your input and exits the menus.
ENTER ◉	Selects the highlighted menu option or confirms an input.
- VOL +	Adjusts the volume level.
√ CH ^	Scrolls through the saved channels.

Lifting and moving the TV

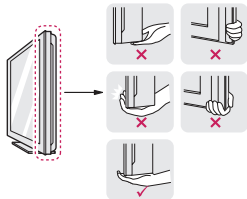
When moving or lifting the TV, read the following to prevent the TV from being scratched or damaged and for safe transportation regardless of its type and size.

CAUTION

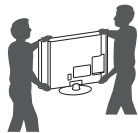
- Avoid touching the screen at all times, as this may result in damage to the screen.
- It is recommended to move the TV in the box or packing material that the TV originally came in.
- Before moving or lifting the TV, disconnect the power cord and all cables.
- When holding the TV, the screen should face away from you to prevent damage.



- Hold the top and bottom of the TV frame firmly. Make sure not to hold the transparent part, speaker, or speaker grill area.



- When transporting a large TV, there should be at least 2 people.
- When transporting the TV by hand, hold the TV as shown in the following illustration.



- When transporting the TV, do not expose the TV to jolts or excessive vibration.
- When transporting the TV, keep the TV upright, never turn the TV on its side or tilt towards the left or right.

Setting up the TV

Put your TV on a pedestal stand and mount the TV on a table or wall.

Attaching the stand

If you are not mounting the TV to a wall, use the following instructions to attach the stand.

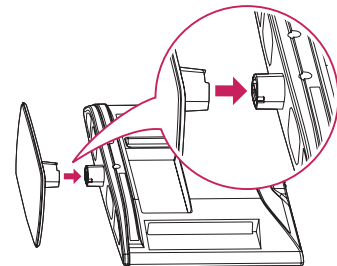
22LK310, 22LK311, 22LK311C

- 1 Lay the TV with the screen side down on a flat surface.

CAUTION

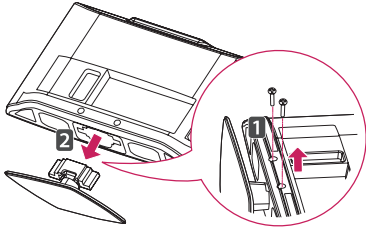
- Lay a foam mat or soft protective cloth on the surface to protect the screen from damage. Make sure not objects press against the screen.

- 2 Assemble the parts of the STAND BODY with the STAND BASE of the TV.

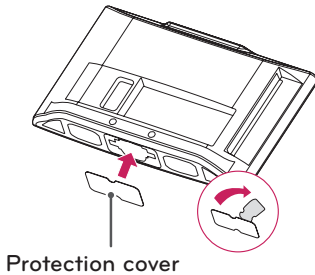


To detach the stand,

- 1 Lay the TV with the screen side down on a flat surface.
- 2 Remove the 2 screws and pull the stand away from the TV.



- 3 Remove the protection paper from the protection cover, adhere it into the opening at the bottom of the TV.
This will protect the opening from accumulating dust and dirt.
When installing the wall mounting bracket, use the Protection cover.



26/32LK310, 26/32LK311, 26/32LK311C

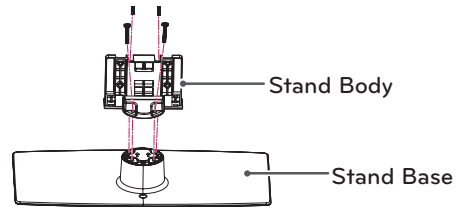
- 1 Lay the TV with the screen side down on a flat surface.

CAUTION

- Lay a foam mat or soft protective cloth on the surface to protect the screen from damage. Make sure not objects press against the screen.

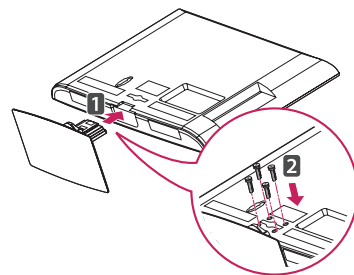
- 2 Assemble the parts of the STAND BODY with the STAND BASE of the TV.

Screw for assembly	Number of screws
M4 x 20	4



- 3 Secure the TV and the stand with the 4 screws.

Screw for assembly	Number of screws
M4 x 20	4



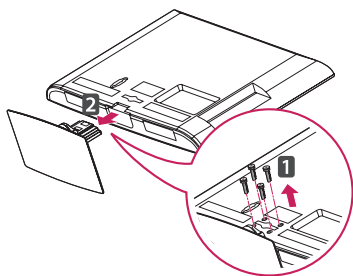
CAUTION

- Tighten the screws firmly to prevent the TV from tilting forward. Do not over tighten.

To detach the stand,

- 1 Lay the TV with the screen side down on a flat surface.
- 2 Remove the 4 screws and pull the stand away from the TV.

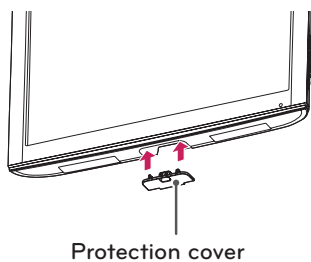
Screw for assembly	Number of screws
M4 x 20	4



- 3 Push the supplied protection cover into the opening at the bottom of the TV until it locks in place.

This will protect the opening from accumulating dust and dirt.

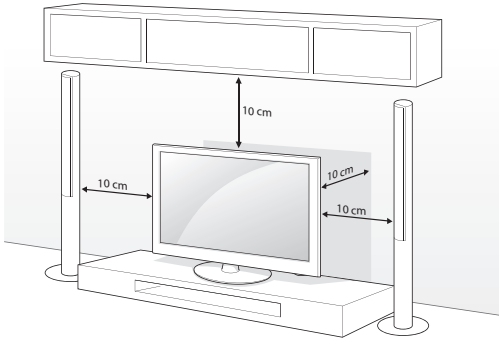
When installing the wall mounting bracket, use the Protection cover.



Mounting on a table

1 Lift and tilt the TV into its upright position on a table.

- Leave a 10 cm (minimum) space from the wall for proper ventilation.



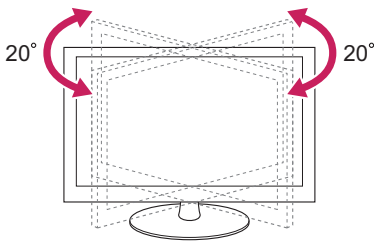
2 Connect the power cord to a wall outlet.

CAUTION

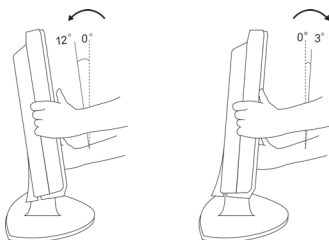
- Do not place the TV near or on sources of heat, as this may result in fire or other damage.

NOTE

- Swivel 20 degrees to the left or right and adjust the angle of the TV to suit your view (Except 22LK310, 22LK311, 22LK311C).



- Adjust the position of the panel in various ways for maximum comfort (For 22LK310, 22LK311, 22LK311C).

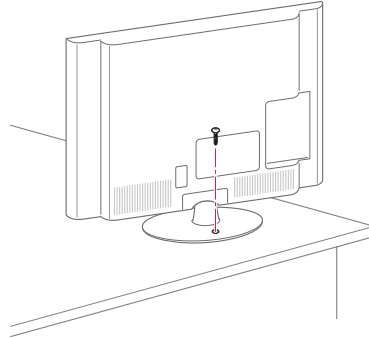


Securing the TV to a table

(For 26/32LK310, 26/32LK311, 26/32LK311C)

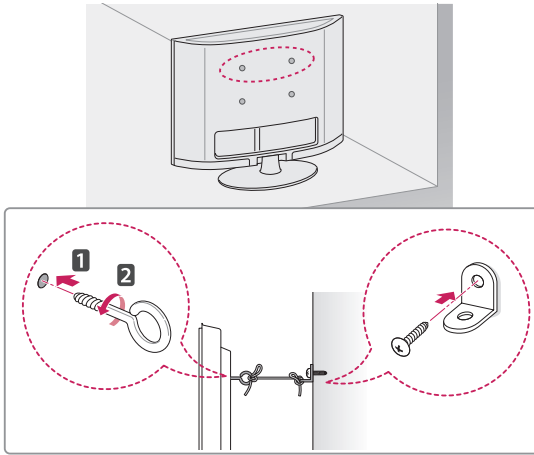
Fix the TV to a table to prevent from tilting forward, damage, and potential injury.

Mount the TV on a table, and then insert and tighten the supplied screw on the rear of the stand.



WARNING

- To prevent TV from falling over, the TV should be securely attached to the floor/wall per installation instructions. Tipping, shaking, or rocking the TV may cause injury.

Securing the TV to a wall (optional)

- 1 Insert and tighten the eye-bolts, or TV brackets and bolts on the back of the TV.
- If there are bolts inserted at the eye-bolts position, remove the bolts first.
- 2 Mount the wall brackets with the bolts to the wall.
Match the location of the wall bracket and the eye-bolts on the rear of the TV.
- 3 Connect the eye-bolts and wall brackets tightly with a sturdy rope.
Make sure to keep the rope horizontal with the flat surface.

CAUTION

- Make sure that children do not climb on or hang on the TV.

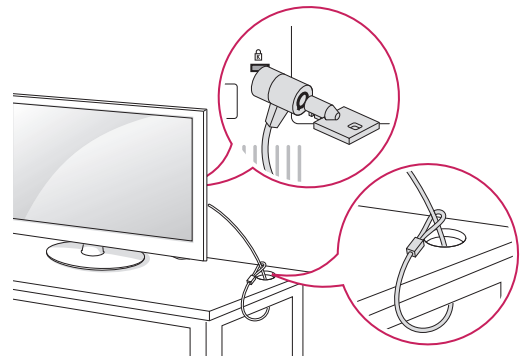
NOTE

- Use a platform or cabinet that is strong and large enough to support the TV securely.
- Brackets, bolts and ropes are optional. You can obtain additional accessories from your local dealer.

Using the Kensington security system (optional)

The Kensington security system connector is located at the rear of the TV. For more information of installation and using, refer to the manual provided with the Kensington security system or visit <http://www.kensington.com>.

Connect the Kensington security system cable between the TV and a table.

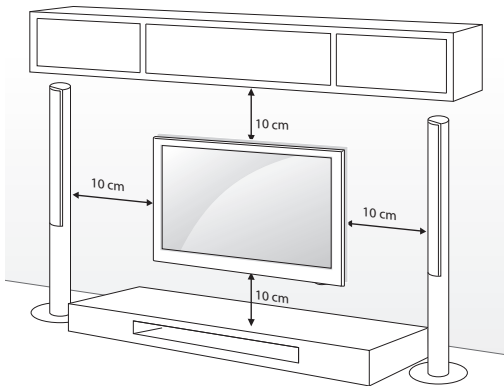
**NOTE**

- The Kensington security system is optional. You can obtain additional accessories from your local dealer.

Mounting on a wall

Attach an optional wall mount at the rear of the TV carefully and install the wall mount on a solid wall perpendicular to the floor. When you attach the TV to other building materials, please contact qualified personnel.

LG recommends that wall mounting be performed by a qualified professional installer.



Make sure to use screws and wall mounts that meet the VESA standard. Standard dimensions for the wall mount kits are described in the following table.

Model	22LK310, 22LK311, 22LK311C	26/32LK310, 26/32LK311, 26/32LK311C
VESA	100 x 100	200 x 100
Standard screw	M4	M4
Number of screws	4	4
Wall mount bracket (optional)	LSW100B, LSW100BG	

The diagram shows two views of the wall mount brackets. The top view shows the LSW100B bracket, which is a long, thin horizontal bar with four mounting holes. The bottom view shows the LSW100BG bracket, which is a similar bar but with a different internal structure and mounting holes.

CAUTION

- Disconnect the power first, and then move or install the TV. Otherwise electric shock may occur.
- If you install the TV on a ceiling or slanted wall, it may fall and result in severe injury. Use an authorized LG wall mount and contact the local dealer or qualified personnel.
- Do not over tighten the screws as this may cause damage to the TV and void your warranty.
- Use the screws and wall mounts that meet the VESA standard. Any damages or injuries by misuse or using an improper accessory are not covered by the warranty.

