

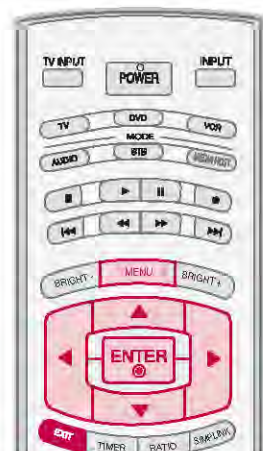
AUTO ON/OFF TIME SETTING

The timer function operates only if the current time has been set.

The Off-Time function overrides the On-Time function if they are both set to the same time.

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

If you do not press any button within 2 hours after the TV turns on with the On Time function, the TV will automatically revert to standby mode.



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

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

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

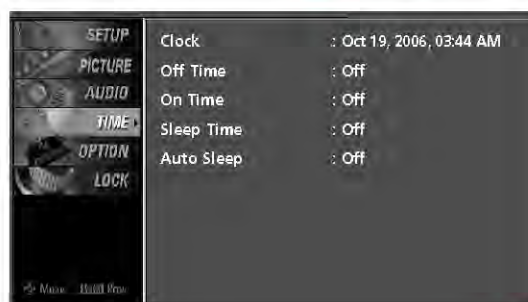
4 Press the ► button and then use ▲ or ▼ button to set the hour.

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

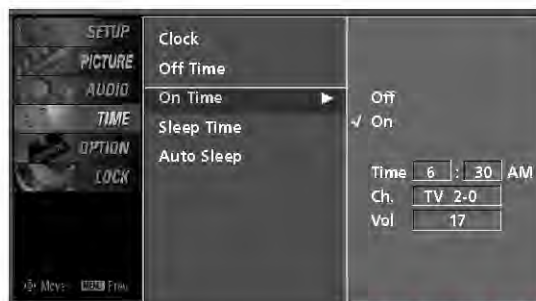
6 **Only On Time**
 Press the ► button and then use ▲ or ▼ button to select the channel at turn-on.

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

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



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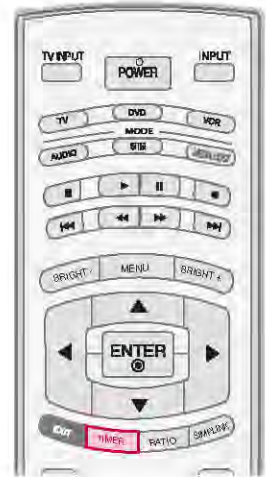
2 3 4 5 6

TIME SETTING

SLEEP TIME SETTING

The Sleep Time turns the TV off at the preset time.
Note that this setting is cleared when the TV is turned off.

You can also set up the Sleep Time in the TIME menu.



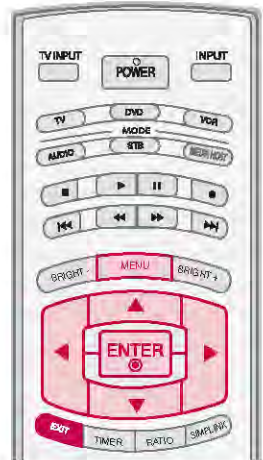
- 1 Press the **TIMER** button repeatedly to select the number of minutes. First the **Off** option appears on the screen, followed by the following Sleep Time options : 10, 20, 30, 60, 90, 120, 180, and 240 minutes.
- 2 When the number of minutes you want is displayed on the screen, press the **ENTER** button. The timer begins to count down from the number of minutes selected.
- 3 To check the remaining minutes before the TV turns off, press the **TIMER** button once.
- 4 To cancel the Sleep Time, press the **TIMER** button repeatedly to select **Off**.

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



AUTO SHUT-OFF SETTING

TV will be automatically turned off, in case of no signal in TV & input source or no remote control input for 10 minutes.



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

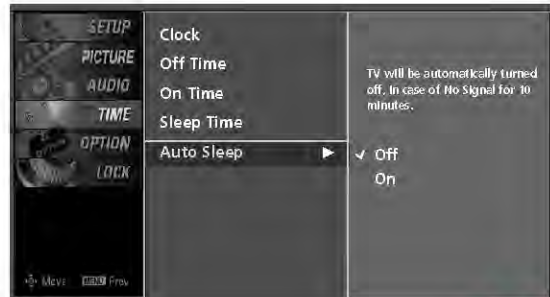
2 Press the ► button and then use ▲ or ▼ button to select **Auto Sleep**.

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

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



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PARENTAL CONTROL / RATINGS

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

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

1. Set ratings and categories to be blocked.
2. Specify a password
3. Enable the lock

V-Chip rating and categories

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

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

- TV-G (General audience)
- TV-MA (Mature audience only)
- TV-PG (Parental guidance suggested)
- TV-Y (All children)
- TV-14 (Parents strongly cautioned)
- TV-Y7 (Children 7 years older)

SET PASSWORD & LOCK SYSTEM

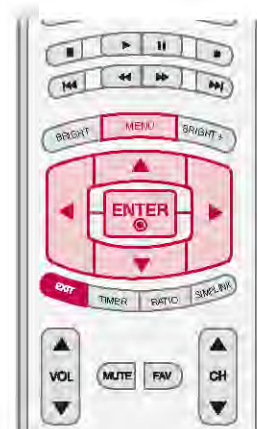
Setting up your Password

Set up blocking schemes to block specific channels, ratings, and external viewing sources.

A password is required to gain access to this menu.

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

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



Set Password

Change the password by inputting a new password twice.

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

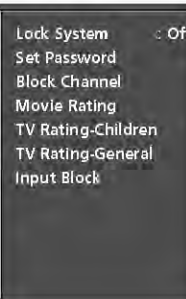
2 Press the ► button and then choose any 4 digits for your new password and enter the them on the **new**.

As soon as the 4 digits are entered, reenter the same 4 digits on the **Confirm**.

Then your changed password has been memorized.

