



INSTALLATION MANUAL

LED TV*

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

LV640S

TABLE OF CONTENTS

3 LOCATION AND FUNCTION OF CONTROLS

- 3 Parts and Button

4 EZMANAGER

- 4 LANGUAGE & COUNTRY SELECTION

5 INSTALLATION MENU

- 5 INTRODUCTION
- 6 PUBLIC DISPLAY SETTINGS
- 6 - Public Display Settings Operation
 - 6 - Power On Status
 - 7 - Volume
 - 7 - Key Management
 - 8 - Limited Mode
 - 9 - DTV Channel Update
 - 9 - Power On Default
 - 9 - Aux Source Setting
 - 9 - Power Management
 - 9 - Factory Reset
- 10 NETWORK
- 10 - MAC Address
 - 10 - Network Setting
 - 11 - Wake On LAN
 - 11 - Server Settings
- 12 GENERAL
- 12 - Configuration Setup
 - 14 - External Speaker
 - 14 - Set ID Setup
 - 14 - Power Saving
 - 15 - Password Change
 - 15 - PreLoaded App
 - 15 - Lock Mode
 - 15 - Crestron
- 16 MEDIA SHARE
- 16 - Screen Share
 - 16 - DIAL
 - 16 - TV Name
 - 16 - SoftAP
- 18 TV MANAGER
- 18 - USB Download Menu

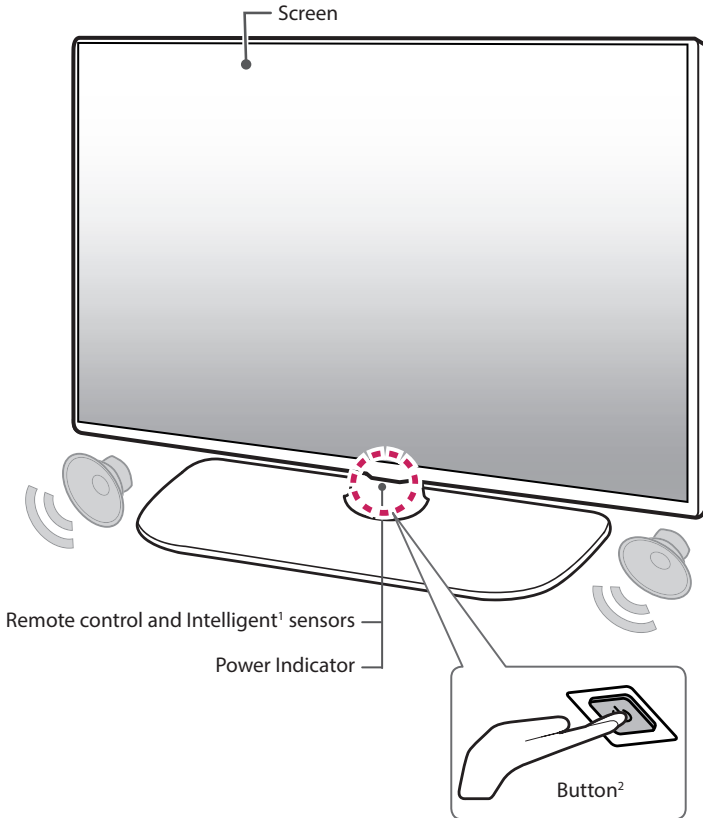
26 KEY CODES

27 EXTERNAL CONTROL DEVICE SETUP

- 27 USB to Serial converter with USB Cable
- 27 RS-232C with RS-232C Cable
- 27 - DE9 (D-Sub 9 pin) Type
 - 27 - Phone jack Type
- 28 Set ID
- 28 Customer Computer
- 28 RS-232C Configurations
- 29 Communication Parameters
- 29 Command reference list
- 30 Transmission / Receiving Protocol
- 30 - Transmission
 - 30 - OK Acknowledgement
 - 30 - Error Acknowledgement
 - 30 - Real data mapping (Hexadecimal : Decimal)

LOCATION AND FUNCTION OF CONTROLS

Parts and Button



- 1 Intelligent sensor - Adjusts the image quality and brightness based on the surrounding environment.
- 2 Button - This button is located below the TV screen.

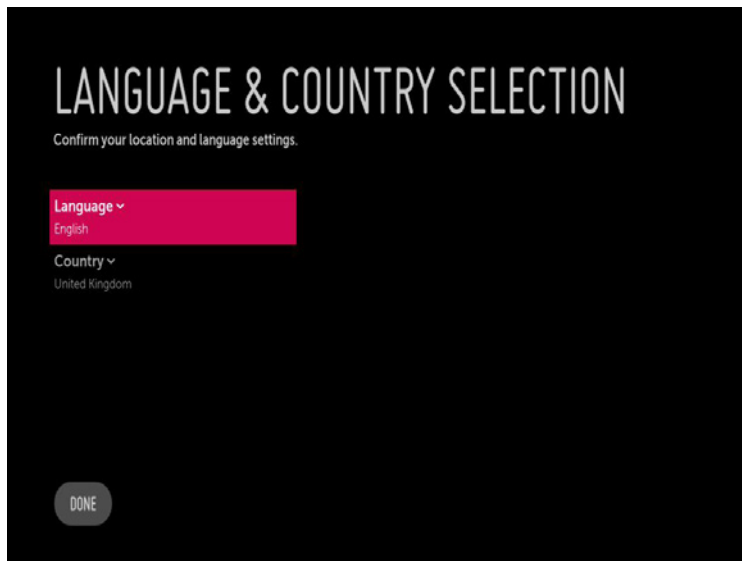
! NOTE

- You can set the power indicator light to on or off by selecting **General** in the main menus.

EZMANAGER

- Image shown may differ from your TV.

LANGUAGE & COUNTRY SELECTION



- Please select the **Language** and **Country**. Some countries need to select the **Time Zone**.

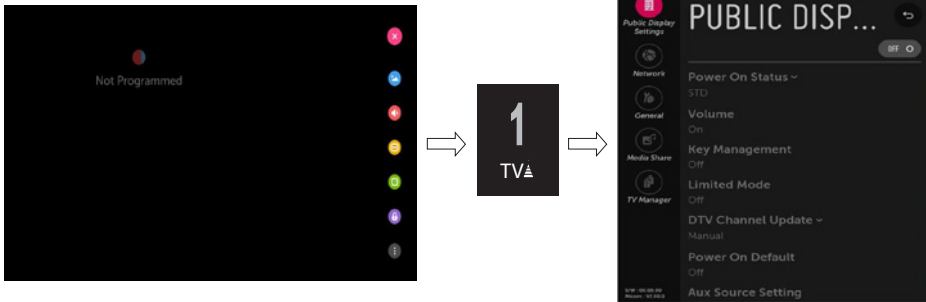
INSTALLATION MENU

- Image shown may differ from your TV.

INTRODUCTION

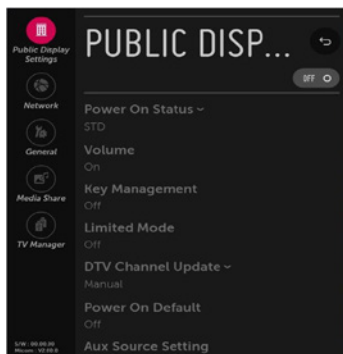
The abundant functions for Hotel TV linked with software installation can be projected on OSD as 'Installation Menu'.

The wide range of hotel features can be performed simply on additional window to enhance the LG hotel TV's easy installation and convenient operation for Hotelier and System Integrators.