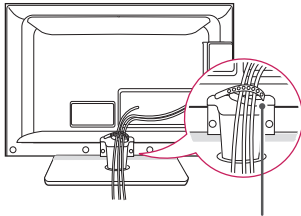
NOTE

- Use the screws that are listed on the VESA standard screw specifications.
- The wall mount kit includes an installation manual and necessary parts.
- The wall mount bracket is optional. You can obtain additional accessories from your local dealer.
- The length of screws may differ depending on the wall mount. Make sure to use the proper length.
- For more information, refer to the manual supplied with the wall mount.

Tidying cables

22LK310, 22LK311, 22LK311C

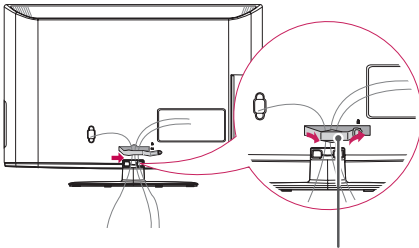
- 1 Gather and bind the cables with the cable tie.



Cable tie

26/32LK310, 26/32LK311, 26/32LK311C

- 1 Gather and bind the cables with the cable management clip.
- 2 Fix the cable management clip firmly to the TV.



Cable Management Clip

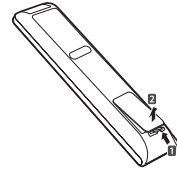
! NOTE

- Do not move the TV by holding the cable management clip, as the cable management clip may break, and injuries and damage to the TV may occur.

REMOTE CONTROL

The descriptions in this manual are based on the buttons on the remote control. Please read this manual carefully and use the TV correctly.

To replace batteries, open the battery cover, replace batteries (1.5 V AAA) matching the ⊕ and ⊖ ends to the label inside the compartment, and close the battery cover. To remove the batteries, perform the installation actions in reverse.



CAUTION

- Do not mix old and new batteries, as this may damage the remote control.

Make sure to point the remote control at the remote control sensor on the TV.

X STUDIO
Select the Photo/Music/Movie list.

Home
Accesses the main menus, or saves your input and exit the menus.

Q. MENU (see p.26)
Accesses the quick menu.

Navigation buttons
(Up / Down / Left/ Right / ENTER)
Navigates the on-screen menus and adjusts the system settings to your preference.

BACK
Allows the user to move back one step in an interactive application or other user interaction function.

SIMPLINK (see p.48)
Accesses the AV devices connected to the TV; Opens the SIMPLINK menu.

EXIT
Clears all on-screen displays and returns to TV viewing.

Colored buttons
These access special functions in some menus.

Control buttons
Controls the SIMPLINK compatible devices (USB, SIMPLINK).

POWER
Turns the TV on or off.

TV
Select the remote's operating mode: TV.

ENERGY SAVING (see p.36)
Adjusts the Energy Saving.

AV MODE (see p.25)
Toggles through preset Video and Audio modes.

INPUT (see p.25)
Rotates through inputs. Also switches the TV on from standby.

Numbers buttons
Enters numbers.

LIST (see p.23)
Displays the channel table.

Q.VIEW
Tunes to the last channel viewed.

VOLUME UP / DOWN
Adjusts the volume level.

FAV (see p.23)
Scroll through the programmed Favorite channels.

MARK
Use to mark or unmark a photo/music/movie.

RATIO (see p.24)
Resizes an image.

MUTE
Mutes all sounds.

CH
Scrolls through the saved channels.

PAGE
Moves to the previous or next screen.

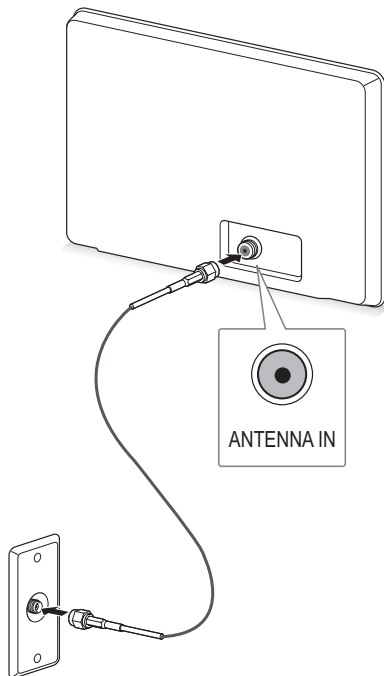
WATCHING TV

Connecting to an antenna or cable

Connect an antenna or cable to watch TV while referring to the following. The illustrations may differ from the actual items and a RF cable is optional.

Connecting an antenna or basic cable

Connect the TV to a wall antenna socket with a RF cable (75 Ω).



NOTE

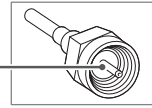
- To improve the picture quality in a poor signal area, please purchase a signal amplifier and install properly.
- If the antenna needs to be split for two TV's, install a 2-Way Signal Splitter.
- If the antenna is not installed properly, contact your dealer for assistance.



CAUTION

- Make sure not to bend the copper wire of the RF cable.

Copper wire



- Complete all connections between devices, and then connect the power cord to the power outlet to prevent damage to your TV.

Turning the TV on for the first time

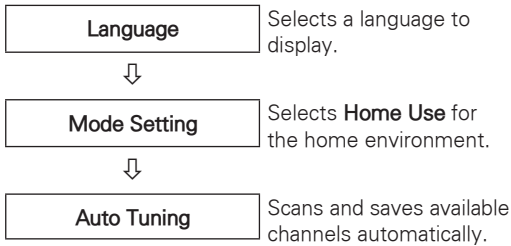
When you turn the TV on for the first time, the Initial setting screen appears. Select a language and customize the basic settings.

- 1 Connect the power cord to a power outlet.
- 2 In Standby mode, press the power button on the remote control to turn the TV on.
The Initial setting screen appears if you turn the TV on for the first time.

! NOTE

- You can also access **Initial Setting** by accessing **OPTION** in the main menu.

- 3 Follow the on-screen instructions to customize your TV settings according to your preferences.



! NOTE

- To display images in the best quality for your home environment, select **Home Use**.
- **Store Demo** is suitable for the retail environment.
- If you select **Store Demo**, the previously customized settings will switch to the default settings of **Store Demo** in 5 minutes.

- 4 When the basic settings are complete, press **ENTER**.

! NOTE

- If you do not complete the Initial setting, it will appear whenever the TV turns on.
- Disconnect the power cord from the power outlet when you do not use the TV for a long period of time.

- 5 To turn the TV off, press the power button on the remote control.

Watching TV

- 1 In Standby mode, press the power button on the remote control to turn the TV on.
- 2 Press **INPUT** and select TV.
- 3 Control the TV using the following buttons while you are watching TV.

Button	Description
CH (^, v)	Scrolls through saved channels.
LIST	Selects a channel on the saved channel list.
0 - 9	Selects a channel by entering numbers.
VOL (+, -)	Adjusts the volume level.
MUTE	Mutes all sounds.
AV MODE ¹	Selects an AV mode (see p.25).
Q.MENU	Accesses the quick menus (see p.26).
Q.VIEW	Alternates between the last two channels selected.
RATIO	Resizes an image (see p.24).

1 Each **AV mode** has the optimized image and sound settings. If you select **Off**, the image and sound settings will be restored to the previously customized settings.

- 4 To turn the TV off, press the power button on the remote control.
The TV switches to Standby mode.

Managing channels

Setting up channels

Storing channels

To store channels automatically,

- 1 Press **Home** to access the main menus.
- 2 Press the Navigation buttons to scroll to **CHANNEL** and press **ENTER**.
- 3 Press the Navigation buttons to scroll to **Auto Tuning** and press **ENTER**.
- 4 Select **Yes** to start automatic tuning.
The TV scans and saves available channels automatically.

! NOTE

- If the TV scans and saves channels, the previously saved channels will be overwritten.

- 5 When you are finished, press **EXIT**.
When you return to the previous menu, press **BACK**.

To store channels manually,

- 1 Press **Home** to access the main menus.
- 2 Press the Navigation buttons to scroll **CHANNEL** and press **ENTER**.
- 3 Press the Navigation buttons to scroll to **Manual Tuning** and press **ENTER**.
- 4 Scroll through the channel, and then add or delete channels.
- 5 When you are finished, press **EXIT**.
When you return to the previous menu, press **BACK**.

! NOTE

- The channels are stored in the order of **TV** and **CATV**.

Editing your channel list

- 1 Press **Home** to access the main menus.
- 2 Press the Navigation buttons to scroll to **CHANNEL** and press **ENTER**.
- 3 Press the Navigation buttons to scroll to **Channel Edit** and press **ENTER**.
- 4 Edit channels using the following buttons.

Button	Description
^	Highlights the channel type.
^, v, <, >	Scrolls through channel types or channels.
ENTER	Selects the highlighted channel to view.
CH (^, v)	Moves to the previous or next page.
Blue button	Adds or deletes a channel. The deleted channel displays in blue.

- 5 When you are finished, press **EXIT**.
When you return to the previous menu, press **BACK**.

Selecting a channel on the channel list

- 1 Press **LIST** to access the channel list.
- To move to the previous or next page, press **CH (^, v)**.
- 2 Select a channel you want and press **ENTER**.

Using favorite channels

Add the channels that you watch frequently to the favorite list.

Setting up your favorite list

- 1 Select a channel to add to the favorite list.
- 2 Press **Q.MENU** button and the Navigation buttons to select **Del/Add/Fav**.
- 3 Press the Navigation buttons to select **Favorite**.
- 4 When you are finished, press **EXIT**.

Selecting a channel on the favorite list

- 1 Press **FAV** to access the favorite list.
- To move to the previous or next page, press **CH (^, v)**.
- 2 Select a channel you want and press **ENTER**.

Using additional options

Adjusting aspect ratio

Resize an image to view at its optimal size by pressing **RATIO** while you are watching TV.

! NOTE

- You can also change the image size by pressing **Q. MENU** or accessing **Aspect Ratio** in the **PICTURE** menu.
- The available ratio varies depending on the input source.

- **16:9**: Resizes images to fit the screen width.



- **Just Scan**: Displays video images in the original size without disappearing parts at the edge of the image.



! NOTE

- If you select **Just Scan**, you may see image noises at the edge of the original signal.
- The input sources: Component/ HDMI/ DVI(720p/1080i/1080p) support Just Scan.

- **4:3**: Resizes images at the standard 4:3 without distortion.



- **Zoom**: Formats an image to fit the screen width. The top and bottom of the image may not appear.



- **Cinema Zoom**: Formats an image in the cinemascope ratio, 2.35:1.
 - To change the ratio of the cinema zoom, press **<** or **>** and its range is from 1 to 16.
 - To move the zoom focus up or down, press **^** or **v**.



! NOTE

- If you enlarge or reduce an image, the image may be distorted.

Changing AV modes

Each **AV mode** has the optimized image and sound settings.

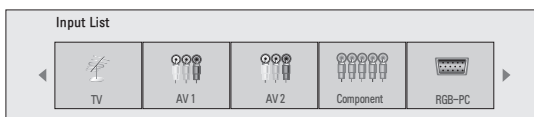
Press **AV MODE** repeatedly to select an appropriate modes.

Mode	Description
Off	Changes to the previously customized settings.
Cinema	Uses the optimized image and sound setting for the cinematic look.
Sport	Uses the optimized image and sound setting for dynamic action sports.
Game	Uses the optimized image and sound setting for fast gaming. When playing a video game using PlayStation or Xbox, it is recommended to use the Game mode. When in Game mode, functions related to picture quality will be optimized for playing games.

Using the input list

Selecting an input source

- 1 Press **INPUT** to access the input sources.
- 2 Press the Navigation buttons to scroll to one of the input sources and press **ENTER**.



Input source	Description
TV	Watch TV over the air and cable.
AV	Watch the contents in a VCR or other external devices.
Component	Watch the contents in a DVD or other external devices, or through a digital set-top box.
RGB-PC	Use the TV as a computer monitor.
HDMI	Watches contents in a HTS or other high definition devices.

Adding an Input label

Add a label to an input source so that you can easily identify a device connected to each input source.

- 1 Press **Home** to access the main menus.
- 2 Press the Navigation buttons to scroll to **OPTION** and press **ENTER**.
- 3 Press the Navigation buttons to scroll to **Input Label** and press **ENTER**.
- 4 Press the Navigation buttons to scroll to one of the input labels and press **ENTER**.
- 5 When you are finished, press **EXIT**.
When you return to the previous menu, press **BACK**.