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

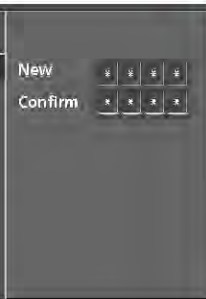
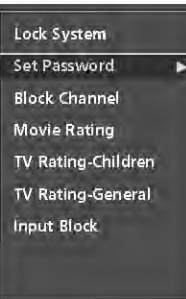
For USA



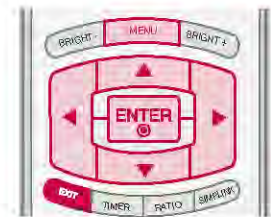
For Canada



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Lock System

Enables or disables the blocking scheme you set up previously.

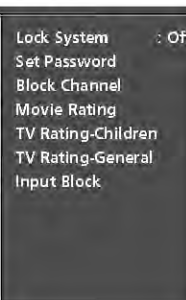
1 After inputting the password, use the ▲ or ▼ button to choose **Lock System**.

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

- When you select, the Lock System is enable.

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

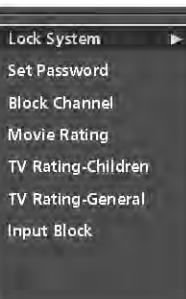
For USA



For Canada



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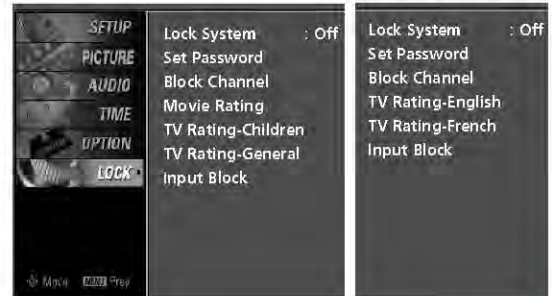
PARENTAL CONTROL / RATINGS

CHANNEL BLOCKING

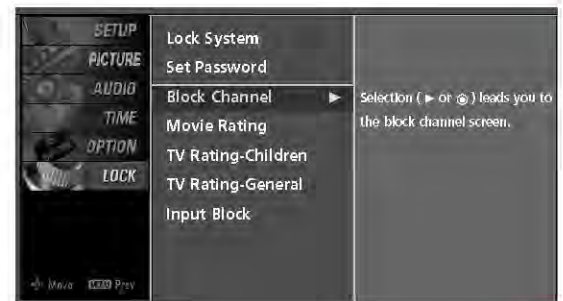
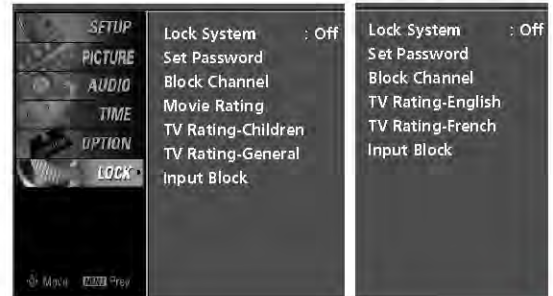
Blocks any channels that you do not want to watch or that you do not want your children to watch.

- 1 After inputting the password, use the ▲ or ▼ button to choose **Block Channel**.
- 2 Press the ► button. You will now see a screen filled with channel numbers and a preview picture.
- 3 Use ▲ ▼ ◀ ▶ button to select a channel and then use the **ENTER** button to block or unblock it.
- 4 Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.

For USA



For Canada



MOVIE & TV RATING

Movie Rating (MPAA) - for USA only

Blocks movies according to the movie ratings limits specified, so children cannot view certain movies. You can set the ratings limit by blocking out all the movies with the ratings above a specified level. Keep in mind that the movie ratings limit only applies to movies shown on TV, not TV programs, such as soap operas.

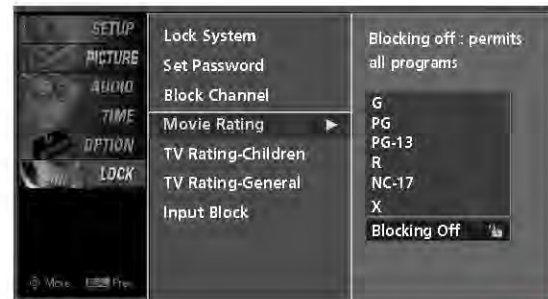
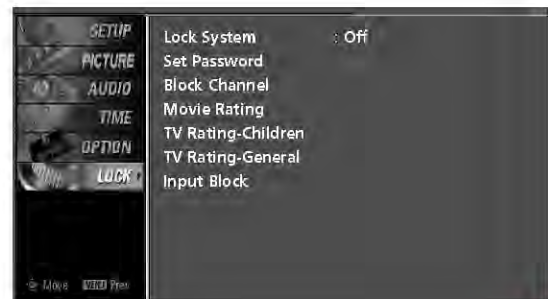
1 After inputting the password, use the ▲ or ▼ button to choose **Movie Rating**.

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

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

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

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



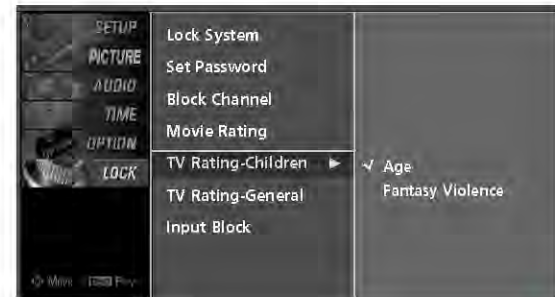
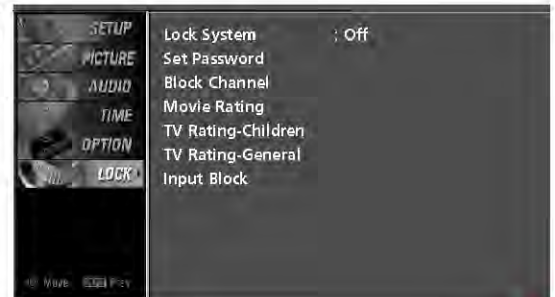
PARENTAL CONTROL / RATINGS