- 1 Press the Setting button for more than 5 seconds using the user remote control, Channel information will appear at top left on the screen.
- 2 Enter a four digit password and press 'OK' button.
 - The TV is set with the initial password "1-1-0-5".
- 3 Use the ∇ \blacktriangle button to select the desired menu.

PUBLIC DISPLAY SETTINGS



- 1 Use the ∇ \wedge button to select the **PUBLIC DISPLAY SETTINGS**.
- 2 Use the 'OK' button and then ∇ \wedge button to select Public Display Mode.
 - When 'Public Display Mode' is set to On (Work), all functions of Public Display Mode apply.

Public Display Settings Operation

- Decide to work all functions of 'Public Display Mode' or not by setting 'Public Display Mode' as On(Work) or Off(Do Not Work) - When 'Public Display Mode' is set to On(Work), all functions of Public Display Mode apply.
- When 'Public Display Mode' is set to Off(Do Not Work), all functions of Public Display Mode Do Not apply.
- When it is set to 'On', 'Key Lock' item of the User menu is disabled and the OSD is displayed same to the Local Key Operation setting of the Public Display Mode.
- When it is set to 'On', all items reserved at the Schedule list are deleted and the reservation function is not supported.(applied for the model offering the reservation function) - The TV triggered by the external device (ex: SIMPLINK, TVLink-Tuner, etc.) operates separately from the Public Display Mode.
- When it is set to 'On', User Menu \rightarrow General \rightarrow 'Reset to Initial Settings and Demo Mode' are disabled.
- When 'Public Display Mode' is set to On(Work), all skipped programs are not tuned by number keys.
- When 'Public Display Mode' is set to On(Work), Detailed Information about the Channel is not available in the EPG.

Power On Status

- Decide to select working status of TV Set when turn on main power.
- You can set with PWR, STD, LST.
- PWR always make TV set On status when turn on main power .
- STD make Stand-by status when turn on main power.
- LST make TVSet work like previous power status. As same concept as Power Backup mode; If main power were turned off in Power On status, TVSet would work in On status. If main power were turned off in Stand-by status, TVSet would work in Stand-by status.
- If there Block All is both IR Operation and Local Key Operation from Key Management, In order to provide the Option that must be able to turn on the TV in the TV turned off situation, change the value of the PWR. (Reference the Key Management)

Volume

- Decide to apply volume policy of 'Start Volume', 'Maximum Volume' and 'Minimum Volume' as On(Work) or Off(Do Not Work).
- ($0 \leq \text{Min} \leq \text{Start} \leq \text{Max} \leq 100$)

Start Volume

- This entry sets the start volume level when is power on.
 - The level is specified as a number between minimum volume to maximum value. ($\text{Min} \leq \text{Start} \leq \text{Max}$)
 - The default setting is 'Off' (disabled).
 - When enabled, if the value is lower then the minimum specified in the minimum volume entry, the minimum volume entry must be used.
 - When enabled, if the value is larger then the maximum specified in the maximum volume entry, the maximum volume value must be used.
 - Access to a volume in 'On Timer' must be fixed to start volume when 'Hotel Mode Operation' (On) and 'Start Volume' (Off, 0 ~ 100) were set simultaneously.

Maximum Volume

- This entry sets the maximum volume level the set. The level is specified as a number between 'Minimum Volume' to 100. ($\text{Min} \leq \text{Max} \leq 100$).
 - If the command volume up to higher than maximum volume' is received, that should be ignored.
 - The default value is 100.

Minimum Volume

- This entry sets the minimum volume level the set will produce.
 - The level is specified as a number between 0 to 'Maximum Volume'. ($0 \leq \text{Min} \leq \text{Max}$)
 - If the command volume down to lower than minimum volume is received, that should be ignored.
 - The default value is 0.

Key Management

- Manage key usability of Local(Front) Key and Remote Control. When selected to 'On', following 'IR Operation' and 'Local Key Operation' will be worked by below.

IR Operation

- Decide whether work the LG remote control or not.
 - When 'IR Operation' is set to 'Normal', all remote keys are available.
 - 'Use PWR Only' makes block all remote keys except power key.
 - When 'IR Operation' is set to 'Block All', all normal remote keys don't work.

Local Key Operation

- Decide to operate 'Local/Front Key' working behavior by setting 'Local Key Operation' as 'Normal', 'Use PWR Only' and 'Block All'.
 - When 'Local Key Operation' is set to 'Normal', all local keys are available.
 - 'Use PWR Only' makes block all local keys except power key.
 - When 'Local Key Operation' is set to 'Block All', all local keys don't work.

Limited Mode

- Configure TV function's limitation. When selected to 'On', following sub-menus will be worked by below.

Setup Menu

- Permit to tune and manage Channels as 'On'(permitted) or 'Off'(not permitted).

Channel Change

- Decide to change channel or not by setting 'Channel Change' as 'On'(Change Possible) or 'Off'(Change Impossible) when present source is TV.
 - When 'Channel Change' is set to Off (Change Impossible)
 - » Channel Key, Numeral Key, List Key, Q.View Key don't work and entering 'Channel Menu' in the Main Menu OSD is impossible.
 - » 'Channel' item in 'On Time' menu will be fixed.
 - » Entering 'Channels' in the 'Main Menu' OSD is impossible regardless of 'Channels' item.
 - When 'Channel Change' is set to On(Change Possible), 'Channel Key', 'Numeric Key', 'List Key', 'Q.View' Key, 'TV/RAD Key', does work and entering 'Channel Menu' in the Main Menu OSD is possible.

Menu Display

- Function to decide whether work with menu (including relevant menus too) of control key (On – Enter possible) or not (Off – Enter Impossible).
 - Although select Off(Enter impossible), the action that press a Menu button for 5 seconds to enter 'Installation Menu' is available.
 - When select On(Enter possible), Menu works.

OSD Display

- Decide to display OSD or not by setting 'OSD Display' as On(Display) or Off(Do not Display).
 - When 'OSD Display' is set to 'Off'(Do not Display), all OSD is not displayed except some exception.
 - Although select 'Off' (Do not Display), the action that press a Menu button for 5 seconds to enter 'Installation Menu' and entering service menu are available. (In-Start, Power-Only, Adjust, Installation Menu...)

System Provider Mode

- 'System Provider Mode' allows access to the menu system from the front panel or remote control but access is controlled as follows:
 - When value is 'On', Accessible Items on the menu system, others are not permissible.
 - » Input select screens
 - » Sleep timer
 - » Aspect Ratio
 - » Subtitles
 - » Channels (Except for Channel Tuning & Settings and Channel Manager)
 - » 'Safety' / 'Photo & Video' / 'Music' / 'Network' / 'Bluetooth' Menu
 - If the channel map is empty, 'Auto-tuning' guide dialog should be blocked by pressing 'List', 'CH+', 'CH-' keys.

DTV Channel Update

- It is a mode to set whether to update dtv Channel automatically or not.
- When DTV Channel Update is set to 'Auto', the function to update TV's Channel map according to dtv Channel's stream information.
- DTV Channel Update is set to 'Manual', the function to keep TV's Channel map even though dtv Channel's information is changed.

Power On Default

- Set the channel to display and Volume Level, etc. when turn on power in AC Power On or Stand-by status.
- Set to On(Work) or Off(Do Not Work).
- When 'Power On Default' is set to Off, it is not applied to the subordinate Input, Channel, A/V Setting, Aspect Ratio menu.
- When Power On Default is set to On, it can set by entering the subordinate menu.

Input

- Set whether it is turned on by the set input source or by the last stored input source.