Locking the buttons on the TV (Child Lock)

Lock the buttons on the TV to prevent any unwanted operations or accidents by children.

- 1 Press **Home** to access the main menus.
- 2 Press the Navigation buttons to scroll to **OPTION** and press **ENTER**.
- 3 Press the Navigation buttons to scroll to **Key Lock** and press **ENTER**.
- 5 Select **On** to activate the **Key lock** feature.
- To deactivate the **Key lock** feature, select **Off**.
- 6 When you are finished, press **EXIT**.
When you return to the previous menu, press **BACK**.

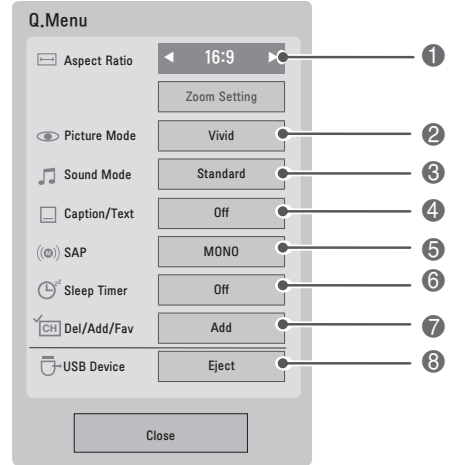
NOTE

- The TV is programmed to remember the last setting after you turn the TV off.
- If you turn the TV off with the Key lock feature activated, press the **⏻ / I, INPUT, CH** (**^, v**) on the TV or Number buttons on the remote control.
- If you press any button on the TV with the Key lock feature activated, **ⓧ** Key Lock appears on the screen.

Using the quick menu

Customize the frequently using menus.

- 1 Press **Q. MENU** to access the quick menus.
- 2 Press the Navigation buttons to scroll through the following menus.



Menu	Description
1 Aspect Ratio	Changes the image size (16:9, Just Scan, 4:3, Zoom, Cinema Zoom).
2 Picture Mode	Changes the image mode (Vivid, Standard, Natural, Cinema, Sport, Game, Expert1, Expert2).
3 Sound Mode	Changes the sound mode (Standard, Music, Cinema, Sport, Game).
4 Caption/Text	Activates or deactivate the subtitles.
5 SAP	Changes the MTS sound (Analog signal).
6 Sleep Timer	Sets the length of time until the TV to turns off.
7 Del/Add/FAV	Edits the channels to add, delete, or favorite the channel.
8 USB Device	Ejects a USB device when a USB device is connected.

NOTE

- The available menus and options may differ from the input source that you are using.

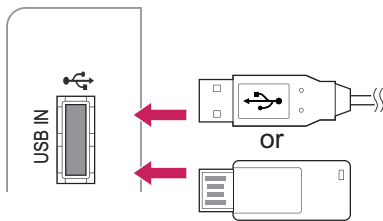
- 3 Press the Navigation buttons to scroll to the option you want.
- 4 When you are finished, press **Q. MENU**.

ENTERTAINMENT

Connecting USB storage devices

Connect USB storage devices such as a USB flash memory, external hard drive, or MP3 player to the TV and use multimedia features (see p.28)

Connect a USB flash memory or USB memory card reader to the TV as shown on the following illustration. The My media screen appears.



To disconnect a USB storage device, make sure to end the connection properly to prevent damages to the TV or files.

- 1 Press **Q.MENU** to access the quick menus.
- 2 Press the Navigation button to scroll to **Eject** and press **ENTER**.
- 3 Disconnect the USB storage device only when the message says that it is safe to remove.

CAUTION

- Do not turn the TV off or remove a USB storage device while the USB storage device is connected to the TV, as this could result in loss of files or damage to the USB storage device.
- Back up your files saved on a USB storage device frequently, as you may lose or damage the files and this may not be covered by the warranty.

Tips for using USB storage devices

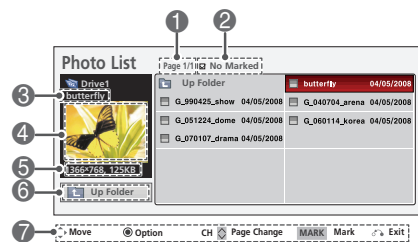
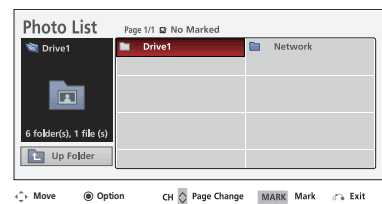
- Only a USB storage device is recognizable.
- If the USB storage device is connected through a USB hub, the device is not recognizable.
- A USB storage device which uses its own driver may not be recognized.
- In case of a card reader, up to four memory cards are concurrently recognizable.
- The recognition speed of a USB storage device may depend on each device.
- Please do not turn off the TV 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.
- Please connect power to a USB storage device (over 0.5A) 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.
- Please backup important files because data on the USB device may be damaged. Data management is the consumer's responsibility and as a result, the manufacturer does not cover data damage.
- Maximum of 999 files and 200 folders can be recognized.
- Please use only a USB storage device which was formatted as a FAT16, FAT32, 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.
- Data in a USB storage device cannot be deleted in the NTFS file system.
- The TV will display up to 128 characters of a files name.
- The recommended capacity is 1TB or less for a USB external hard disk and 32GB or less for USB memory.

- TV need more time to detect if the storage size is bigger. If the USB memory is connected in Standby Mode, power on time would be longer than without memory.
- Any device with more than the recommended capacity may not work properly.
- If a USB external hard disk with a "Energy Saving" function does not work, turn the hard disk off and on again to make it work properly. Refer to the user manual of the application USB external hard disk.
- When using a USB HDD via the USB extension cable, connect a support electric power source.

Browsing files

Access the photo, music, or movie lists and browse files.

- 1 Connect a USB storage device.
- 2 Press **Home** to access the Home menu.
- 3 Press the Navigation buttons to scroll to **USB** and press **ENTER**.
- 4 Press Navigation buttons to scroll to **Photo List**, **Music List**, or **Movie List** and press **ENTER**.
- 5 Press Navigation buttons to select a folder or file you want.



No.	Description
①	Current page number/total number of pages
②	The number of selected files
③	File name
④	Preview window
⑤	File size
⑥	Return to the previous level
⑦	Available buttons on the remote control

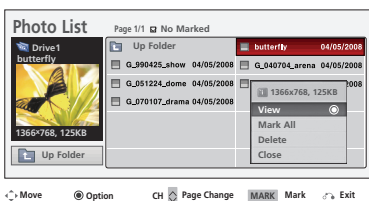
Supported file format

Type	Supported file format
Photo	<ul style="list-style-type: none"> JPG Available size Baseline: 64 pixel (W) x 64 pixel (H) - 15360 pixel (W) x 8640 pixel (H) Only Baseline scan is supported among JPG (SOF0, SOF1 only) Non supported files are displayed in the form of bitmap.
Music	<ul style="list-style-type: none"> MP3 Bit rate range 32 Kbps - 320 Kbps Sampling rate (Sampling Frequency) MPEG1 layer 3: 32 kHz - 48 kHz *A copy-protected file will not play.
Video	<ul style="list-style-type: none"> mpg, mpeg, mpe, vob, dat, Avi, divx, m4v Max bit rate of playable Divx file: 6 Mbps Sampling frequency: within 32KHz - 48KHz (MP3) Bit rate: within 32kbps - 320kbps (MP3) Supported subtitle format: *.smi/ *.srt/ *.sub(MicroDVD,SubViewer 2.0)/ *.ass/* .ssa/* .txt(DVD Subtitle System)

Viewing photos

View image files saved in a USB storage device. The displays on the screen may differ from the model.

- 1 Press **Home** to access the Home menu.
- 2 Press the Navigation buttons to scroll to **USB** and press **ENTER**.
- 3 Press the Navigation buttons to scroll to **Photo List** and press **ENTER**.
- 4 Press Navigation buttons to select a folder or file you want and press **ENTER**. A pop-up window will appear.



- 5 View photos by using the following menus.

Menu	Description
View	Display the selected photo.
Mark All or Unmark All	Selects all files or clears all of your selections.
Delete	Delete the selected photo file.
Close	Closes the pop-up menu.

Using photo options

Use the following options while viewing photos.



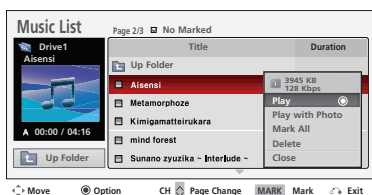
Options

Number of selected photos

Option	Description
Slideshow	Selected photos are displayed during the slide show. If there are no selected photos, all photos saved in the current folder display during a slideshow. <ul style="list-style-type: none"> Set the time interval of the slide show in Option.
BGM	Listen to music while viewing photos in full size. <ul style="list-style-type: none"> Set the BGM device and album in Option.
Rotate (Rotate)	Rotates the photo 90°, 180°, 270°, 360° clockwise.
Delete	Deletes a photo.
Option	Set values for Slide Speed and Music Album . <ul style="list-style-type: none"> You cannot change Music Album while BGM is playing.
Hide	Hide the menu on the full-sized screen. <ul style="list-style-type: none"> To see the menu again on the full-sized screen, press Enter button to display.

Listening to music

- 1 Press **Home** to access the Home menu.
- 2 Press the Navigation buttons to scroll to **USB** and press **ENTER**.
- 3 Press the Navigation buttons to scroll to **Music List** and press **ENTER**.
- 4 Press Navigation buttons to select a folder or file you want and press **ENTER**.
A pop-up window will appear.



- 5 Play music by using the following menus.

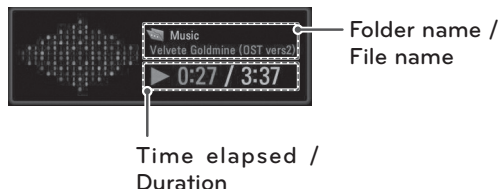
Menu	Description
Play, Stop Play, or Play Marked	Plays a music file, stops the playback, or plays the selected music file. <ul style="list-style-type: none"> • When music is playing, ▶ is displayed in front of the music play time.
Play with Photo	Start playing the selected music and then move to the Photo List.
Mark All or Unmark All	Selects all files or clears all of your selections
Delete	Delete the selected music file.
Close	Closes the pop-up menu.

- 6 Control playback by using the following buttons.

Button	Description
■	Stops playback
▶	Plays a music file
	Pauses or resumes playback
◀	Skips to the next file
▶	Skips to the previous file

! NOTA

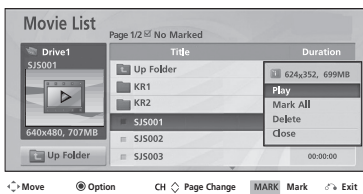
- A damaged or corrupted music file does not play but displays 00:00 in play time.
- A copy-protected file will not play.
- If the TV is not in use for some time during playback, the information box as a screensaver will appear to prevent image burn.



Viewing movies

Play video files on the TV. Your TV can display video files from a USB storage device.

- 1 Press **Home** to access the Home menu.
- 2 Press the Navigation buttons to scroll to **USB** and press **ENTER**.
- 3 Press the Navigation buttons to scroll to **Movie List** and press **ENTER**.
- 4 Press Navigation buttons to select a folder or file you want and press **ENTER**.
A pop-up window will appear.



- 5 Play a movie by using the following menus.

Menu	Description
Play, Stop Play, or Play Marked	Plays a movie, stops playback, or plays the selected movie.
Mark All or Unmark All	Selects all files or clears all of your selections.
Delete	Delete the selected movie file.
Close	Closes the pop-up menu.

- 6 Control playback by using the following buttons.

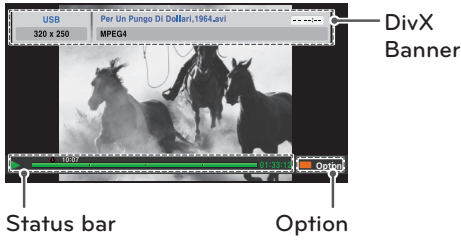
Button	Description
■	Stops the playback.
▶	Plays a video.
⏸	Pauses or resumes the playback.
◀	Scans backward in a file.
▶	Scans forward in a file.
< or >	Skips to specific points in a file during playback. The time of a specific point will appear on the status bar. In some files, this function may not work properly.