TV Rating Children -for USA only

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

- 1 After inputting the password, use the ▲ or ▼ button to choose **TV Rating-Children**.
- 2 Press the ► button and then use the ▲ or ▼ to select **Age**, or **Fantasy Violence**.
Press the ► button and then use the ▲ or ▼ button to select block options.
 - Age(applies to TV-Y, TV-Y7)
 - Fantasy Violence(applies to TV-Y7)

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

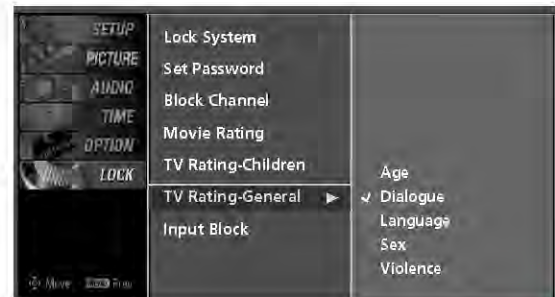
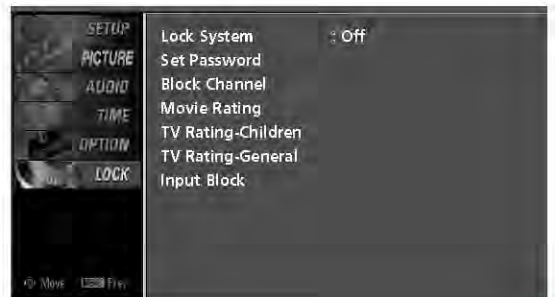


TV Rating General -for USA only

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

- 1 After inputting the password, use the ▲ or ▼ button to choose **TV Rating-General**.
- 2 Press the ► button and then use the ▲ or ▼ button to select **Age**, **Dialogue**, **Language**, **Sex** or **Violence**.
Press the ► button and then use the ▲ or ▼ button to select block options.
 - Age(applies to TV-G,TV-PG,TV-14,TV-MA)
 - Dialogue-sexual dialogue(applies to TV-PG,TV-14)
 - Language-adult language(applies to TV-PG,TV-14,TV-MA)
 - Sex-sexual situations(applies to TV-PG,TV-14,TV-MA)
 - Violence(applies to TV-PG,TV-14,TV-MA)

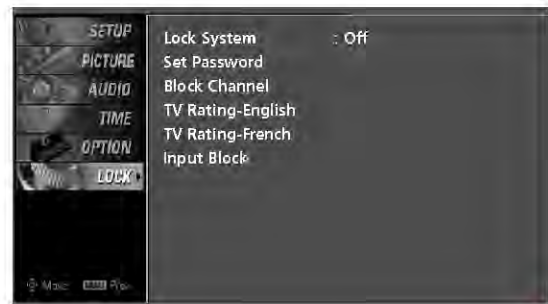
- 3 Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.



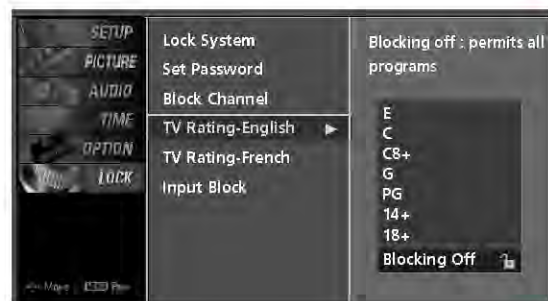
TV Rating english - for CANADA only

Selecting canadian english language rating system.

- 1 After inputting the password, use the ▲ or ▼ button to choose **TV Rating-English**.
- 2 Press the ► button and then use the ▲ or ▼ button to select **E, C, C8+, G, PG, 14+, 18+,** or **Blocking Off**.
 - E(Exempt)
 - C(Children)
 - C8+(Children eight years and older)
 - G(General programming, suitable for all audiences)
 - PG(Parental Guidance)
 - 14+(Viewers 14 years and older)
 - 18+(Adult programming)
 - Blocking Off(Permits all programs)
- 3 Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.



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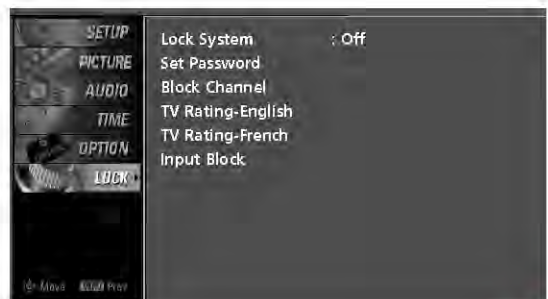


2

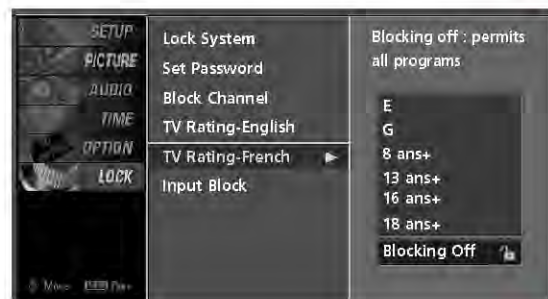
TV Rating french - for CANADA only

Selecting canadian french language rating system.

- 1 After inputting the password, use the ▲ or ▼ button to choose **TV Rating-French**.
- 2 Press the ► button and then use the ▲ or ▼ button to select **E, G, 8 ans+, 13 ans+, 16 ans+, 18 ans+,** or **Blocking Off**.
 - E(Exempt)
 - G(General)
 - 8 ans+(General-Not convenient for little children)
 - 13 ans+(Not convenient for children of 13 years and younger)
 - 16 ans+(Not convenient for children of 16 years and younger)
 - 18 ans+(This programs is only for adults)
 - Blocking Off(Permits all programs)
- 3 Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.