Channel

- Select start channel number if Input source's value is TV.

A/V Setting

- If 'A/V Setting' is changed from 'Off' to 'On', A/V parameters that are set before entering 'Installation Menu' are applied whenever turn on power.

Aspect Ratio

- The aspect ratio determines the default aspect ratio that the set returns to on power up.

Aux Source Setting

- Set to On(Work) or Off(Do Not Work).
- The Auxiliary (Input) Source Setting feature will enable or disable for each external input.
- User cannot disable the current input's 'Aux Source Setting'.

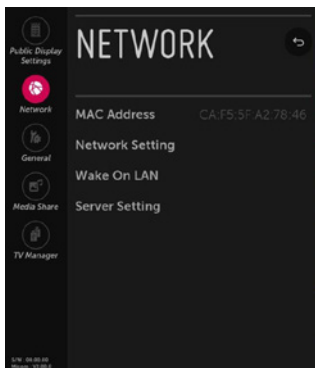
Power Management

- The Power Management feature will turn off the television receiver if no input control command is received from either the Local or IR Key within a selected hours.
- Activity on either of these inputs shall reset the 'Power Management' timer and prevent interruption of TV viewing.
- This entry can be set to a value which is corresponding to the desired hours (1Hour to 7Hours).
- Default value is 'Off(disabled)'.

Factory Reset

- Change all settings to their default values.

NETWORK



- 1 Use the ∇ \blacktriangle button to select the NETWORK.

MAC Address

- Displays the MAC address (not customizable).

Network Setting

One-click network connection

- Connects easily to a wired/wireless network.
- Network Connection to connect to an available network automatically. Follow the prompts on the TV.

To connect to a network through Set Expert

- For use in special circumstances such as in offices (in cases where a static IP is used).
- 1 Select a network connection, either Wired or Wireless.
 - 2 When connecting via Wired, Configures the IP settings of the TV set. You can set the IP address, subnet mask, gateway and DNS server.
 - 3 When connecting via Wi-Fi, use the one of the following network connection methods.

AP List	Connects to the network selected from the AP List.
Enter the SSID	Connects to the wireless AP typed in.
WPS-PBC	Connects easily when the button of a wireless AP supporting PBC is pressed.
WPS-PIN	Connects easily when the PIN of the wireless AP that you wish to connect to is entered in to the AP website.
Advanced Wi-Fi Settings	After connects Wi-Fi, you can set the IP address, subnet mask, gateway and DNS server.

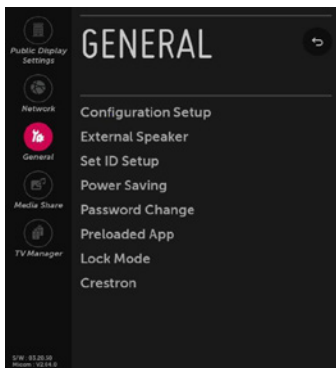
Wake On LAN

- Sets the Wake On LAN function to Enable or Disable.
 - The Wake On LAN feature enables the TV to receive software updates and/or be powered ON upon receipt of Wake Up Frame packets and/or Magic Packet data via the wired LAN. To facilitate use of this feature, note that the appropriate wired connection must be made. ('Wake up Frame' is not supported depending on model)

Server Settings

- Sets the information to connect to the external server.
 - CMS Server : Sets the network information to connect to SuperSign CMS. (or other compatible solutions.)
 - Control Server : Sets the network information to connect to SuperSign Control. (or other compatible solutions.)

GENERAL



Configuration Setup

Select RCU

- It is a mode to set whether to use Select RCU or not. When 'Select RCU' is set to 'Enable', You can adjust 'Number of RCU' menu.

Number of RCU

- It is a mode to set Number of RCU.
 Number of RCU value range 1~9. (When 'Select RCU' is set to 'Enable')
 Number of RCU value range 0. (When 'Select RCU' is set to 'Disable')
 * RCU(Remote Control Unit) : It is special RCU that operates only setted number of RCU in TV.

DTV Channel Update

- It is a mode to set whether to update DTV Channel automatically or not.
 When DTV Channel Update is set to 'Auto', the function to update TV's Channel map according to dtv Channel's stream information.
 DTV Channel Update is set to 'Manual', the function to keep TV's Channel map even though DTV Channel's information is changed.

On Timer Operation

- It is a mode to select 'On Timer Operation' working one time or repeatedly.
 'Once': 'On Time' in the user menu operates only one time when the 'On Time' menu is set to 'ON'.
 'Repeat': 'On Time' operates repeatedly when the 'On Time' menu is set to 'ON'.

15Min Auto Off

- When '15Min Auto Off' is set to 'Enable', TV will turn off if there is no signal in 15Min.

Auto Sensing

- If 'Auto Sensing' is set to 'On', the input is automatically switched when the input signal that you set to "ON" is received.
- If 'Auto Sensing' is set to 'Disable', the input is not switched when the input signal is received.
- * SIMPLINK and Auto Sensing cannot work simultaneously. If SIMPLINK is set to On, Auto Sensing is automatically set to Disable.
- * If the signal is removed while Auto Sensing (automatic input switch) is enabled, the input returns to the previous setting.
If the several input are connected by enabling Auto Sensing and the automatic input returns to the previous setting.
If the several inputs are connected by enabling Auto Sensing and the automatic input switch is performed several times, the input returns to the previous setting only for the last input and does not repeat the operation for the rest.

Insert Image

- Set to Enable(Work) or Disable(Do Not Work).
- It is a mode to decide whether to display background image when using Bluetooth Sound Sync app or watching Radio channel.
- You can download the background image at TV Manager app.

Screen Saver

- When the currently displayed app has not received any user input for an hour, it will be replaced by a Screen Saver.
- If you turn this option 'Off', the current picture may create an afterimage burned onto your screen, possibly permanently.

External Speaker

Volume Control

- Selects the volume control method of an external speaker. You can select 'Off', 'Int Variable', 'Fixed', 'Ext Variable' by ^ v pressing button. Ext Variable uses the External Vol Up/Down Control Line to change the volume up to 1 Watts. Int variable is linked to the main volume OSD and change the volume 0 - 1 Watts. Fixed produces a fixed output. The default is Off.

Output

- This item is enabled when Volume Control is set to Fixed. You can choose one of 7 steps. (0.01/0.03/0.05/0.1/0.2/0.5/1 Watts). The Default is 1 Watt.

Set ID Setup

Set ID Lock

- Set the 'Set ID' item in 'GENERAL' Menu whether to activate or not.
- Set to On(Work) or Off(Do Not Work).

Set ID

- Set the 'Set ID' of TV Set with 1~99.

Power Saving

Static Saving

- It is the item for setting the level to reduce the backlight control from the items for saving the consuming power, which is increased or decreased by 10 steps from 0 to 100. 100 makes the consuming power set to the same one from the TV. 0 reduces the consuming power to the minimum. The default value is 100.
- * The value displayed at the OSD is not changed and only the actual setting value is converted to percentage based on the static saving value to set.
- * 0 ~ 30: HIGH, 40 ~ 60 : MID , 70 ~ 90 : LOW , 100 : OFF

Keyless Off Hours

- Automatically TV will be turned off if there is no key input for the preset time period.
- When it is set to 'Enable', User Menu -> Timer -> 'Auto Power Off' is disabled.
- When it is set to 'Enable', User Menu -> Timer -> '2Hour Auto Power Off' is disabled.