Tips for playing video files

- 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.
- Time information in an external subtitle file should be arranged in ascending order to be played.
- DivX may not be played depending on its types or recording methods.
- If the video and audio structure of recorded file is not interleaved, either video or audio is out-putted.
- Max bitrate of playable DivX file is 6 Mbps.
- Maximum FPS (Frame Per Second) can be reached only at SD level. FPS is 25 FPS (720*576) or 30 FPS (720*480) depending on Resolution.
- Files of 25 FPS or 30 FPS of higher may not be played properly.
- If the file is recorded with GMC, the unit supports only 1 point of recorded level. (GMC is the acronym for Global Motion Compensation, a technique used to compensate MPEG Video files.)
- Playing a video via a USB connection that does not 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.

Video options

1 Press **ENTER** during playback.



- 2 Press the Red button to access the video option menu.
- 3 Press the Navigation buttons to scroll to one of the following options and press **ENTER**.

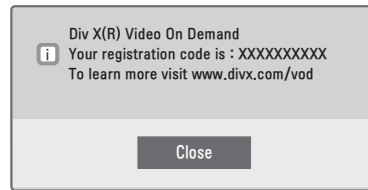
Option	Description																						
Picture Size	<ul style="list-style-type: none"> • Full Mode: Files are played in full screen mode regardless of the aspect ratio of video. • Original Mode: Files are played according to the aspect ratio of video. 																						
Audio Language	Changes the Language Group of the audio for video files. Files with a single audio track cannot be selected.																						
Subtitle Language	The subtitles can be turned on or off.																						
	<table border="1"> <thead> <tr> <th>Subtitle Language Group</th> <th>Support Language</th> </tr> </thead> <tbody> <tr> <td>Latin 1</td> <td>French, Spanish, Catalan Basque, Portuguese, Italian, Albanian, Rhaeto-Romanic, Dutch, German, Danish, Swedish, Norwegian, Finnish, Faroese, Icelandic, Irish, Scottish, English</td> </tr> <tr> <td>Latin 2</td> <td>Czech, Hungarian, Polish, Romanian, Croatian, Slovak, Slovenian, Sorbian</td> </tr> <tr> <td>Latin 4</td> <td>Estonian, the Baltic languages Latvian (Letish) and Lithuanian, Greenlandic and Lappish</td> </tr> <tr> <td>Latin 5</td> <td>English, Trukish</td> </tr> <tr> <td>Cyrillic</td> <td>Bulgarian, Byelorussian, Macedonian, Russian, Serbian and pre-1990 (no ghewith upturn) Ukrainian</td> </tr> <tr> <td>Greek</td> <td>English, Modern Greek</td> </tr> <tr> <td>Hebrew</td> <td>English, Modern Hebrew</td> </tr> <tr> <td>Chinese</td> <td>Chinese</td> </tr> <tr> <td>Thai</td> <td>Thai</td> </tr> <tr> <td>Arabic</td> <td>English, Arabic</td> </tr> </tbody> </table>	Subtitle Language Group	Support Language	Latin 1	French, Spanish, Catalan Basque, Portuguese, Italian, Albanian, Rhaeto-Romanic, Dutch, German, Danish, Swedish, Norwegian, Finnish, Faroese, Icelandic, Irish, Scottish, English	Latin 2	Czech, Hungarian, Polish, Romanian, Croatian, Slovak, Slovenian, Sorbian	Latin 4	Estonian, the Baltic languages Latvian (Letish) and Lithuanian, Greenlandic and Lappish	Latin 5	English, Trukish	Cyrillic	Bulgarian, Byelorussian, Macedonian, Russian, Serbian and pre-1990 (no ghewith upturn) Ukrainian	Greek	English, Modern Greek	Hebrew	English, Modern Hebrew	Chinese	Chinese	Thai	Thai	Arabic	English, Arabic
	Subtitle Language Group	Support Language																					
	Latin 1	French, Spanish, Catalan Basque, Portuguese, Italian, Albanian, Rhaeto-Romanic, Dutch, German, Danish, Swedish, Norwegian, Finnish, Faroese, Icelandic, Irish, Scottish, English																					
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	Cyrillic	Bulgarian, Byelorussian, Macedonian, Russian, Serbian and pre-1990 (no ghewith upturn) Ukrainian																					
	Greek	English, Modern Greek																					
	Hebrew	English, Modern Hebrew																					
Chinese	Chinese																						
Thai	Thai																						
Arabic	English, Arabic																						
Sync.	When the video is not synchronized with the captions, it can be adjusted by 0.5 second.																						
Position	Move the location of the subtitles.																						

DivX® VOD Guide

DivX® VOD Registration

In order to play purchased or rented DivX® VOD contents, you should register your device with 10 digit DivX registration code from your device at www.divx.com/vod.

- 1 Press **Home** to access the Home menu.
- 2 Press the Navigation buttons to scroll to **USB** and press **ENTER**.
- 3 Press the Navigation buttons to scroll to **DivX Reg. Code** and press **ENTER**.
- 4 View the registration code of your TV.



5 When you are finished, press **EXIT**.

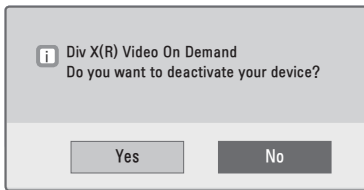
NOTE

- While you are checking the registration code, some buttons may not work.
- If you use the DivX registration code of another device, you cannot play the rented or purchased DivX file. Make sure to use the DivX registration code assigned to your TV.

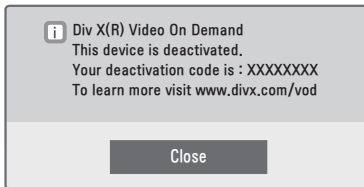
DivX® VOD Deregistration

You should deregister your device with 8 digit DivX deregistration code from your device at www.divx.com/vod.

- 1 Press **Home** to access the Home menu.
- 2 Press the Navigation buttons to scroll to **USB** and press **ENTER**.
- 3 Press the Navigation buttons to scroll to **Deactivation** and press **ENTER**.
- 4 Select **Yes** to confirm.



- 5 Select **ENTER**.



- 6 When you are finished, press **EXIT**.

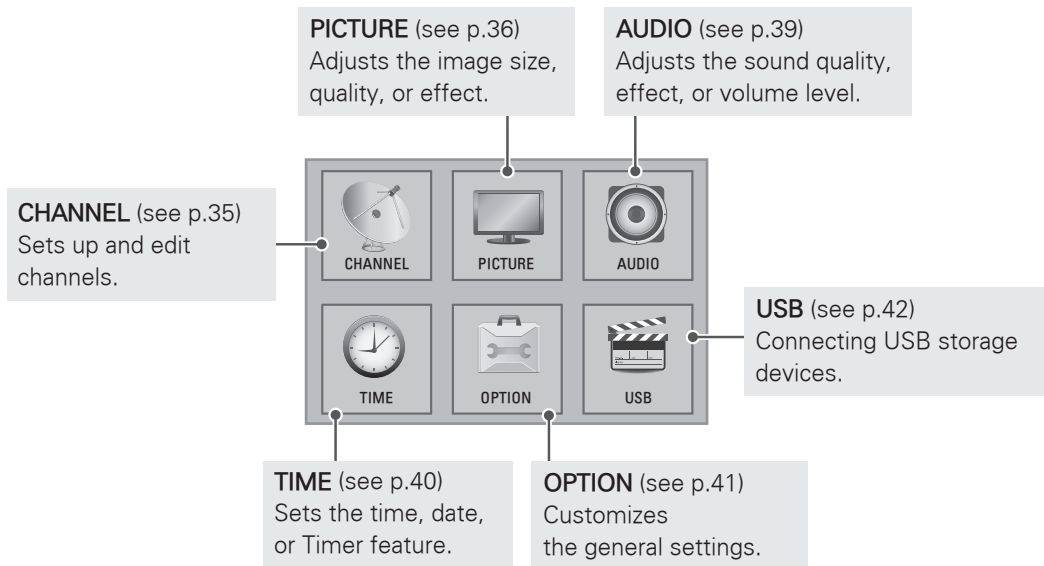
NOTE

- Once the deregistration is executed, you must register your device again to see DivX® VOD contents.

CUSTOMIZING TV SETTINGS

Accessing Main Menus

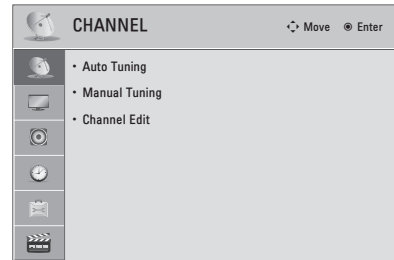
- 1 Press **Home** to access the main menus.
- 2 Press the Navigation buttons to scroll to one of the following menus and press **ENTER**.
- 3 Press the Navigation buttons to scroll to the setting or option you want and press **ENTER**.
- 4 When you are finished, press **EXIT**.



Customizing Settings

CHANNEL Settings

- 1 Press **Home** to access the main menus.
- 2 Press the Navigation buttons to scroll to **CHANNEL** and press **ENTER**.
- 3 Press the Navigation buttons to scroll to the setting or option you want and press **ENTER**.
 - To return to the previous level, press **BACK**.
- 4 When you are finished, press **EXIT**.

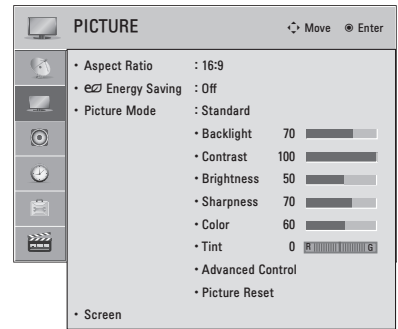


The available channel settings are described in the following.

Setting	Description
Auto Tuning	Tunes and stores all available channels through antennas or cable inputs (see p.22).
Manual Tuning	Tunes and stores the channels you want manually (see p.22).
Channel Edit	Adds or deletes channels on the channel (see p.23).

PICTURE Settings

- 1 Press **Home** to access the main menus.
- 2 Press the Navigation buttons to scroll to **CHANNEL** and press **ENTER**.
- 3 Press the Navigation buttons to scroll to the setting or option you want and press **ENTER**.
- To return to the previous level, press **BACK**.
- 4 When you are finished, press **EXIT**.




The available picture settings are described in the following.

Setting	Description					
Aspect Ratio	Changes the image size to view images at its optimal size (see p.24).					
Energy Saving	Reduces the power consumption by adjusting the screen brightness.					
	<div style="border: 1px solid black; padding: 5px;"> <p>NOTE</p> <ul style="list-style-type: none"> When selecting "Minimum, Medium, or Maximum", Backlight feature will not work. </div>					
	Option					
	<table border="1" style="width: 100%;"> <tr> <td>Off</td> <td>Energy Saving is not used.</td> </tr> <tr> <td>Minimum/ Medium/Maximum</td> <td>Selects the brightness level.</td> </tr> <tr> <td>Screen off</td> <td>The screen turns off in 3 seconds. Pressing any button of the remote control will turn on the screen again.</td> </tr> </table>	Off	Energy Saving is not used.	Minimum/ Medium/Maximum	Selects the brightness level.	Screen off
Off	Energy Saving is not used.					
Minimum/ Medium/Maximum	Selects the brightness level.					
Screen off	The screen turns off in 3 seconds. Pressing any button of the remote control will turn on the screen again.					
Picture Mode	Selects one of the preset image or customizes options in each mode for the best TV screen performance. You are also able to customize advanced options of each mode. The available preset picture modes vary depending on the TV.					
	Mode					
	Vivid	Adjusts the video image for the retail environment by enhancing the contrast, brightness, color, and sharpness.				
	Standard	Adjusts the image for the normal environment.				
	Natural	Displays the most natural screen.				
	Cinema	Optimizes the video image for a cinematic look to enjoy movies as if you are in a movie theater.				
	Sport	Optimizes the video image for high and dynamic actions by emphasizing primary colors such as white, grass, or sky blue.				
	Game	Optimizes the video image for a fast gaming screen such as PCs or games.				
Expert	Adjusts the detailed video image settings for video experts as well as general viewers.					