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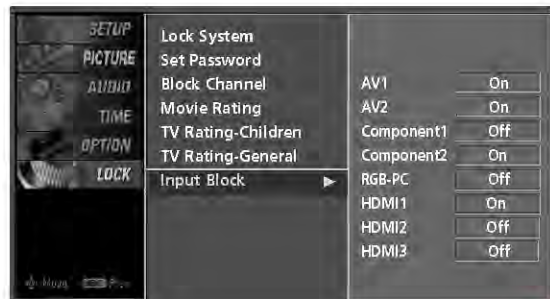
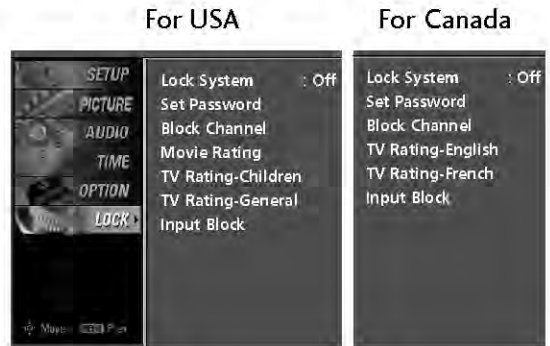
2

PARENTAL CONTROL /RATINGS

EXTERNAL INPUT BLOCKING

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

- 1 After inputting the password, use the ▲ or ▼ button to choose **Input Block**.
- 2 Press the ► button and then use the ▲ or ▼ to select a source.
- 3 Press the ► button and then use the ◀ or ▶ to select **On** or **Off** on the each source.
- 4 Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.



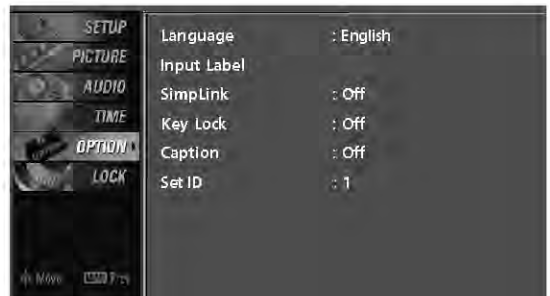
KEY LOCK

The TV can be set up so that it can only be used with the remote control.

This feature can be used to prevent unauthorized viewing by locking out the front panel controls.

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

- 1 Press the **MENU** button and then use ▲ or ▼ button to select the **OPTION** menu.
- 2 Press the ► button and then use ▲ or ▼ button to select **Key Lock**.
- 3 Press the ► button and then use ▲ or ▼ button to select **On** or **Off**.
- 4 Press **EXIT** button to return to TV viewing or press **MENU** button to return to the previous menu.



APPENDIX

TROUBLESHOOTING

The operation does not work normally.

The remote control doesn't work

- Check to see if there is any object between the product and the remote control causing obstruction. Ensure you are pointing the remote control directly at the TV.
- Ensure that the batteries are installed with correct polarity (+ to +, - to -).
- Ensure that the correct remote operating mode is set: TV, VCR etc.
- Install new batteries.

Power is suddenly turned off

- Is the sleep timer set?
- Check the power control settings. Power interrupted.
- No broadcast on station tuned with Auto off activated.

The video function does not work.

No picture & No sound

- Check whether the product is turned on.
- Try another channel. The problem may be with the broadcast.
- Is the power cord inserted into wall power outlet?
- Check your antenna direction and/or location.
- Test the wall power outlet, plug another product's power cord into the outlet where the product's power cord was plugged in.

Picture appears slowly after switching on

- This is normal, the image is muted during the product startups process. Please contact your service center, if the picture has not appeared after five minutes.

No or poor color or poor picture

- Adjust Color in menu option.
- Keep a sufficient distance between the product and the VCR.
- Try another channel. The problem may be with the broadcast.
- Are the video cables installed properly?
- Activate any function to restore the brightness of the picture.

Horizontal/vertical bars or picture shaking

- Check for local interference such as an electrical appliance or power tool.

Poor reception on some channels

- Station or cable product experiencing problems, tune to another station.
- Station signal is weak, reorient antenna to receive weaker station.
- Check for sources of possible interference.

Lines or streaks in pictures

- Check antenna (Change the direction of the antenna).

APPENDIX

The audio function does not work.

Picture OK & No sound	<ul style="list-style-type: none">■ Press the VOL or VOLUME button.■ Sound muted? Press MUTE button.■ Try another channel. The problem may be with the broadcast.■ Are the audio cables installed properly?
No output from one of the speakers	<ul style="list-style-type: none">■ Adjust Balance in menu option.
Unusual sound from inside the product	<ul style="list-style-type: none">■ A change in ambient humidity or temperature may result in an unusual noise when the product is turned on or off and does not indicate a fault with the product.

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

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

MAINTENANCE

Early malfunctions can be prevented. Careful and regular cleaning can extend the amount of time you can enjoy your new TV.