Password Change

- To ensure more security, Password can be changed by installers' own design.
- 1 Change password by using virtual keyboard.
 - 2 Input the password again for confirmation.

PreLoaded App

- 1 If you want to use a particular app, you can choose from the menu. you can setting each apps activation.
- 2 You can check or uncheck by pressing 'OK' button.

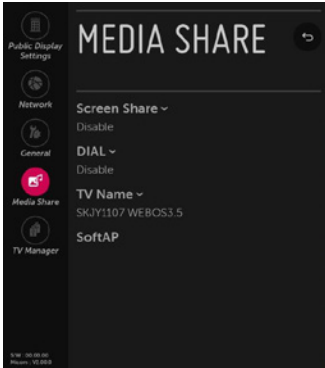
Lock Mode

- If 'Lock Mode' is 'Yes', the following features will be unavailable.
 - * USB
 - If it is set to 'Enable',USB devices do not work in relative features.(Exclude S/W update).
 - * Factory Reset
 - If it is set to 'Enable', User Menu -> General -> 'Reset to Initial Settings' is disabled.

Crestron

- This function enables synchronization with applications provided by Crestron.
- Server: This menu sets the server's IP address for the network connection with the server (equipment provided by Crestron).
- Port: This menu sets the port for the network connection with the server. The default port number is 41794.
- IP ID: This menu sets a unique ID for synchronizing with the application.

MEDIA SHARE



- 1 You can setting Whether to use for “SmartShare”

Screen Share

- Screen Share enables WiFi p2p functions such as Miracast and WiDi. If this value is enabled, Screen Share app is displayed at launcher bar and User can connect to TV by user’s Miracast enabled mobile phone or WiDi enabled laptop

DIAL

- With this DIAL service, you can launch the target app at Smart Home Launcher bar without select the target app by remote controller. The target app should be already selected at Installer Menu > General > Preloaded App.

TV Name

- When other media device(ex: smart phone, desktop, laptop) searching TV, this string was displayed.

SoftAP

- If you want to use SoftAp menu on **MEDIA SHARE** menu, you must select ‘On’ in this item. A SoftAP is a function of TV which is used like Access Point.
- Regardless of the Instant On mode, the SoftAP setting stays unchanged after power off/on. (Depending on model)

Use Default

- If you want to use default password(this password was generated randomly), you must select 'Enable' in this item.

Security Key

- When guests want to use TV's SoftAP function, they need this password. If you want to change this default password, you need to Change 'Use Default' value into 'Disable'.

Wi-Fi Signal Strength

- You can control wireless signal strength on SoftAP mode. This is controlled by 5 step. If you select 'Not Used', wireless signal strength will be set to Max value.

Wi-Fi Channel

- You can control wireless channel on SoftAP mode. This is controlled from 1 to 11 channel. If you select 'Auto', wireless channel of SoftAP will be set to random channel.

TV MANAGER

USB Download Menu

* USB Cloning : An Installer can quickly set up and clone multiple TV sets at a property. These cloned TVs will all have the same Master TV Setup: Public Display Mode Installation Menu settings, User A/V settings and the Channel Map. This newer procedure significantly decreases the installation time that would be necessary if the standard RS-232C method were used instead.

1 Overview USB Cloning Procedure

: Commercial TVs have the capability to support cloning internal TV data and Channel information with an external clone device called "USB Cloning", in order to copy TV data accurately and quickly. The clone internal functions use slightly different internal processes for the two types of commercial TVs. However, the UI of cloning feature remains the same in both. Regarding the demands over the current cloning feature for quicker cloning, better portability and etc, we would like to announce the cloning process via USB port, named as USB Cloning. USB cloning process is divided into 2 main processes. One is writing the previously saved TV data into the TV, and one another is reading of current TV data into USB memory card. To avoid any confusion due to the words, it is clearly specified as "Import Clone File" and "Export Clone File" in the whole process.

2 Data To Be Cloned

: The data cloned are the same data cloned by previous USB Cloning. Details are explained in the following:

- TV data includes :
 - » A. Installer Menu settings
 - » B. Main menu settings (Audio, Picture etc)
- Analog / Digital Channel information includes:
 - » A. Channel numbers
 - » B. Channel label
 - » C. Channel attributes including channel type, skipping status and etc.

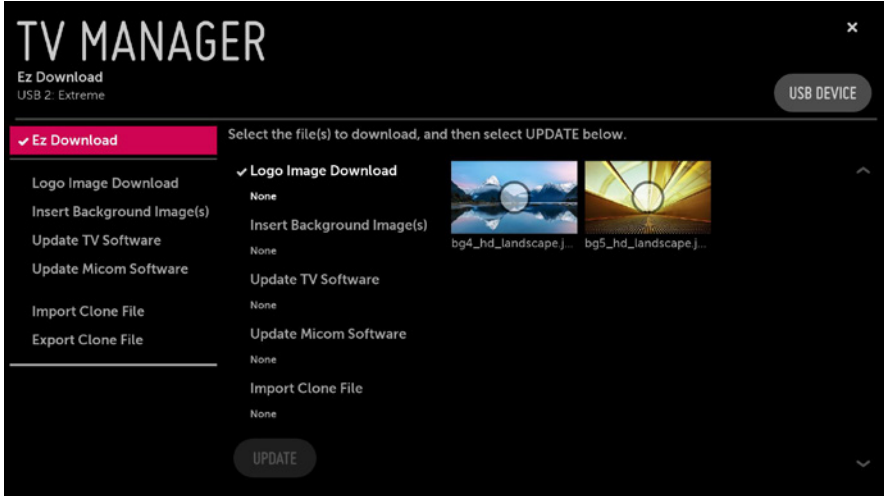
3 Input Source

: The user needs a USB memory card with FAT formatted to make successive cloning via USB port.

! NOTE

- Currently, support the preceding USB file system for FAT file format only. Other file formats including NTFS is not currently supported. Microsoft Windows officially supports FAT for the USB memory card.
- Only a USB storage device is recognizable.

Ez Download

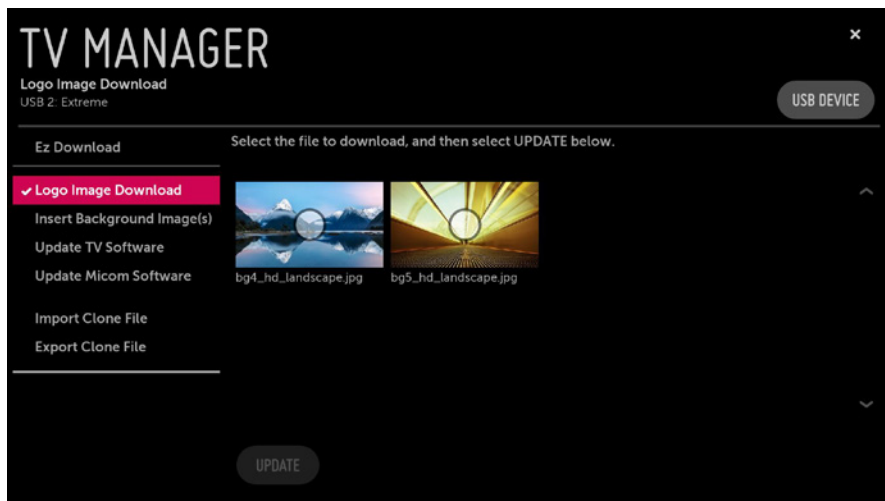


- Ez Download is a function that enables users to download the desired items all at once, such as EPK (software update file), TLL, Logo Image, Background Images, Micom.
- * Images and EPK files should be copied into the folder named LG_DTV on the USB.
- TLL files should be copied to the root folder of the USB.
- If you press 'EZ Download' menu, EZ Download is launched.
- If .DZM file exist file will be selected previously download file.