Setting	Description	
SCREEN	Customizes the PC display options.	
	Option	
	Resolution	Selects a proper resolution when your PC uses 1024 X 768, 1280 X 768, or 1360 X 768 resolution.
	Auto Configure	Sets the TV to optimize the options automatically for the TV display.
	Position	Locates the image at the proper position.
	Size	Adjusts the image size.
	Phase	Eliminates horizontal streaking.
	Reset	Restores the options to the default setting.

Basic Image Options

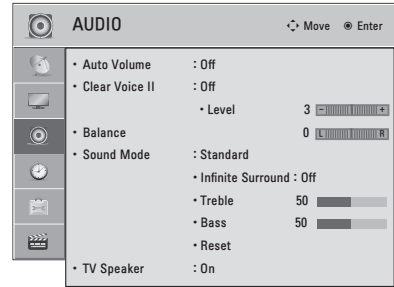
Setting	Description
Backlight	Adjusts the brightness of the screen by controlling the LCD backlight. If you decrease the brightness level, the screen becomes darker and the power consumption will be reduced without any video signal loss.  NOTE <ul style="list-style-type: none"> When adjusting Energy Saving, Backlight function is disabled.
Contrast	Increases or decreases the gradient of the video signal. You may use Contrast when the bright part of the picture is saturated.
Brightness	Adjusts the base level of the signal 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.
Color	Adjusts intensity of all colors.
Tint	Adjusts the balance between red and green levels.
Advanced Control	Customizes the advanced options.
Picture Reset	Restores the options of each mode to the factory default.

Advanced Image Options

Setting	Description
Color Temperature	Set to warm to enhance hotter colors such as red, or set to cool to enhance cooler colors such as blue.
Dynamic Contrast	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.
Dynamic Color	Adjusts screen colors so that they look livelier, richer and clearer. This feature enhances hue, saturation and luminance so that red, blue and green white look more vivid.
Noise Reduction	Reduces screen noise without compromising video quality.
Gamma	You can adjust brightness of dark area and middle gray level area of the picture. <ul style="list-style-type: none"> » Low: Make the dark and middle gray level areas brighter. » Medium: Express the original picture level. » High: Make the dark and middle gray level area darker.
Black Level	Sets black level of the screen to proper level. This function is available in the following modes: AV (NTSC-M), HDMI, Component or USB. <ul style="list-style-type: none"> » Low: The reflection of the screen gets darker. » High: The reflection of the screen gets brighter. » Auto: Realizing the black level of the screen and set it to High or Low automatically.
Eye Care	Adjusts the brightness of the screen to prevent the screen from being too bright. Dims extremely bright pictures. This feature is disabled in "Picture Mode - Standard, Sport, Game".
Film Mode	Makes video clips recorded in film look more natural by eliminating judder effect. DVD and Blu-ray movies are filmed at 24 frames per second (fps).
Color Gamut	Maximizes the utilization of color to increase color quality. <ul style="list-style-type: none"> » Standard: Displays standard set of colors. » Wide: Increase number of colors used.
Edge Enhancer	Shows clearer and distinctive yet natural edges of the video.
Color Filter	This is the function to filter the specific colors of the video. You can use the RGB filter to set color saturation and hue accurately.
Color Standard	Convert the color of a different video to HD color.
White Balance	This is the function to adjust the overall color of the screen to the feeling you want. <ul style="list-style-type: none"> - Red/Green/Blue Contrast, Red/Green/Blue Brightness: The adjustment range is -50 - +50.
Color Management System	As the tool used by the experts to make adjustments by using the test patterns, this does not affect other colors but can be used to selectively adjust the 6 color areas (Red/Green/Blue/Cyan/Magenta/Yellow). Color difference may not be distinctive even when you make the adjustments for the general video. <ul style="list-style-type: none"> Adjusts Red/Green/Blue/Yellow/Cyan/Magenta. Red/Green/Blue/Yellow/Cyan/Magenta Color: The adjustment range is -30 - +30. Red/Green/Blue/Yellow/Cyan/Magenta Tint: The adjustment range is -30 - +30. This feature is disable in RGB-PC and HDMI-PC mode.

AUDIO Settings

- 1 Press **Home** to access the main menus.
- 2 Press the Navigation buttons to scroll to **AUDIO** and press **ENTER**.
- 3 Press the Navigation buttons to scroll to the setting or option you want and press **ENTER**.
 - To return to the previous level, press **BACK**.
- 4 When you are finished, press **EXIT**.

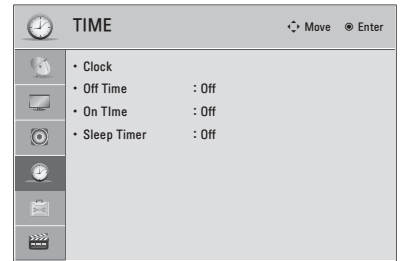


The available audio settings are described in the following.

Setting	Description
Auto Volume	Activates the Auto Volume feature to keep the volume level consistent whenever you change channels. The volume level may not be consistent due to different signal conditions of broadcasting stations.
Clear Voice II	Sets whether to enhance human voice clarity. You can adjust the level of clarity when you set this feature on.
Balance	Adjust balance between the left and right speakers according to your room environment.
Sound Mode	Selects one of the preset sound modes or customizes options in each mode.
Mode	
Standard	Select when you want standard-quality sound.
Music	Select when you listen to music.
Cinema	Select when you watch movies.
Sport	Select when you watch sports events.
Game	Select when you play games.
<div style="border: 1px solid black; padding: 10px;"> <p>NOTE</p> <ul style="list-style-type: none"> If sound quality or volume is not at the level you want, it is recommended to use a separate home theater system or amplifier to cope with different user environments. If the Clear Voice II feature is on, Infinite Surround will not be activated. </div>	
Option	
Infinite Surround	Infinite Surround is a patented LG proprietary sound processing technology that strives immersive 5.1 surround sound with just two front speakers.
Treble	Controls the dominant sounds in the output. When you turn up the treble, it will increase the output to the higher frequency range.
Bass	Controls the softer sounds in the output. When you turn up the bass, it will increase the output to the lower frequency range.
Reset	Resets the sound mode to the default setting.
TV Speaker	Turns on the internal speaker of the TV when using an external Hi-Fi system. You can use the TV speaker as an audio output device even if there is no video input.

TIME Settings

- 1 Press **Home** to access the main menus.
- 2 Press the Navigation buttons to scroll to **TIME** and press **ENTER**.
- 3 Press the Navigation buttons to scroll to the setting or option you want and press **ENTER**.
 - To return to the previous level, press **BACK**.
- 4 When you are finished, press **EXIT**.

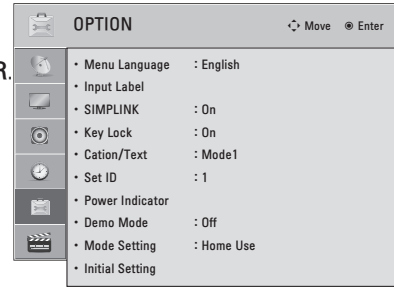


The available time settings are described in the following

Setting	Description
Clock	Sets the time, date, time zone, and daylight-saving time feature. The time will be set automatically according to a digital channel signal which includes time information provided by the broadcasting station. If not, set the time and date manually.
Off Time/On Time	<p>Sets the time to turn on or off the TV automatically. To use this function, you should set the current time and date in advance.</p> <div style="border: 1px solid black; padding: 5px;"> <p>NOTE</p> <ul style="list-style-type: none"> • If you do not press any button within 2 hours after the TV turns on by the On Time feature, the TV enters the Standby mode automatically. • If you set both Off time and On time features to the same time, the Off time feature overrides the On time feature. </div>
Sleep Timer	Sets the length of time until the TV to turns off. When you turn the TV off and turn it on again, the Sleep timer faature will be set to off.

OPTION Settings

- 1 Press **Home** to access the main menus.
- 2 Press the Navigation buttons to scroll to **OPTION** and press **ENTER**.
- 3 Press the Navigation buttons to scroll to the setting or option you want and press **ENTER**.
 - To return to the previous level, press **BACK**.
- 4 When you are finished, press **EXIT**.

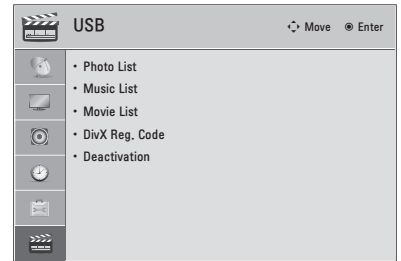


The available general settings are described in the following.

Setting	Description	
Menu Language	Selects a desired language.	
Input Label	Selects a label for an input source to identify a device connected to each input source. (see p.25)	
SIMPLINK	Sets to control and play other AV devices connected to the TV with an HDMI cable. Other devices should support HDMI-CEC profile and SIMPLINK logo. (see p.48)	
Key Lock	Locks or unlocks the buttons on the TV.	
Caption/Text	Sets whether to display captions and customize your option in each mode.	
	Mode	
	Mode 1-2 Text 1-2	Displays the audio portion of a TV program as text on the TV screen. Mode1 is the most common mode in use.
Set ID	Adds an ID to the connected devices. (see p.57)	
Power Indicator	Sets to turn on off the indicator light on the TV.	
	Option	
	Standby Light Power Light	Sets to turn on off the indicator light in Standby mode. Sets to turn on off the indicator light when you turn on the power.
Demo Mode	Sets to show special features of the TV.	
Mode Setting	Default selection is "Home Use". We recommend setting the TV to "Home Use" mode for the best picture in your home environment.	
	Option	
	Home Use Store Demo	Selects it for the home environment. Selects it for the retail environment.
Initial Setting	Resets the TV to factory default and erases all stored channels. Customizes the TV settings to suit your preference. The initial setup screen will appear when you turn on the TV for the first time.	
	Setting	
	Language Mode Setting	Selects a desired language. Selects Home Use for the home environment. Selects Store Demo for the retail environment.
	Auto Tuning	Scans and saves available channels automatically.

USB Settings

- 1 Press **Home** to access the main menus.
- 2 Press the Navigation buttons to scroll to **USB** and press **ENTER**.
- 3 Press the Navigation buttons to scroll to the setting or option you want and press **ENTER**.
 - To return to the previous level, press **BACK**.
- 4 When you are finished, press **EXIT**.



The available general settings are described in the following.

Setting	Description
Photo List	Use it for viewing photos. (see p.29)
Music List	Use it for listening to music. (see p.30)
Movie List	Use it for viewing movies. (see p.31)
DivX Reg. Code	Registers your TV to play DivX protected videos (see p.32)
Deactivation	Deactivates your TV (see p.33)

MAKING CONNECTIONS

Connect various external devices to the TV and switch input modes to select an external device. For more information on external device's connection, refer to the manual provided with each device.

Available external devices are: HD receivers, DVD players, VCRs, audio systems, USB storage devices, PC, gaming devices, and other external devices.