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

Cleaning the Screen

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

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

Cleaning the Cabinet

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

Extended Absence

CAUTION

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

PRODUCT SPECIFICATIONS

37LB5D (37LB5DF-UC)	Width x Height x Depth (inches/mm)	With Stand	36.5x27.3x11.1 inches 927.0x692.8x283.2 mm
		Without Stand	36.5x24.8x3.5 inches 927.0x630.0x88.0 mm
	Weight (pounds / kg)	With Stand	44.1 pounds / 20.0kg
		Without Stand	35.3 pounds / 16.0kg
42LB5D (42LB5DF-UC)	Width x Height x Depth (inches/mm)	With Stand	40.7x29.5x11.3 inches 1033.1x750.0x287.6 mm
		Without Stand	40.7x27.0x3.5 inches 1033.1x686.5x88.5 mm
	Weight (pounds / kg)	With Stand	60.6 pounds / 27.5kg
		Without Stand	50.7 pounds / 23.0kg
47LB5D (47LB5DF-UC)	Width x Height x Depth (inches/mm)	With Stand	45.1x32.5x13.0 inches 1144.5x825.6x331.0 mm
		Without Stand	45.1x29.7x4.1 inches 1144.5x754.9x103.0 mm
	Weight (pounds / kg)	With Stand	82.7 pounds / 37.5kg
		Without Stand	69.2 pounds / 31.4kg
52LB5D (52LB5DF-UC)	Width x Height x Depth (inches/mm)	With Stand	51.5x35.7x14.6 inches 1308.0x906.1x370.0 mm
		Without Stand	51.5x33.3x3.5 inches 1308.0x845.0x89.5 mm
	Weight (pounds / kg)	With Stand	93.5 pounds / 42.4kg
		Without Stand	83.1 pounds / 37.7kg
Resolution	1920 x 1080 (Dot)		
Power requirement	AC100-240V~ 50/60Hz		
Television System	NTSC-M, ATSC, 64 & 256 QAM		
Program Coverage	VHF 2-13, UHF 14-69, CATV 1-135, DTV 2-69, CADTV 1-135		
External Antenna Impedance	75 Ω		
Operating Temperature Range	0 ~ 40°C		
Operating Humidity Range	Less than 80%		
Storage Temperature Range	-20 ~ 60°C		
Storage Humidity Range	Less than 85%		

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

32LB4D (32LB4DS-UA)	Width x Height x Depth (inches/mm)	With Stand	31.8x23.8x9.8 inches 806.8x605.6x249.0 mm
		Without Stand	31.8x21.6x3.1 inches 806.8x548.6x79.0 mm
	Weight (pounds / kg)	With Stand	30.6 pounds / 13.9 kg
		Without Stand	24.9 pounds / 11.3 kg
37LB4D (37LB4DS-UA)	Width x Height x Depth (inches/mm)	With Stand	36.5x27.5x11.0 inches 926.6x697.6x280.4 mm
		Without Stand	36.5x25.0x3.5 inches 926.6x635.6x88.0 mm
	Weight (pounds / kg)	With Stand	44.0 pounds / 20.0 kg
		Without Stand	36.0 pounds / 16.3 kg
42LB4D (42LB4DS-UA)	Width x Height x Depth (inches/mm)	With Stand	40.7x29.5x11.4 inches 1032.7x750.0x289.0 mm
		Without Stand	40.7x27.0x3.5 inches 1032.7x685.5x88.5 mm
	Weight (pounds / kg)	With Stand	60.0 pounds / 27.1 kg
		Without Stand	49.9 pounds / 22.6 kg
Resolution	1366 x 768 (Dot)		
Power requirement	AC 100-240V~ 50/60Hz		
Television System	NTSC-M, ATSC, 64 & 256 QAM		
Program Coverage	VHF 2-13, UHF 14-69, CATV 1-135, DTV 2-69, CADTV 1-135		
External Antenna Impedance	75 Ω		
Operating Temperature Range	0 ~ 40°C		
Operating Humidity Range	Less than 80%		
Storage Temperature Range	-20 ~ 60°C		
Storage Humidity Range	Less than 85%		

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

PROGRAMMING THE REMOTE CONTROL

The provided universal remote control can be programmed to operate most remote-controllable devices. Note that the remote may not control all models of other brands.

Programming a code into a remote mode

- 1** To find out whether your remote control can operate each device without programming, turn on the device (such as a VCR) and press the corresponding mode button on the remote. After that, press the **POWER** button. If the device is turned off and it responds properly the remote control need not be programmed. If not, the remote should be programmed to operate the device. The programming procedures are explained below.
- 2** Press the **MENU** and **MUTE** button continuously at the same time for two seconds; the currently selected device button is illuminated. If you don't press any button for 20 seconds, the light on the mode button will be turned off. In that case, you have to repeat from step 2.
- 3** Enter the appropriate code from the code table on the following pages. When pressing the button, the light blinks at a time. If the device turned off, the programming is successful.
- 4** Press the **MENU** button to store the code. After blinking twice, this code is stored.
- 5** Test the remote control functions to see if the device responds properly. If not, steps 2-5.