! NOTE

- If the DZM file is still in the USB after the download is complete:
An Ez Download pop-up window will appear and list the file types, such as TLL, Logo Image, Background Images, EPK or Micom with the previously downloaded lists checked automatically.
- If the global TLL and model TLL files exist in the same USB root directory, then only the global TLL will be shown.
If the global TLL has been deleted, then the model TLL will be shown.

Logo Image Download

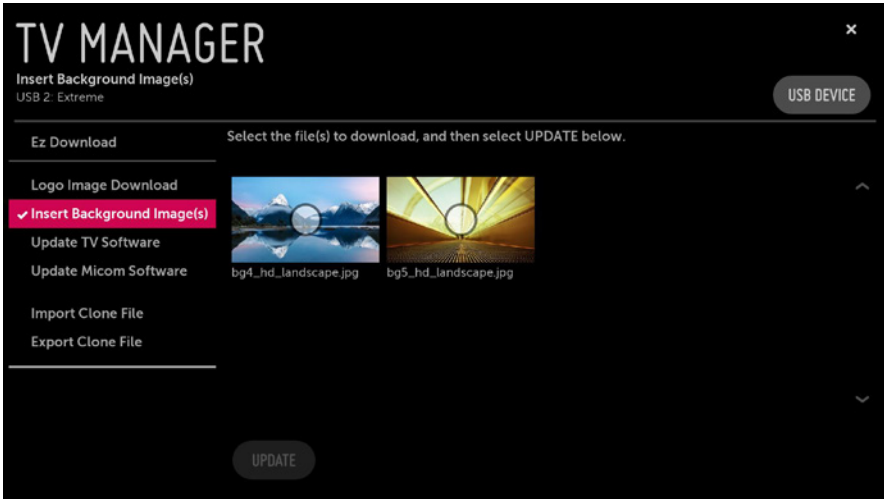


- If there are more than two USB Memory Device, It is possible to select the USB.
- The download sequence is Logo Image Download -> Select Image -> UPDATE.

! NOTE

- Splash Image update function supports only JPEG,BMP format file of less than 8 MB filesize.
- We recommend you that splash image resolution match the TV's panel resolution.
- Max resolution of splash image : Full HD → 1920 x 1080, HD → 1360 x 768.
- Min resolution of splash image : Full HD → 64 x 64, HD → 64 x 64.
- TV keep splash image until you change a new splash image.
- The target file is located in \WLG_DTV folder.

Insert Background Image(s)

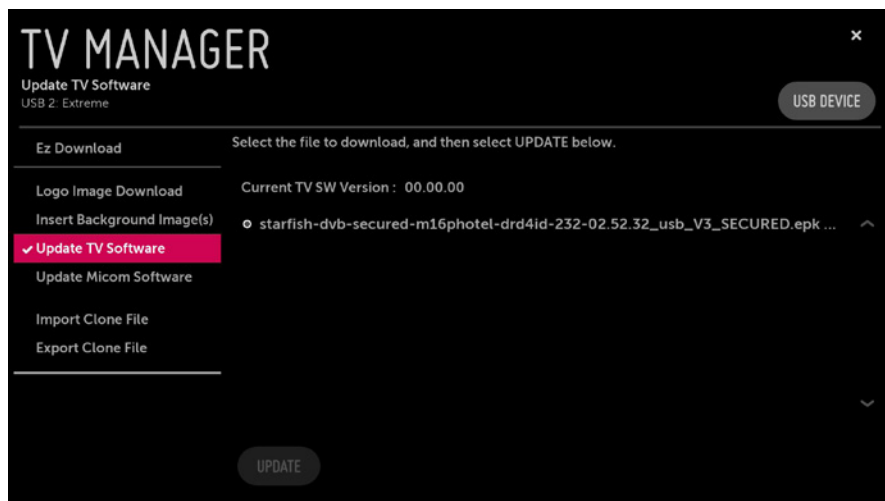


- This feature downloads Insert Background Image(s) from USB.
- Images should be copied to \WLG_DTV of the USB.
- The download sequence is Insert Background Image(s) -> Select Images -> UPDATE.

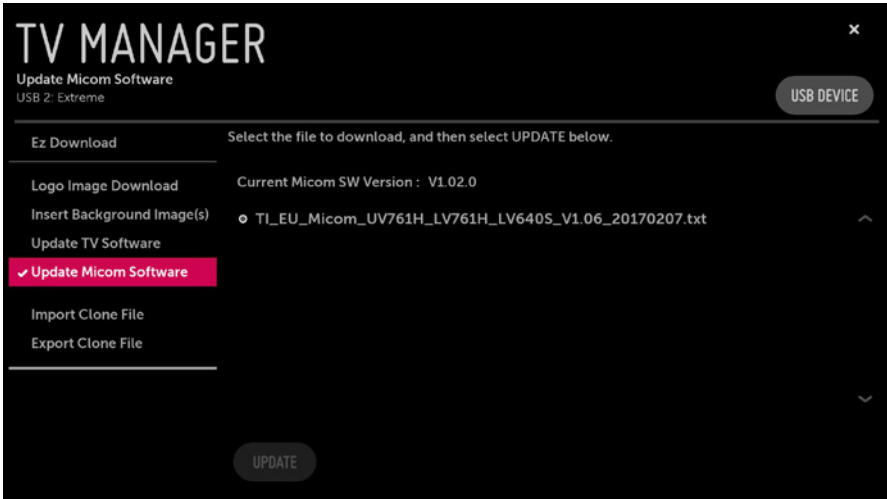
! NOTE

- Maximum number of images that you can update at once are 12.
- If you updates the images, original images will be removed.
- Insert Background Image update function supports only JPEG,BMP format file of less than 10 MB filesize.
- Max resolution of splash image : Full HD → 1920 x 1080, HD → 1360 x 768.
- Min resolution of splash image : Full HD → 64 x 64, HD → 64 x 64.
- If you want to use inserted image in Bluetooth Sound Sync app and Live TV's Radio Channel, please change the value of 'Insert Image' property to enable ('Insert Image' in Installation > General > Configuration Setup).

Update TV Software

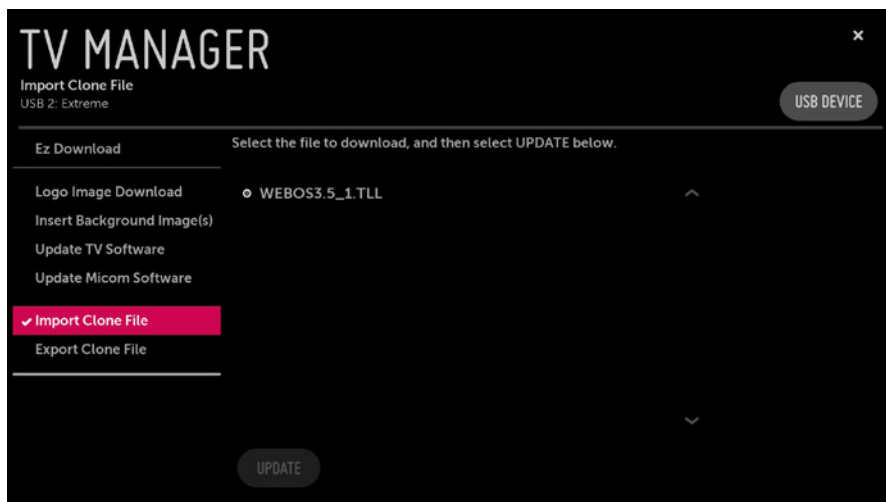


- This feature update EPK of TV through the hex file in USB. The target file is located in \LG_DTV folder.
- If there are more than two USB memory Device, It is possible to select the USB.
- The download sequence is Update TV Software -> Select file(EPK) -> UPDATE.