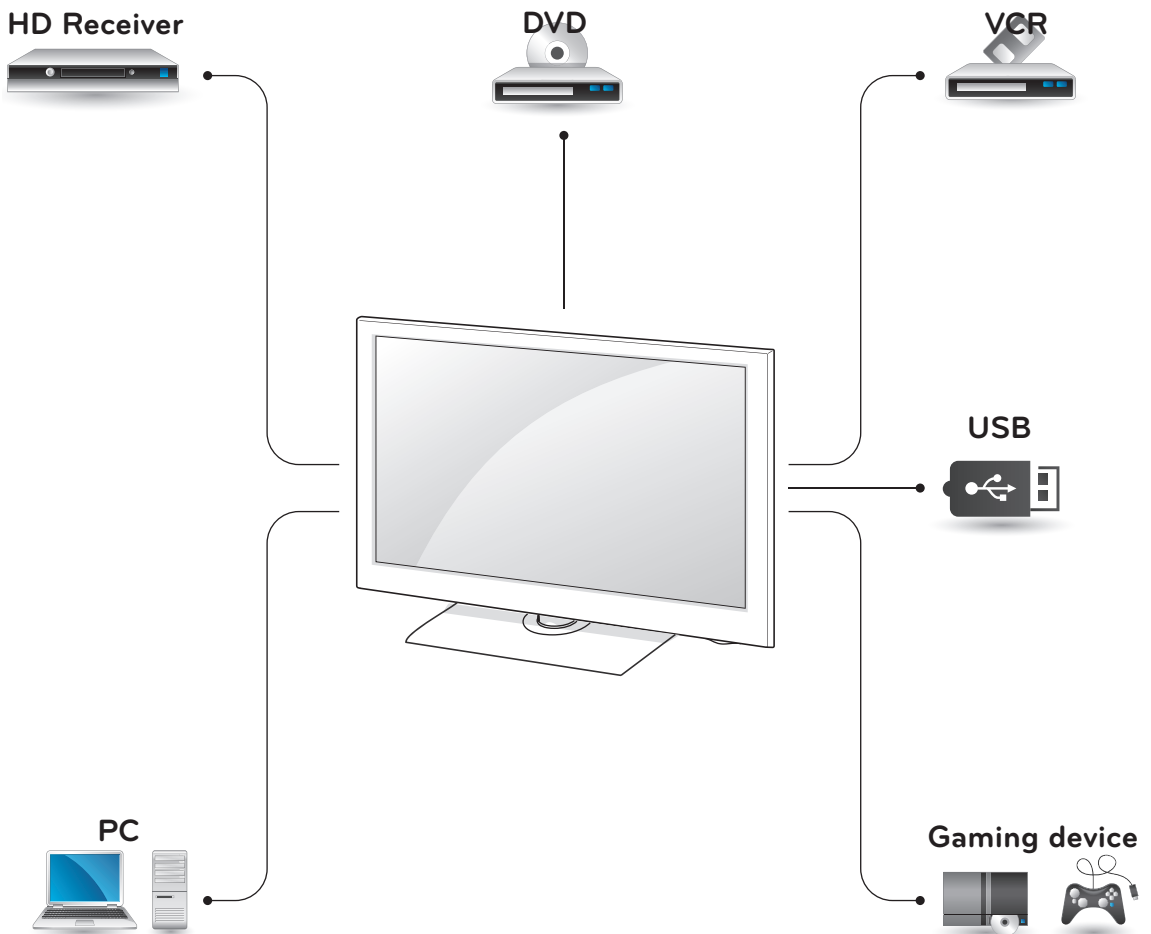
NOTE

- If you record a TV program on a DVD recorder or VCR, make sure to connect the TV signal input cable to the TV through a DVD recorder or VCR. For more information on recording, refer to the manual provided with the connected device.
- The external device connection may differ from the model.
- Connect external devices to the TV regardless of the order of the TV port.

Connection overview

Connect various external devices to the ports on the TV back panel.

- 1 Find an external device you want to connect to your TV as shown on the following illustration.
- 2 Check the connection type of the external device.
- 3 Go to the appropriate illustration and check the connection details.



HDMI – see p.45

DVI – see p.45

Component – see p.46

Composite – see p.46

RGB – see p.47

Memory storage – see p.47

Memory card reader – see p.47



NOTE

- If you connect a gaming device to the TV, use the cable supplied with the gaming device.
- Refer to the external equipment's manual for operating instructions.

- This part of MAKING CONNECTIONS mainly uses picture for 26/32LK310, 26/32LK311, 26/32LK311C.

Connecting to a HD receiver, DVD, or VCR player

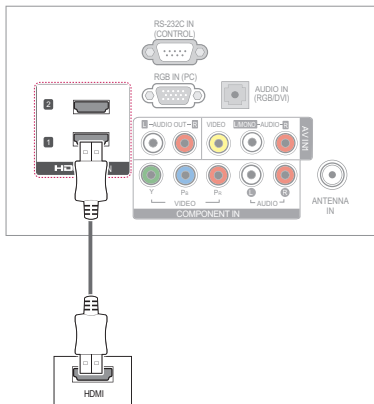
Connect a HD receiver, DVD, or VCR player to the TV and select an appropriate input mode.

HDMI connection

Transmits the digital video and audio signals from an external device to the TV. Connect the external device and the TV with the HDMI cable as shown in the following illustration.

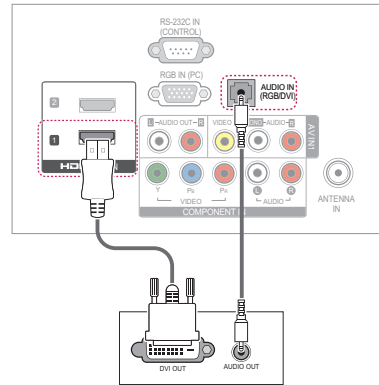
NOTE

- Use the latest High Speed HDMI™ Cable with CEC (Customer Electronics Control) function.
- High Speed HDMI™ Cables are tested to carry an HD signal up to 1080p and higher.



DVI to HDMI connection

Transmits the digital video signal from an external device to the TV. Connect the external device and the TV with the DVI-HDMI cable as shown in the following illustration. To transmit an audio signal, connect an audio cable.

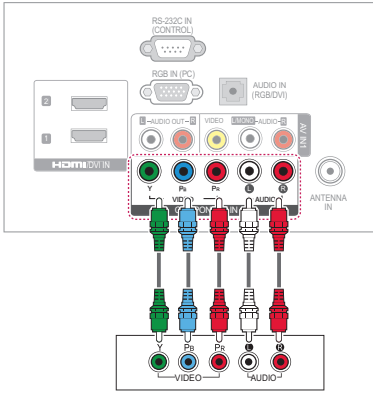


NOTE

- DVI Function is only operating in HDMI/ DVI IN 1 jack of 26/32LK310, 26/32LK311, 26/32LK311C Models.

Component connection

Transmits the analog video and audio signals from an external device to the TV. Connect the external device and the TV with the component cable as shown in the following illustration.



! NOTE

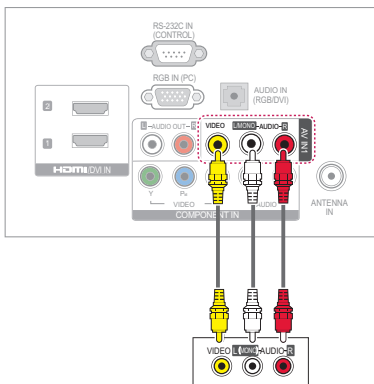
- If cables are installed incorrectly, it could cause the image to display in black and white or with distorted color. Check to ensure the cable are matched with the corresponding color connection.

Composite connection

Transmits the analog video and audio signals from an external device to the TV. Connect the external device and the TV with the composite cable as shown in the following illustration.

! NOTE

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



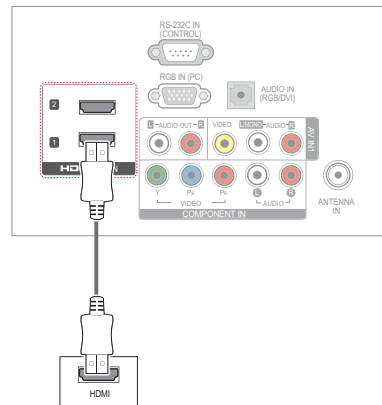
Connecting to a PC

! NOTE

- It is recommended to use the TV set with the HDMI connection for the best image quality.

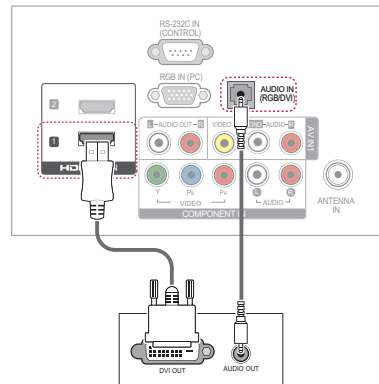
HDMI Connection

Transmits the digital video and audio signals from your PC to the TV. Connect the PC and the TV with the HDMI cable as shown in the following illustrations.



DVI to HDMI Connection

Transmits the digital video signal from your PC to the TV. Connect the PC and the TV with the DVI-HDMI cable as shown in the following illustration. To transmit an audio signal, connect an audio cable.

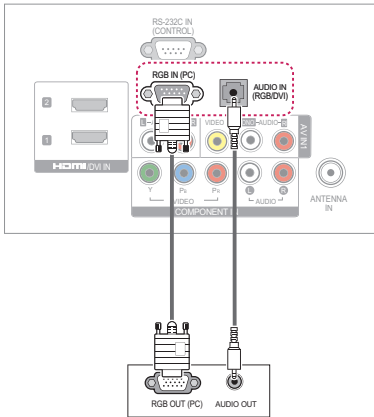


! NOTE

- DVI Function is only operating in HDMI/ DVI IN 1 jack of 26/32LK310, 26/32LK311, 26/32LK311C Models.

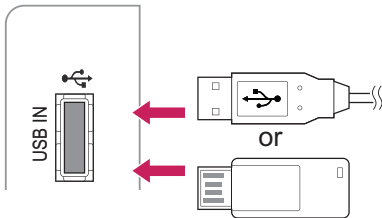
RGB connection

Transmits the analog video signal from your PC to the TV. Connect the PC and the TV with the D-sub 15 pin signal cable as shown in the following illustrations.



Connecting to a USB

Connect a USB storage device such as a USB flash memory, external hard drive, MP3 player or a USB memory card reader to the TV and access the My media menu to use various multimedia files. See "Connecting USB storage devices" on p.27 and "Browsing files" on p.28.



Connecting to an audio system

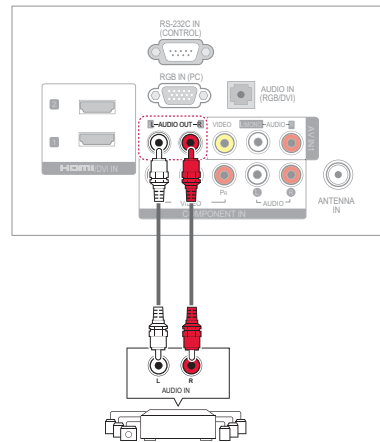
Use an optional external audio system instead of the built-in speaker.

! NOTE

- If you use an optional external audio device instead of the built-in speaker, set the TV speaker feature to off (see p.39).

Analog stereo audio connection

Transmits the analog audio signal from the TV to an external device. Connect the external device and the TV with the audio cable as shown in the following illustration.



SIMPLINK connection

Use the TV remote control to play and control the AV device connected with the HDMI cable through HDMI-CEC. This TV may work with the devices that support HDMI-CEC, but only devices with the **SIMPLINK** logo are fully supported.

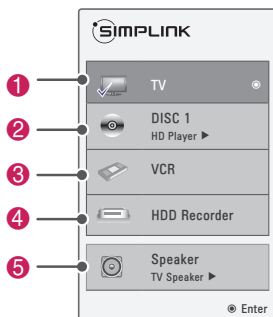
Connect one end of the HDMI cable to the HDMI/DVI IN or HDMI IN terminal on the rear of the TV and the other end to the SIMPLINK device.

! NOTE

- If the connected device does not support HDMI-CEC, the SIMPLINK feature is unavailable.
- To operate SIMPLINK, you should use an High Speed HDMI cable with the CEC (Consumer Electronics Control) function.
- SIMPLINK may not work properly if you a third-party device that has an HDMI-CEC function.

Activating and Using the SIMPLINK menus

- 1 Press **SIMPLINK** to access the SIMPLINK menus.
- 2 Press the Navigation buttons to scroll to one of the devices and press **ENTER**.



No.	Description
①	Displays the previously viewed TV channel.
②	Plays discs. When multiple discs are available, the title of the disc appears at the bottom of the screen.
③	Controls the connected VCR.
④	HDD recordings playback: Controls the recording stored in HDD.
⑤	Audio out to home theater speaker or Audio out to TV: Changes the audio output between Home theater speaker and TV speaker.

- A check mark appears in front of the selected device.
- Available devices display in a bright color.
- Unavailable devices display in grey.

3 Control the selected AV device.

- 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.
- Disc playback: Control connected AV devices by pressing the Navigation buttons, **ENTER**, **▶**, **■**, **||**, **◀** and **▶▶**.
- Power off all devices: When you power 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 automatically turn on.

! NOTE

- If you change the input source by pressing **INPUT**, the progressing function of the SIMPLINK device will stop.
- If you select a device that has the home theater feature, the sound output automatically switches to the home theater speaker and the TV speaker turns off.

MAINTENANCE

Update and clean your TV regularly to keep the best performance and to extend the product lifespan.