Remote control code

VCRs

Brand	Codes	Brand	Codes	Brand	Codes
AIWA	034	MAGNAVOX	031 033 034 041	SAMSUNG	032 040 102 104
AKAI	016 043 046 124 125 146		067 068 012 031 033 067		105 107 109 112 113 115 120 122 125
AMPRO	072	MARANTZ	069	SANSUI	022 043 048 135
ANAM	031 033 103	MARTA	101	SANYO	003 007 010 014
AUDIO DYNAMICS	012 023 039 043	MATSUI	027 030		102 134
BROKSONIC	035 037 129	MEI	031 033	SCOTT	017 037 112 129
CANON	028 031 033	MEMOREX	003 010 014 031 033 034 053 072		131
CAPEHART	108		101 102 134 139	SEARS	003 008 009 010 013 014 017 020
CRAIG	003 040 135	MGA	045 046 059		031 042 073 081 101
CURTIS MATHES	031 033 041	MINOLTA	013 020	SHARP	031 054 149
DAEWOO	005 007 010 064 065 108 110 111 112 116 117 119	MITSUBISHI	013 020 045 046 049 051 059 061 151	SHINTOM	024
DAYTRON	108		034 040	SONY	003 009 031 052 056 057 058 076 077 078 149
DBX	012 023 039 043	MTC	024 034	SOUNDESIGN	034
DYNATECH	034 053	MULTITECH	012 023 039 043 048	STS	013
ELECTROHOME	059	NEC	043	SYLVANIA	031 033 034 059 067
EMERSON	006 017 025 027 029 031 034 035 036 037 046 101 129 131 138 153	NORDMENDE	053 054	SYMPHONIC	034
		OPTONICA	066 070 074 083 133 140 145	TANDY	010 034
FISHER	003 008 009 010	PANASONIC	013 020 031 033 063	TATUNG	039 043
FUNAI	034		031 034 067	TEAC	034 039 043
GE	031 033 063 072 107 109 144 147	PENTAX	031 033 034 054 067 071 101	TECHNICS	031 033 070
GO VIDEO	132 136	PHILCO	101	TEKNIKA	019 031 033 034 101
HARMAN KARDON	012 045	PHILIPS	013 021 048	THOMAS	034
HITACHI	004 018 026 034 043 063 137 150	PILOT	108	TMK	006
INSTANTREPLAY	031 033	PIONEER	072	TOSHIBA	008 013 042 047 059 082 112 131
JCL	031 033	PORTLAND	011 014	TOTEVISION	040 101
JCPENNY	012 013 015 033 040 066 101	PULSAR	033 066 075 145	UNITECH	040
JENSEN	043	QUARTZ	013 020 033 034 040 041 062 063 107 109 140 144 145 147	VECTOR RESEARCH	012
JVC	012 031 033 043 048 050 055 060 130 150 152	QUASAR	003 008 010 014 031 033 034 040 053 054 101	VICTOR	048
KENWOOD	014 034 039 043 047 048	RCA	012 034 046	VIDEO CONCEPTS	012 034 046
LG (GOLDSTAR)	001 012 013 020 101 106 114 123	REALISTIC	003 008 010 014 031 033 034 040 053 054 101	VIDEOSONIC	040
LLOYD	034		058	WARDS	003 013 017 024 031 033 034 040 053 054 131
LXI	003 009 013 014 017 034 101 106	RICO	058	YAMAHA	012 034 039 043
MAGIN	040	RUNCO	148	ZENITH	034 048 056 058 072 080 101
		SALORA	014		

APPENDIX

Cable Box

Brand	Codes	Brand	Codes	Brand	Codes
ABC	003 004 039 042 046 052 053	LG (GOLDSTAR)	074 001 106 101 005	REMBRANT	025
AJIN	112	M-NET	037	SAMSUNG	102 107 030 068
ANTRONIK	014	MACOM	033	SCIENTIFIC ATLANTA	003 011 041 042 043 045 046
ARCHER	005 007 014 024	MAGNAVOX	010 012 064 079	SHERITECH	022
CABLE STAR	026	MEMOREX	100	SIGNAL	030
CENTURION	092	MOVIE TIME	028 032	SIGNATURE	052
CENTURY	007	NSC	015 028 038 071 073	SL MARX	030
CITIZEN	007	OAK	016 031 037 053	SPRUCER	047 078
COLOUR VOICE	065 090	PANASONIC	044 047	STARCOM	002 004 008 009
COMBANO	080 081	PARAGON	100	STARGATE	008 030
COMTRONICS	019 030	PHILIPS	006 012 013 020 065 085 090	TADIRAN	030
DIAMOND	023	PIONEER	034 051 052 063 076	TAEKWANG	110
EAGLE	020 030 040	POST NEWS WEEK	016	TAIHAN	105
EASTERN	057 062 066	PRUCER	059	TANDY	017
ELECTRICORD	032	PTS	011 048 071 072 073 074	TEXSCAN	029
GE	072	PULSAR	100	TOCOM	039 040 056
GEMINI	008 022 025 054	RCA	047	TOSHIBA	100
GI	052 074	REGAL	049 050	UNIKA	007 014 024
GOLDEN CHANNEL	030	REGENCY	057	UNITED CABLE	004 053
HAMLIN	049 050 055			UNIVERSAL	005 007 014 024 026 027 032 035
HITACHI	052 055			VIEWSTAR	012 015 018 086 087 088 089
HOSPITALITY	070 077			ZENITH	100 114 060 093
JERROLD	002 003 004 008 009 010 052 069				

HDSTB

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

Audio

Brand	Codes	Brand	Codes	Brand	Codes
AIWA	014 028 070 096 125 129 139 229 230		157 158 159 160 189 207 222 224 225 226 227 243 247	RCX	092
AKAI	163			REALISTIC	103 106
ANAM	003 014 017 023 059 106 189 216 217 235 236	LOTTE	014 016 036 098 100 172 173 174 175 176 177 178 179 180 181 183 201 202 208 213 214 219 223 232 238 240	SAMSUNG	124 145 146 182 193 194 195 203 204 244 245 246
BURMECTER	252			SANSUI	011 135 138 144
CARVER	086			SANYO	019 083 234
CLARION	199			SCOTT	106 186
DAEWOO	027 053 060 084 102 148 198 221	LXI	103	SHARP	031 032 051 052 072 082 117 119 156 184 199 200 206 209
DENON	015 075 130 143	MAGNAVOX	111	SHERWOOD	005 006 158
FANTASIA	071	MARANTZ	002 018 020 025 034 041 081 090 097 112	SONY	044 045 109 114 118 126 248 249
FINEARTS	022			TAEKWANG	012 020 073 074 076 077 105 161 162 163 164 165 166 167 168 169 205 231 233 242
FISHER	089 099	MCINTOSH	049		
LG(GOLDSTAR)	001 021 024 029 087 107 108 110 190 191 192 210 211 212 239	MCS	104		
HAITAI	034 035 188 222	MEMOREX	107		
HARMAN/KARDON	068	NAD	046		
JVC	004 013 141	ONKYO	013 040 041 047 048 056 057 132 133 140	TEAC	010 085 106 136 185 187 237
KEC	185 186 187	OPTIMUS	158	TECHNICS	101 113 128 134 147 218
KOHEL	030	PANASONIC	007 033 064 113 142 220 241 251	TOSHIBA	137
NAD	045 046	PENNEY	104	THE	061
KENWOOD	038 050 067 089 170 171 197 206 215 222	PHILIPS	026 112 143	VICTOR	088 131
INKEL	037 058 062 069 078 079 095 121 122 149 150 151 152 153 154 155	PIONEER	039 042 043 063 065 091 093 094 115 123 127 250	WARDS	089
		QUASAR	113	YAMAHA	054 055 066 092 199
		RCA	080		