Update Micom Software

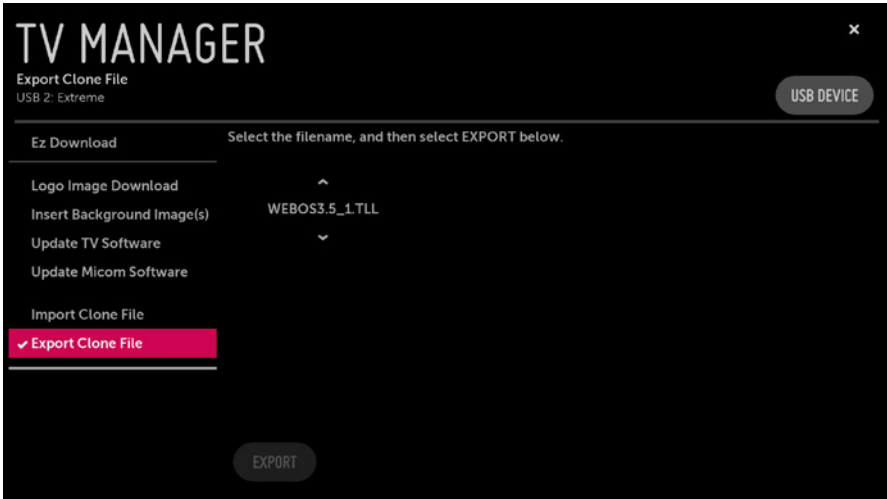
- This feature update MICOM of TV through the txt file in USB. The target file is located in \LG_DTV folder
- If there are more than two USB memory Device, It is possible to select the USB.
- The download sequence is Update Micom Software -> Select file(Micom) -> UPDATE.

Import Clone File



- Once the internal TV data and its channel map information is written to the USB memory card, the user can start "Import Clone File" process with the data file generated and stored in USB memory card. As previously warned in "Export Clone File" process, the user should not turn TV off nor unplug the USB memory card. The following images might be slightly different than the OSD image.





























Export Clone File



- "Export Clone File" must be done first before "Import Clone File" process, as it generate the file to be used in "Export Clone File". While writing is in process, the user must not turn TV off nor unplug the USB memory card. The following images might be slightly different than the OSD image.

Key Codes

- This feature is not available for all models.

Code (Hexa)	Function	Note	Code (Hexa)	Function	Note
08	 (Power)	R/C Button	40		R/C Button
0F	TV	R/C Button	7C	 (Home)	R/C Button
39	CAPTION	R/C Button	07		R/C Button
30	AV MODE/*	R/C Button	44		R/C Button
79	 RATIO	R/C Button	06		R/C Button
0B	 (Input)	R/C Button	28	BACK	R/C Button
10 - 19	Number Key 0 - 9	R/C Button	41		R/C Button
4C	 LIST	R/C Button	5B	EXIT	R/C Button
1A	FLASHBK	R/C Button	91	SAP/*	R/C Button
02	 VOL	R/C Button	0E	SLEEP	R/C Button
B5	APP	R/C Button	B1		R/C Button
00	 CH /  PAGE	R/C Button	B0		R/C Button
0A	AUDIO	R/C Button	BA		R/C Button
03	VOL 	R/C Button	8F		R/C Button
09	 (Mute)	R/C Button	8E		R/C Button
01	CH  / PAGE 	R/C Button	72		R/C Button
4D	PICTURE	R/C Button	71		R/C Button
AA	 INFO	R/C Button	63		R/C Button
52	SOUND	R/C Button	61		R/C Button
43	 (Q.Settings)	R/C Button			

• Key code 4C (0 x 4C) is available on ATSC / ISDB models which use major / minor channel. (For South Korea, Japan, North America, Latin America except Colombia models)

EXTERNAL CONTROL DEVICE SETUP

(Image shown may differ from your TV.)

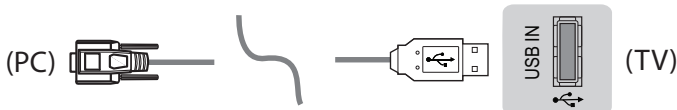
- Connect the USB to Serial converter/RS-232C input jack to an external control device (such as a computer or an A/V control system) to control the product's functions externally.

Note: The type of control port on the TV can be different between model series.

- Please be advised that not all models support this type of connectivity.
- Cable is not provided.

USB to Serial converter with USB Cable

USB Type



- LGTV supports PL2303 chip-based (Vendor ID : 0 x 0557, Product ID : 0 x 2008) USB to serial converter which is not made nor provided by LG.
- It can be purchased from computer stores that carry accessories for IT support professionals.

RS-232C with RS-232C Cable

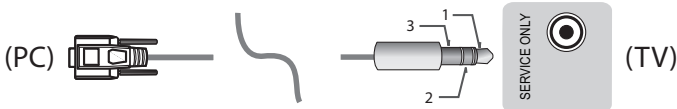
DE9 (D-Sub 9 pin) Type

- You need to purchase the RS-232C (DE9, D-Sub 9 pin female-to-female type) to RS-232C cable required for the connection between the PC and the TV, which is specified in the manual.
- The connection interface may differ from your TV.

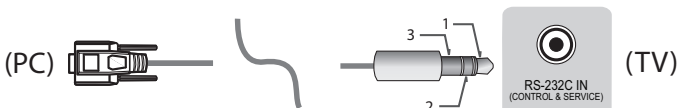


Phone jack Type

- You need to purchase the phone-jack to RS-232C cable required for the connection between the PC and the TV, which is specified in the manual.
- For other models, connect to the USB port.
- The connection interface may differ from your TV.



or

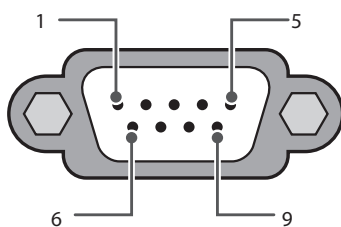


Set ID

For Set ID number, see "Real Data Mapping".

- 1 Press **Q.Settings** (⚙️) ▶️ **(All Settings)** to access the main menus.
- 2 Press the Navigation buttons to scroll to **General** ▶️ **Set ID** and press **OK**.
- 3 Press the Navigation buttons to scroll to **Set ID** and press **OK**.
- 4 Scroll left or right to select a set ID number and select **BACK**, **OK**, **▲**. The adjustment range is 1-99.
- 5 When you are finished, press **EXIT**.