Cleaning your TV



CAUTION

- Make sure to turn the power off and disconnect the power cord and all other cables first.
- When the TV is left unattended and unused for a long time, disconnect the power cord from the wall outlet to prevent possible damage from lightning or power surges.

Screen and frame

To remove dust or light dirt, wipe the surface with a dry, clean, and soft cloth.

To remove major dirt, wipe the surface with a soft cloth dampened in clean water or a diluted mild detergent. Then wipe immediately with a dry cloth.



CAUTION

- Do not push, rub, or hit the surface with your fingernail or a sharp object, as this may result in scratches on the screen and image distortions.
- Do not use any chemicals, such as waxes, benzene, alcohol, thinners, insecticides, air fresheners, lubricants, as these may damage the screen's finish and cause discoloration.

Cabinet and stand

To remove dust or light dirt, wipe the cabinet with a dry, clean, and soft cloth.

To remove major dirt, wipe the cabinet with a soft cloth dampened in a clean water or water containing a small amount of mild detergent. Then wipe immediately with a dry cloth.



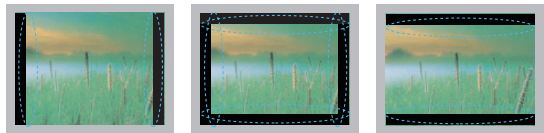
CAUTION

- Do not spray liquid onto the surface. If water enters the TV, it may result in fire, electric shock, or malfunction.
- Do not use any chemicals as this may deteriorate the surface.

Power cord

Remove the accumulated dust or dirt on the power cord regularly.

Preventing "Image burn" or "Burn-in" on your TV screen



- If a fixed image displays on the TV screen for a long period of time, it will be imprinted and become a permanent disfigurement on the screen. This is "image burn" or "burn-in" and not covered by the warranty.
- If the aspect ratio of the TV is set to 4:3 for a long period of time, image burn may occur on the letterboxed area of the screen.
- Avoid displaying a fixed image on the TV screen for a long period of time (2 or more hours for LCD, 1 or more hours for the Plasma TV) to prevent image burn.

TROUBLESHOOTING

General

Problem	Resolution
Cannot control the TV with the remote control.	<ul style="list-style-type: none"> • Check the remote control sensor on the product and try again. • Check if there is any obstacle between the product and the remote control. • Check if the batteries are still working and properly installed (⊕ to ⊕, ⊖ to ⊖). • Check if the appropriate input mode such as TV or VCR is set for using the remote control.
No image display and no sound is produced.	<ul style="list-style-type: none"> • Check if the product is turned on. • Check if the power cord is connected to a wall outlet. • Check if there is a problem in the wall outlet by connecting other products.
Image appears slowly when the TV turns on.	<ul style="list-style-type: none"> • The image is muted during the product startup process. This is normal. If the image does not appear in a few minutes, unplug the TV for 30 seconds and try again. If the image still does not appear, contact the authorized service center in your local area.
Cannot connect external devices.	<ul style="list-style-type: none"> • Refer to the "Connection overview" and connect an external device.
The TV turns off suddenly.	<ul style="list-style-type: none"> • Check the power control settings. The power supply may be interrupted. • Check if the Auto sleep feature is activated in the Time settings. Refer to the "Sleep Timer". • If there is no signal while the TV is on, the TV will turn off automatically after 15 minutes of inactivity.

Audio

Problem	Resolution
No sound is produced while images are displaying.	<ul style="list-style-type: none"> • Press VOL + or - button. • Check if the sound is muted by pressing MUTE. • Scroll to other channels. There may a problem with the broadcast. • Check if the audio cables are connected properly. • Check if the TV Speaker feature is activated in the menu option.
No output from one of the speakers	<ul style="list-style-type: none"> • Adjust Balance in the menu option.
Unusual sound from inside the TV is produced.	<ul style="list-style-type: none"> • A change in ambient humidity or temperature may result in an unusual noise when the product turns on or off. There is no problem with your product.

Video

Problem	Resolution
An image displays in black and white or the color quality is poor.	<ul style="list-style-type: none"> Adjust the color setting in the menu option. Keep a sufficient distance between this product and other electronic products. Scroll to other channels. There may a problem with the broadcast.
Horizontal or vertical bars appears or images blur	<ul style="list-style-type: none"> Check if there are local interferences such as an electrical appliance or power tool.
Lines or streaks appear on images	<ul style="list-style-type: none"> Check the antenna or aim the antenna to the proper direction.
Afterimages (ghosts) appear when the product turns off	<ul style="list-style-type: none"> Pixels may have been damaged from a fixed image displayed for a long time (image burn). Use a screen saver to prevent the pixel damage on the screen.
The power is on but the screen appears extremely dark.	<ul style="list-style-type: none"> Adjust the brightness and contrast in the menu option.
"No Signal" appears on the screen.	<ul style="list-style-type: none"> Check if the signal cable is connected between the TV and products properly. Check the selected input source by pressing INPUT.
Black spots appear on the screen.	<ul style="list-style-type: none"> Several pixels in red, green, white, or black may appear on the screen that can attribute to the characteristics of the LCD panel. This is normal.
The display offset is wrong.	<ul style="list-style-type: none"> Adjust the position setting in the menu option. Check if the video card resolution and frequency are supported by the product. If the frequency is out of range, set to the recommended resolution using the display settings on the external device.
Thin lines appear in the background of the screen.	<ul style="list-style-type: none"> Check the video cable connections.
Horizontal noises appear or characters blur.	<ul style="list-style-type: none"> Adjust the Phase setting in the menu option. Refer to the "SCREEN (RGB-PC)".
The reception on some channels is poor	<ul style="list-style-type: none"> Scroll to other channels. There may a problem with the broadcast. The station signal may be weak. Aim the antenna to the proper direction. Check if there is local interference such as an electrical appliance or power tool.

Movie

Problem	Resolution
The file does not appear on the Movie List.	<ul style="list-style-type: none"> Check whether the extension is supported.
Message is displayed saying "This file is invalid" or the audio is working normally but the video is not working normally.	<ul style="list-style-type: none"> Check whether the file is playing normally on a PC. (Check whether the file is damaged.) Check whether the resolution is supported. Check whether the video/audio codec is supported. Check whether the frame rate is supported.
Message is displayed saying "Unsupported Audio" or the video is working normally but the audio is not working normally.	<ul style="list-style-type: none"> Check whether the file is playing normally on a PC. (Check whether the file is damaged.) Check whether the audio codec is supported. Check whether the bit rate is supported. Check whether the sample rate is supported.
Subtitle is not working.	<ul style="list-style-type: none"> Check whether the file is playing normally on a PC. (Check whether the file is damaged.) Check whether the video file and subtitle file name are the same. Check whether the video file and subtitle file are located in the same folder. Check whether the subtitle file is supported. Check whether the language is supported. (When you open the subtitle file in Memo Pad, you can check the language of the subtitle file.)

SPECIFICATIONS

Product specifications may be changed without prior notice due to upgrade of product functions.

Power requirement	AC100 - 240 V - 50/60 Hz	
Television System	NTSC, PAL-M/N	
Program Coverage	VHF2-13, UHF14-69, CATV 1-125	
External Antenna Impedance	75 Ω	
Environment condition	Operating Temperature	0 - 40 °C
	Operating Humidity	Less than 80 %
	Storage Temperature	-20 - 60 °C
	Storage Humidity	Less than 85 %

MODELS		22LK310 (22LK310-MA)	26LK310 (26LK310-MA)
		22LK311 (22LK311-MB)	26LK311 (26LK311-MB)
		22LK311C (22LK311C-MA)	26LK311C (26LK311C-MA)
Dimensions (W x H x D)	With stand	526.0 mm x 377.0 mm x 164.9 mm (20.7 inch x 14.8 inch x 6.4 inch)	663.0 mm x 484.0 mm x 206.8 mm (26.1 inch x 19.0 inch x 8.1 inch)
	Without stand	526.0 mm x 331.0 mm x 65.0 mm (20.7 inch x 13.0 inch x 2.5 inch)	663.0 mm x 423.0 mm x 79.9 mm (26.1 inch x 16.6 inch x 3.1 inch)
Weight	With stand	4.3 kg (9.4 lbs)	7.3 kg (16.0 lbs)
	Without stand	4.0 kg (8.8 lbs)	6.2 kg (13.6 lbs)
Current Value / Power consumption		0.9 A / 90 W	1.0 A / 100 W

MODELS		32LK310 (32LK310-MA)
		32LK311 (32LK311-MB)
		32LK311C (32LK311C-MA)
Dimensions (W x H x D)	With stand	800.0 mm x 565.0 mm x 206.8 mm (31.4 inch x 22.2 inch x 8.1 inch)
	Without stand	800.0 mm x 509.0 mm x 73.8 mm (31.4 inch x 20.0 inch x 2.9 inch)
Weight	With stand	9.2 kg (20.2 lbs)
	Without stand	8.2 kg (18.0 lbs)
Current Value / Power consumption		1.2 A / 120 W

RGB (PC) supported mode

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)
640x350	31.468	70.09
720x400	31.469	70.09
640x480	31.469	59.94
800x600	37.879	60.317
1024x768	48.363	60.004
1280x768	47.776	59.87
1360x768	47.72	59.799

HDMI (DTV) supported mode

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)
720x480	31.47	59.94
	31.50	60.00
720x576	31.25	50.00
1280x720	44.96	59.94
	45.00	60.00
	37.50	50.00
1920x1080i	33.72	59.94
	33.75	60.00
	28.125	50.00
1920x1080p	67.432	59.94
	67.50	60.00
	56.25	50.00
	27.00	24.00
	33.75	30.00

Component supported mode

Resolution	Horizontal Frequency (KHz)	Vertical Frequency (Hz)
720x480i	15.73	59.94
	15.75	60.00
720x480p	31.47	59.94
	31.50	60.00
720x576i	15.625	50.00
720x576p	31.25	50.00
1280x720p	44.96	59.94
	45.00	60.00
	37.50	50.00
1920x1080i	28.125	50.00
	33.72	59.94
	33.75	60.00
1920x1080p	56.25	50.00
	67.432	59.94
	67.50	60.00

Component port connecting information

Component ports on the TV	Y	P _B	P _R
---------------------------	---	----------------	----------------

Video output ports on DVD player	Y	P _B	P _R
	Y	B-Y	R-Y
	Y	Cb	Cr
	Y	Pb	Pr

USB Video Supported Formats

Video Format	Audio Format	Subtitle Format
MPEG1, MPEG2, MPEG4(Doesn't support Microsoft MPEG4 V2, V3), DivX 3.xx, DivX 4.xx, DivX 5.xx, DivX VOD(DRM), XviD, DivX 6.xx(Playback)	Mpeg, Mp3, PCM, Dolby D, AC3	*.smi/ *.srt/ *.sub(MicroDVD,SubViewer 2.0)/ *.ass/* .ssa/* .txt(DVD Subtitle System)

File Extension Name	Video Decoder	Audio Codec	Max Resolution
mpg, mpeg, mpe, vob, dat	MPEG1, MPEG2	AC3, MPEG, MP3, PCM	
Avi, divx, m4v	MPEG4-SP, MPEG4-ASP, DviX 3.xx, DviX 4.xx, DviX 5.xx, DviX 6.xx(playback), Xvid	AC3, MPEG, MP3, PCM	720 x 576 @ 25p 720 x 480 @ 30p

IR CODES

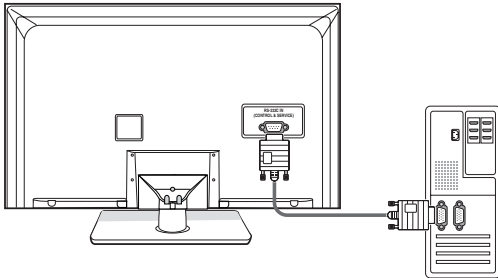
Code (Hexa)	Function	Note
08	POWER	Remote control Button (Power On/Off)
95	ENERGY SAVING	Remote control Button
30	AV MODE	Remote control Button
0B	INPUT	Remote control Button
0F	TV	Remote control Button
10 - 19	Number Key 0-9	Remote control Button
53	LIST	Remote control Button
1A	Q.VIEW	Remote control Button
02	VOL +	Remote control Button
03	VOL -	Remote control Button
1E	FAV/MARK	Remote control Button
79	RATIO	Remote control Button
09	MUTE	Remote control Button
00	CH ▲	Remote control Button
01	CH ▼	Remote control Button
7C	X STUDIO	Remote control Button
43	Home	Remote control Button
45	Q.MENU	Remote control Button
40	▲	Remote control Button
41	▼	Remote control Button
07	<	Remote control Button
06	>	Remote control Button
44	ENTER	Remote control Button
28	BACK	Remote control Button
7E	SIMPLINK	Remote control Button
5B	EXIT	Remote control Button
72	RED	Remote control Button
71	GREEN	Remote control Button
63	YELLOW	Remote control Button
61	BLUE	Remote control Button
B1	■	Remote control Button
B0	▶	Remote control Button
BA	▮	Remote control Button
8E	▶▶	Remote control Button
8F	◀◀	Remote control 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.