DVD

Brand	Codes	Brand	Codes	Brand	Codes
APEX DIGITAL	022	mitsubishi	002	RCA	005 006
DENON	020 014	NAD	023	SAMSUNG	011 015
GE	005 006	ONKYO	008 017	SONY	007
HARMAN KARDON	027	PANASONIC	003 009	THOMPSON	005 006
JVC	012	PHILIPS	013	TOSHIBA	019 008
LG	001 010 016 025	PIONEER	004 026	YAMAHA	009 018
MAGNAVOX	013	PROCEED	021	ZENITH	010 016 025
MARANTZ	024	PROSCAN	005 006		

APPENDIX

IR CODES

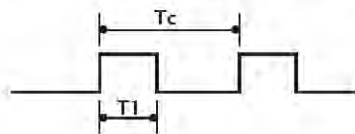
1. How to Connect

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

2. Remote Control IR Codes

Output waveform

Single pulse, modulated with 37.917KHz signal at 455KHz



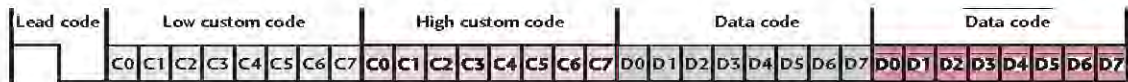
Carrier frequency

$$FCAR = 1/TC = fOSC/12$$

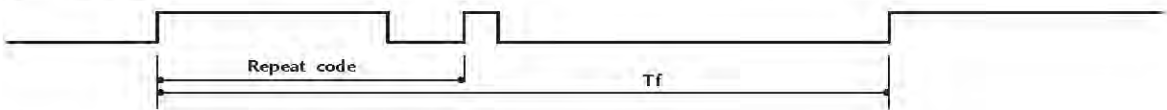
$$\text{Duty ratio} = T1/TC = 1/3$$

Configuration of frame

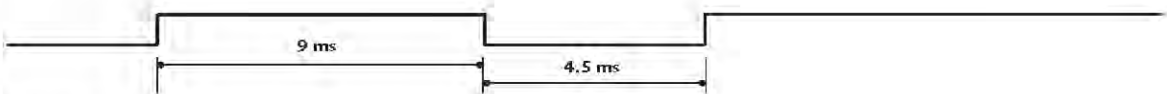
1st frame



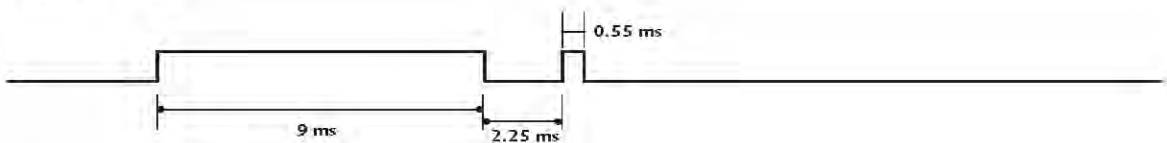
Repeat frame



Lead code

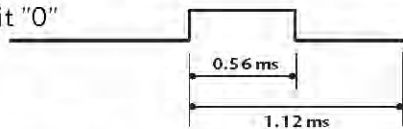


Repeat code

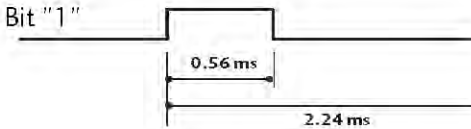


Bit description

Bit "0"

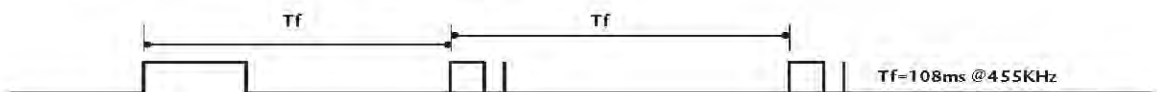


Bit "1"



Frame interval: Tf

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



Code (Hexa)	Function	Note	Code (Hexa)	Function	Note
0F	TV INPUT	R/C Button	BF	COMPONENT1	Discrete IR Code (Component1 Input Selection)
0B	INPUT	R/C Button	D4	COMPONENT2	Discrete IR Code (Component2 Input Selection)
08	POWER	R/C Button (Power On/Off)	D5	RGB-PC	Discrete IR Code (RGB-PC Input Selection)
79	RATIO	R/C Button	D7	RGB-DTV	Discrete IR Code (RGB-DTV Input Selection)
0E	TIMER	R/C Button	CE	HDMI1	Discrete IR Code (HDMI1 Input Selection)
10-19	Number Key 0-9	R/C Button	CC	HDMI2	Discrete IR Code (HDMI2 Input Selection)
4C	= (Dash)	R/C Button	76	Ratio 4:3	Discrete IR Code (Only 4:3 Mode)
1A	BACK	R/C Button	77	Ratio 16:9	Discrete IR Code (Only 16:9 Mode)
09	MUTE	R/C Button	AF	Ratio Zoom	Discrete IR Code (Only Zoom1 Mode)
02	VOL ▲	R/C Button	C4	POWER ON	Discrete IR Code (Only Power On)
03	VOL ▼	R/C Button	C5	POWER OFF	Discrete IR Code (Only Power Off)
00	CH ▲	R/C Button	B0	PLAY	R/C Button
01	CH ▼	R/C Button	BA	PAUSE	R/C Button
1E	FAV	R/C Button	B1	STOP	R/C Button
39	CC	R/C Button	BD	REC	R/C Button
40	▲	R/C Button	8F	REW	R/C Button
41	▼	R/C Button	8E	FF	R/C Button
07	◀	R/C Button	B2	GO TO PREV	R/C Button
06	▶	R/C Button	B3	GO TO NEXT	R/C Button
44	ENTER	R/C Button	7C	MEDIA HOST	R/C Button
34	BRIGHT-	R/C Button	7D	MARK	R/C Button
43	MENU	R/C Button	CA	USB EJECT	R/C Button
33	BRIGHT+	R/C Button			
52	SOUND	R/C Button			
4D	PICTURE	R/C Button			
5B	EXIT	R/C Button			
7E	SIMPLINK	R/C Button			
0A	SAP	R/C Button			
D6	TV	Discrete IR Code (TV Input Selection)			
5A	AV1	Discrete IR Code (AV1 Input Selection)			
D0	AV2	Discrete IR Code (AV2 Input Selection)			