Customer Computer



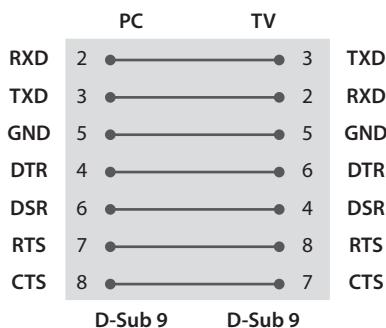
RS-232C
(Serial port)

No.	Pin name
1	3.5 V
2	RXD (Receive data)
3	TXD (Transmit data)
4	IR OUT from TV
5	GND
6	No connection
7	No connection
8	No connection
9	No connection

RS-232C Configurations

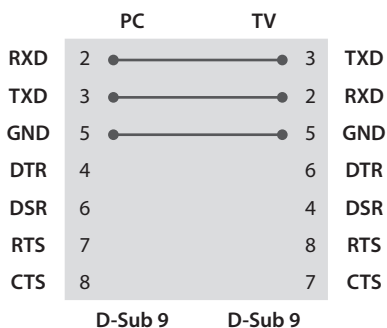
7-Wire Configurations

(Standard RS-232C cable)



3-Wire Configurations

(Not standard)



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

(Depending upon model)

	COMMAND 1	COMMAND 2	DATA (Hexadecimal)		COMMAND 1	COMMAND 2	DATA (Hexadecimal)
01. Power*	k	a	00 to 01	13. Treble	k	r	00 to 64
02. Aspect Ratio	k	c	(page 31)	14. Bass	k	s	00 to 64
03. Screen Mute	k	d	(page 31)	15. Balance	k	t	00 to 64
04. Volume Mute	k	e	00 to 01	16. Color (Colour) Temperature	x	u	00 to 64
05. Volume Control	k	f	00 to 64	17. Equalizer	j	v	(page 33)
06. Contrast	k	g	00 to 64	18. Energy Saving	j	q	00 to 05
07. Brightness	k	h	00 to 64	19. Tune Command	m	a	(page 33)
08. Color/ Colour	k	i	00 to 64	20. Channel (Programme) Add/ Del(Skip)	m	b	00 to 01
09. Tint	k	j	00 to 64	21. Key	m	c	Key Codes
10. Sharpness	k	k	00 to 32	22. Control Backlight, Control Panel Light	m	g	00 to 64
11. OSD Select	k	l	00 to 01	23. Input select (Main)	x	b	(page 35)
12. Remote Control Lock Mode	k	m	00 to 01	24. Auto Configure	j	u	(page 36)

* Note: During playing or recording media, all commands except Power (ka) and Key (mc) are not executed and treated as NG. With RS-232C cable, TV can communicate "ka command" in power-on or power-off status. But with USB-to-Serial converter cable, the command works only if TV is on.

Transmission / Receiving Protocol

Transmission

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

[Command 1]	:	First command to control the TV. (j, k, m or x)
[Command 2]	:	Second command to control the TV.
[Set ID]	:	You can adjust the [Set ID] to choose desired monitor ID number in option menu. Adjustment range in TV is 1 to 99. If [Set ID] value is selected to '0', every connected set can be controlled. * [Set ID] is indicated as decimal (1 to 99) on menu and as Hexadecimal (0 x 00 to 0 x 63) on transmission/receiving protocol.
[DATA]	:	To transmit command data (hexadecimal). Transmit 'FF' data to read status of command.
[Cr]	:	Carriage Return - ASCII code '0 x 0D'
[]	:	Space - ASCII code '0 x 20'

OK Acknowledgement

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

The set transmits ACK (acknowledgement) based on this format when receiving normal data. At this time, if the data is data read mode, it indicates present status data. If the data is data write mode, it returns the data of the PC computer.

Error Acknowledgement

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

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

Data 00: Illegal Code

Real data mapping (Hexadecimal : Decimal)

- When you enter the [data] in hexadecimal, refer to following conversion table.
- Channel Tune (ma) Command uses two-byte hexadecimal value([data]) to select channel number.

00 : Step 0	32 : Step 50 (Set ID 50)	FE : Step 254
01 : Step 1 (Set ID 1)	33 : Step 51 (Set ID 51)	FF : Step 255
...
0A : Step 10 (Set ID 10)	63 : Step 99 (Set ID 99)	01 00 : Step 256
...
0F : Step 15 (Set ID 15)	C7 : Step 199	27 0E : Step 9998
10 : Step 16 (Set ID 16)	C8 : Step 200	27 0F : Step 9999
...

- Commands may work differently depending upon model and signal.

01. Power (Command: k a)

- To control Power *On or Off of the set.

Transmission

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

Data 00 : Power Off 01 : *Power On

Ack

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

- To Show TV is Power On or *Off

Transmission


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

Ack

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

- * Similarly, if other functions transmit 'FF' data based on this format, Acknowledgement feedback presents status about each function.

02. Aspect Ratio (Command: k c) (Main Picture Size)

- To adjust the screen format. (Main picture format) You can also adjust the screen format using the **Aspect Ratio** in the  (Q.Settings) or **Picture** menu.

Transmission

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

Data 01 : Normal screen (4:3) (Just Scan Off)
 02 : Wide screen (16:9) (Just Scan Off)
 04 : Zoom
 05 : Zoom 2 (Latin America except Colombia Only)
 06 : Set by Program/Original (Just Scan Off)
 07 : 14:9 (Europe, Colombia, Mid-East, Asia except South Korea and Japan)
 09 : * Just Scan
 0B : Full Wide (Europe, Colombia, Mid-East, Asia except South Korea and Japan)
 10 to 1F : Cinema Zoom 1 to 16
 0C : 21:9 (Depending upon model)

Ack

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

- Using the PC input, you select either 16:9 or 4:3 screen aspect ratio.
- In DTV/HDMI/Component mode (high-definition), Just Scan is available.
- Full wide mode may work differently based on model and is supported for DTV fully, and ATV, AV partially.

03. 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
 01 : Screen mute on (Picture off)
 10 : Video mute on

Ack

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

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

04. 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)
 01 : Volume mute off (Volume on)

Ack

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

05. Volume Control (Command: k f)

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

Transmission

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

Data Min : 00 to Max : 64

Ack

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

06. Contrast (Command: k g)

- To adjust screen contrast. You can also adjust contrast in the **Picture** menu.

Transmission

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

Data Min : 00 to Max : 64

Ack

`[g][][Set ID][][OK/NG][Data][x]`**07. Brightness (Command: k h)**

- To adjust screen brightness. You can also adjust brightness in the **Picture** menu.

Transmission

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

Data Min : 00 to Max : 64

Ack

`[h][][Set ID][][OK/NG][Data][x]`**08. Color/Colour (Command: k i)**

- To adjust the screen Color(Colour). You can also adjust colour in the **Picture** menu.

Transmission

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

Data Min : 00 to Max : 64

Ack

`[i][][Set ID][][OK/NG][Data][x]`**09. Tint (Command: k j)**

- To adjust the screen tint. You can also adjust tint in the **Picture** menu.

Transmission

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

Data Red : 00 to Green : 64

Ack

`[j][][Set ID][][OK/NG][Data][x]`**10. Sharpness (Command: k k)**

- To adjust the screen sharpness. You can also adjust sharpness in the **Picture** menu.

Transmission

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

Data Min : 00 to Max : 32

Ack

`[k][][Set ID][][OK/NG][Data][x]`**11. 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 01 : OSD on

Ack

`[l][][Set ID][][OK/NG][Data][x]`**12. Remote Control Lock Mode (Command: k m)**

- To lock the front panel controls on the monitor and remote control.

Transmission

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

Data 00 : Lock off 01 : Lock on

Ack

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

- * If you are not using the remote control, use this mode. When main power is off & on (plug-off and plug-in, after 20 - 30 seconds), external control lock is released.
- * In the standby mode (DC off by off timer or 'ka', 'mc' command), and if key lock is on, TV will not turn on by power on key of IR & Local Key.

13. Treble (Command: k r)

- To adjust treble. You can also adjust in the **Sound** menu.