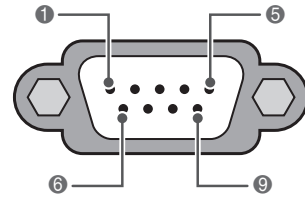
Connect the serial port of the control device to the RS-232C jack on the product back panel.



NOTE

- RS-232C on this unit is intended to be used with third party RS-232C control hardware and software. The instructions below are provided to help with programming software or to test functionality using telenet software. RS-232C connection cables are not supplied with the product.

Type of connector; D-Sub 9-Pin Male



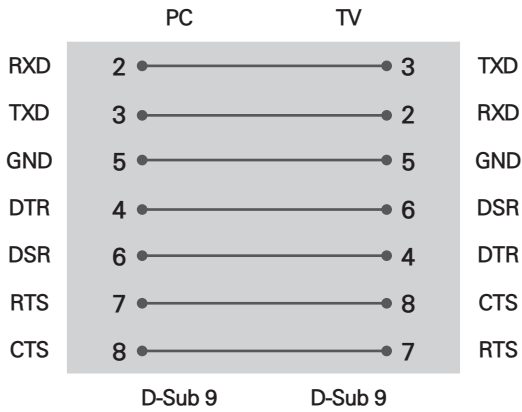
RS-232C IN
(CONTROL & SERVICE)

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

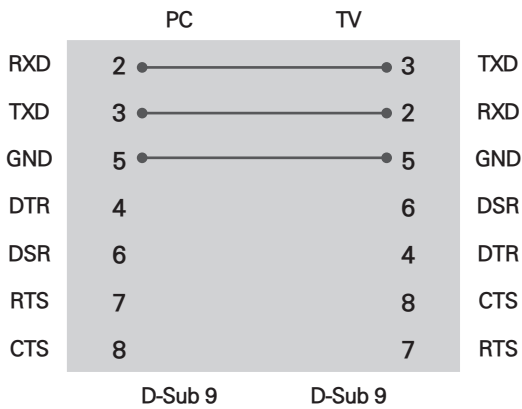
RS-232C configurations

7-Wire Configuration

(Serial female-female NULL modem cable)

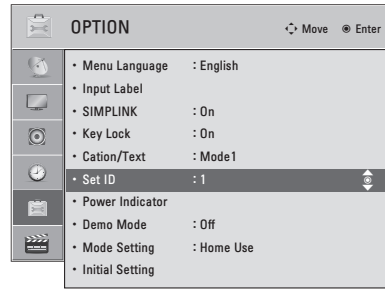


3-Wire Configurations(Not standard)



Set ID

Set ID number.



- 1 Press **Home** to access the main menus.
- 2 Press the Navigation buttons to scroll to **OPTION** and press **ENTER**.
- 3 Press the Navigation buttons to scroll to **Set ID** and press **ENTER**.
- 4 Scroll left or right to select a set ID number and select **CLOSE**. The adjustment range is 1-99.
- 5 When you are finished, press **EXIT**.

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

	COMMAND1	COMMAND2	DATA (Hexadecimal)		COMMAND1	COMMAND2	DATA (Hexadecimal)
01. Power	k	a	00 - 01	14. Treble	k	r	00 - 64
02. Input Select	x	b	(see p.60)	15. Bass	k	s	00 - 64
03. Aspect Ratio	k	c	(see p.60)	16. Balance	k	t	00 - 64
04. Screen Mute	k	d	00 - 01	17. Color Temperature	k	u	00 - 02
05. Volume Mute	k	e	00 - 01	18. Abnormal State	k	z	FF
06. Volume Control	k	f	00 - 64	19. Energy Saving	j	q	(see p.61)
07. Contrast	k	g	00 - 64	20. Auto Configuration	j	u	(see p.61)
08. Brightness	k	h	00 - 64	22. Channel Add/Del	m	b	00 - 01
09. Color	k	i	00 - 64	23. Key	m	c	(see p.62)
10. Tint	k	j	00 - 64	24. Backlight	m	g	00 - 64
11. Sharpness	k	k	00 - 64				
12. OSD Select	k	l	00 - 01				
13. Remote Control Lock Mode	k	m	00 - 01				

	COMMAND1	COMMAND2	DATA00 (Hexadecimal)	DATA01 (Hexadecimal)	DATA02 (Hexadecimal)	DATA03 (Hexadecimal)	DATA04 (Hexadecimal)	DATA05 (Hexadecimal)
21. Channel Tuning	m	a	physical program high	major program low	major low	minor high	minor low	attribute

Transmission / Receiving protocol

Transmission

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

[Command 1] : First command to control the set.(j, k, m or x)

[Command 2] : Second command to control the set.

[Set ID] : You can adjust the set ID to choose desired set ID number in Option menu. Adjustment range is 1~ 99. When selecting Set ID '0', every connected the 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 the command data.

Transmit the 'FF' data to read status of command.

[Cr] : Carriage Return

ASCII code '0x0D'

[] : ASCII code 'space (0x20)'

* In this model, set will not send the status during the standby mode.

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.

* In this model, set will not send the status during the standby mode.

* Data Format

[Command 2] : Use as command.

[Set ID] : Use the small character, if set ID is 10, it will send the '0', 'a'.

[DATA] : Use the small character, if data is 0 x ab, it will send the 'a', 'b'.

[OK] : Use the large character.

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.

Data1: Illegal Code

Data2: Not supported function

Data3: Wait more time

* In this model, set will not send the status during the standby mode.

* Data Format

[Command 2] : Use as command.

[Set ID] : Use the small character, if set ID is 10, it will send the '0', 'a'.

[DATA] : Use the small character, if data is 0 x ab, it will send the 'a', 'b'.

[NG] : Use the large character

01. Power (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

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

To show Power On/Off.

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

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

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

02. Input Select (Command: x b)

To select input source for set.

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

Data 10: TV

Data 20: AV1

Data 21: AV2

Data 40: Component

Data 41: Component2

Data 60: RGB-PC

Data 90:HDMI1

Data 91: HDMI2

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

- * Use the feature depending on your model.

03. Aspect Ratio (Command: k c)

To adjust the screen format. (Main picture format)
You can adjust the screen format using the Aspect Ratio in the Picture menu.

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

Data 01: 4:3

Data: 09: Just scan

Data 02: 16:9

Data: 10: Cinema Zoom 1

Data 04: Zoom

:

Data 1F: Cinema Zoom16

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

- * Using the RGB input, you select either 16:9 or 4:3screen aspect ratio.
- * Just Scan operates only in
Component/HDMI(720p/1080i/1080p) input source.

04. Screen Mute (Command: k d)

To select screen mute on/off.

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

Data 00: Screen mute off (Picture on), Video Mute off

Data 01: Screen mute on (Picture off)

Data 10: Video Mute on

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

- * In case of Video-out Mute on only, TV will display On Screen Display (OSD). But, in case of screen mute on, TV will not display On Screen Display (OSD).

05. Volume Mute (Command: k e)

To control volume mute on/off.

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

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

Data 00: Volume mute on (Volume off)

Data 01: Volume mute off (Volume on)

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

06. 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: 00 - Max: 64 (*transmit by Hexadecimal code)

*Refer to "Real data mapping".

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

07. 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: 00 - Max: 64 (*transmit by Hexadecimal code)

*Refer to "Real data mapping".

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

08. 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: 00 - Max: 64 (*transmit by Hexadecimal code)

*Refer to "Real data mapping".

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

09. Color (Command: k i)

To adjust screen color.

You can also adjust color in the PICTURE menu.

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

Data Min: 00 - Max: 64 (*transmit by Hexadecimal code)

*Refer to "Real data mapping".

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

10. 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: 00 - Green: 64 (*transmit by Hexadecimal code)

*Refer to "Real data mapping".

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

11. 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: 00 - Max: 64 (*transmit by Hexadecimal code)

*Refer to "Real data mapping".

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

12. OSD Select (Command: k l)

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

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

Data 00: OSD off Data 01: OSD on

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

13. Remote Control Lock Mode (Command: k m)

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

(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.)

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

Data 00: Lock off Data 01: Lock on

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

14. 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: 00 - Max: 64 (*transmit by Hexadecimal code)

*Refer to "Real data mapping".

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

15. 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: 00 - Max: 64 (*transmit by Hexadecimal code)

*Refer to "Real data mapping".

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

16. 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: 00 - Max: 64 (*transmit by Hexadecimal code)

*Refer to "Real data mapping".

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

17. Color Temperature (Command: k u)

To adjust color temperature.

You can also adjust color temperature in the PICTURE menu.

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

Data 00: Medium 01: Cool 02: Warm

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

18. Abnormal State (Command: k z)

To recognize an abnormal state.

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

Data FF: Read

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

Data 00: Normal (Power on and signal exist)

Data 01: No signal (Power on)

Data 02: Turn the TV off by remote control

Data 03: Turn the TV off by sleep time function

Data 04: Turn the TV off by RS-232C function

Data 08: Turn the TV off by Off time function

Data 09: Turn the TV off by Auto off function

* This function is "read only".

19. Energy Saving (Command: j q)

To reduce the power consumption of the TV.

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

Data 00: Energy Saving: off

01: Energy Saving: Minimum

02: Energy Saving: Medium

03: Energy Saving: Maximum

05: Screen off

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

20. 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 01: To set

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

21. Channel Tuning (Command: m a)

To tune channel to following physical/major/minor number.

Transmission [m][a][][Set ID][][Data00][][Data01][][Data02][Cr]

Data 00: Physical Channel Number(Transmit by Hexadecimal code)

NTSC air: 02-45, NTSC cable: 01, 0E-7D

Data 01 & 02: Major Channel Number(two part) or Channel Number(one part)

Data 01: High byte Data 02: Low byte

Two part channel number: Major number-Minor number.

One part channel number: In case of using one part channel number, minor channel does not need.

Data 03 & 04: Minor Channel Number

Not needed for NTSC.

Data 03: High byte Data 04: Low byte

Data 05: Attribute

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

Example)

1. Analog channel: NTSC cable, channel number(35), main picture

Command: ma 00 23 xx xx xx xx 01 attribute(0x01): main picture, two part(it's not mandatory), using physical channel, NTSC cable 'data: don't care major and minor channel number in case analog channel tuning.

```
Acknowledgement[a][ ][Set ID][ ][OK][Data0][Data1]
[Data2][Data3][Data4][Data5][x][a][ ][Set ID][ ][NG]
[Data0][x]
```

*** Two/One part Channel: 6th bit**

This bit is used in a cable-ready system.

*** Using physical Channel: 5th bit**

If the channel band is NTSC air or NTSC cable, channel tuning can be done by only physical channel. In this case, using physical channel bit must be low(0).

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

To add and delete the channels.

```
Transmission [m][b][ ][Set ID][ ][Data][Cr]
Data 00: Channel Delete      Data 01: Channel Add
Acknowledgement [b][ ][Set ID][ ][OK/NG][Data][x]
```

23. Key (Command: m c)

To send IR remote key code.

```
Transmission [m][c][ ][Set ID][ ][Data][Cr]
Data: Key code - (see p.55)
Acknowledgement [c][ ][Set ID][ ][OK/NG][Data][x]
```

24. Backlight (Command: m g)

To adjust screen backlight.

```
Transmission [m][g][ ][Set ID][ ][Data][Cr]
Data Min:00 - Max:64 (*transmit by Hexadecimal code)
*Refer to "Real data mapping".
Acknowledgement [g][ ][Set ID][ ][OK/NG][Data][x]
```



The model and serial numbers of the TV is located on the back of the TV
Record it below should you ever need service.

MODEL _____

SERIAL _____