Transmission

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

Data Min: 00 to Max: 64

Ack

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

(Depending upon model)

14. Bass (Command: k s)

- To adjust Bass. You can also adjust in the **Sound** menu.

Transmission

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

Data Min: 00 to Max: 64

Ack

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

(Depending upon model)

15. Balance (Command: k t)

- To adjust balance. You can also adjust balance in the **Sound** menu.

Transmission

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

Data Min : 00 to Max : 64

Ack

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

16. Color (Colour) Temperature (Command: x u)

- To adjust colour temperature. You can also adjust Color (Colour) Temperature in the **Picture** menu.

Transmission

[x][u][][Set ID][][Data][Cr]

Data Min : 00 to Max : 64

Ack

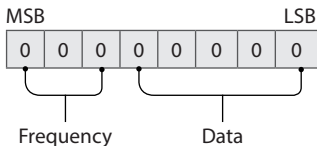
[u][][Set ID][][OK/NG][Data][x]

17. Equalizer (Command : j v)

- Adjust EQ of the set.

Transmission

[j][v][][Set ID][][Data][Cr]



7	6	5	Frequency	4	3	2	1	0	Step
0	0	0	1st Band	0	0	0	0	0	0(decimal)
0	0	1	2nd Band	0	0	0	0	1	1(decimal)
0	1	0	3rd Band
0	1	1	4th Band	1	0	0	1	1	19(decimal)
1	0	0	5th Band	1	0	1	0	0	20(decimal)

Ack

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

- * It depends upon model, and can adjust when sound mode is EQ adjustable value.

18. Energy Saving (Command: j q)

- To reduce the power consumption of the TV. You can also adjust **Energy Saving** in **Picture** menu.

Transmission

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

Data 00: Off

01: Minimum

02: Medium

03: Maximum

04: Auto (For LCD TV / LED TV)

05: Screen off

(Depending upon model)

Ack

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

19. Tune Command (Command: m a)

- * This command may work differently depending upon model and signal.
- * For Europe, Mid-East, Colombia, Asia except South Korea and Japan Model
- Select channel to following physical number.

Transmission

[m][a][][Set ID][][Data 00][][Data 01][

[Data 02][Cr]

* Digital Antenna/Cable/Satellite

[Data 00][Data 01]: Channel Data

Data 00 : High Channel data

Data 01 : Low Channel data
- 00 00 ~ 27 0F (Decimal: 0 ~ 9999)Data 02 : Input Source (Digital)
- 10: Antenna TV (DTV)
- 20: Antenna Radio (Radio)
- 40: Satellite TV (SDTV)
- 50: Satellite Radio (S-Radio)
- 90: Cable TV (CADTV)
- a0: Cable Radio (CA-Radio)

* Tune Command Examples:

1. Tune to the Analog antenna (PAL) Channel 10.
Set ID = All = 00
Data 00 & 01 = Channel Data is 10 = 00 0a
Data 02 = Analog Antenna TV = 00
Result = **ma 00 00 0a 00**
2. Tune to the digital antenna (DVB-T) Channel 01.
Set ID = All = 00
Data 00 & 01 = Channel Data is 1 = 00 01
Data 02 = Digital Antenna TV = 10
Result = **ma 00 00 01 10**
3. Tune to the satellite (DVB-S) Channel 1000.
Set ID = All = 00
Data 00 & 01 = Channel Data is 1000 = 03 E8
Data 02 = Digital Satellite TV = 40
Result = **ma 00 03 E8 40**

Ack

[a][][Set ID][][OK][Data 00][Data 01]

[Data 02][x][a][][Set ID][][NG][Data 00][x]

* For South Korea, North/Latin America
except Colombia Model* To tune channel to following physical/
major/minor number.

Transmission

[m][a][][0][][Data00][][Data01][][Data02][]

[Data03][][Data04][][Data05][Cr]

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

* Analog Antenna/Cable

Data 00: Physical Channel Number

- Antenna (ATV): 02~45 (Decimal: 2 ~ 69)

- Cable (CATV): 01, 0E~7D (Decimal: 1, 14~125)

[Data 01 ~ 04]: Major/Minor Channel Number

Data 01 & 02: xx (Don't care)

Data 03 & 04: xx (Don't care)

Data 05: Input Source (Analog)

* Digital Antenna/Cable

Data 00 : xx (Don't care)

[Data 01][Data 02]: Major Channel Number

Data 01 : High byte Channel Data

Data 02 : Low byte Channel Data
- 00 01 ~ 27 0F (Decimal: 1 ~ 9999)

[Data 03][Data 04]: Minor Channel Number

Data 03 : High byte Channel Data

Data 04 : Low byte Channel Data

Data 05 : Input Source (Digital)

02: Antenna TV (DTV) – Use Physical Channel Number

06: Cable TV (CADTV) – Use Physical Channel Number

22: Antenna TV (DTV) – Don't Use Physical Channel Number

26: Cable TV (CADTV) - Don't Use Physical Channel Number

46: Cable TV (CADTV) – Use Physical/ Major Channel Number Only (One Part Channel)

66: Cable TV (CADTV) – Use Major Channel Number Only (One Part Channel)

* Two bytes are available for each major and minor channel data, but usually the low byte is used alone (high byte is 0).

* Tune Command Examples:

1. Tune to the Analog cable (NTSC) channel 35.
Set ID = All = 00
Data 00 = Channel Data is 35 = 23
Data 01 & 02 = No Major = 00 00
Data 03 & 04 = No Minor = 00 00
Data 05 = Analog Cable TV = 01
Total = **ma 00 23 00 00 00 01**
2. Tune to the digital antenna (ATSC) channel 30-3.
Set ID = All = 00
Data 00 = Don't know Physical = 00
Data 01 & 02 = Major is 30 = 00 1E
Data 03 & 04 = Minor is 3 = 00 03
Data 05 = Digital Antenna TV = 22
Total = **ma 00 00 00 1E 00 03 22**

Ack

[a][][Set ID][][OK][Data 00][Data 01]
[Data 02][Data 03][Data 04][Data 05][x][a][]
[Set ID][][NG][Data 00][x]

* For Japan Model

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

Transmission

[m][a][][0][][Data00][][Data01][][Data02][]
[Data03][][Data04][][Data05][Cr]

20. Channel (Programme) Add/Del(Skip) (Command: m b)

- To skip current channel(programme) for next time.

Transmission

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

Data 00: Del(ATSC,ISDB)/Skip(DVB) 01: Add

Ack

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

- Set the saved channel status to del(ATSC, ISDB)/ skip(DVB) or add.

21. Key (Command: m c)

- To send IR remote key code.

Transmission

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

Data Key code - page 26

Ack

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

22. Control Backlight, Control Panel Light (Command: m g)

* For LCD TV / LED TV

- To control the backlight.

Transmission

[m][g][][Set ID][][Data][Cr]

Data Min : 00 to Max : 64

Ack

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

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

- To select input source for main picture.

Transmission

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

Data 00:	DTV	10:	ATV
01:	CADTV	11:	CATV
02:	Satellite DTV ISDB-BS (Japan)		
03:	ISDB-CS1 (Japan)		
04:	ISDB-CS2 (Japan)		
20:	AV or AV1	40:	Component1
21:	AV2	41:	Component2
60:	RGB		
90:	HDMI1	91:	HDMI2
92:	HDMI3	93:	HDMI4

Ack

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

- * This function depends on model and signal.

24. Auto Configure (Command: j u)

- To adjust picture position and minimize image shaking automatically. It works only in RGB (PC) mode.

Transmission

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

Data 01: To set

Ack

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