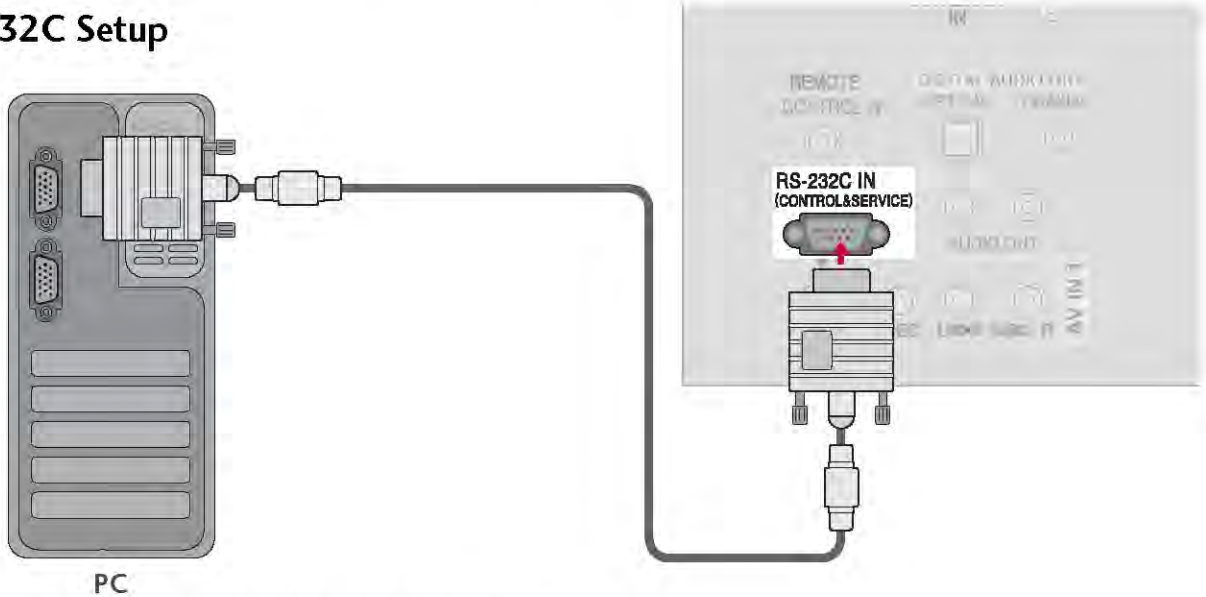
EXTERNAL CONTROL THROUGH RS-232C

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

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

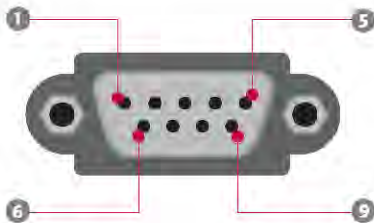
Note: RS-232C connection cables are not supplied with the product.

RS-232C Setup



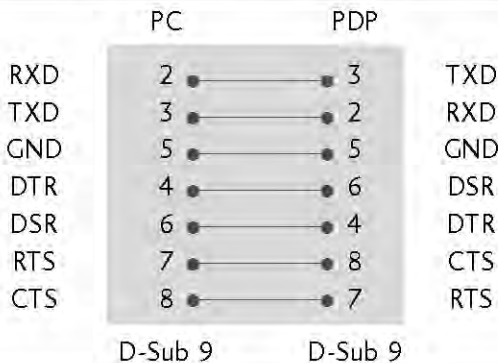
Type of Connector; D-Sub 9-Pin Male

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

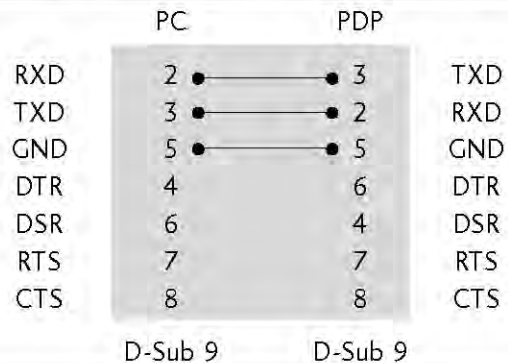


RS-232C Configurations

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

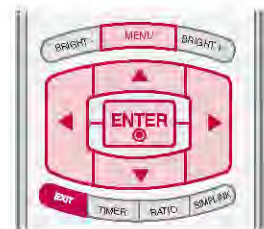


3-Wire Configurations (Not standard)



Set ID

Use this function to specify a TV ID number.
Refer to 'Real Data Mapping 1'. ▶ p.104

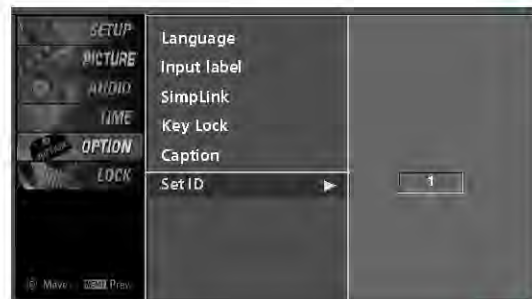
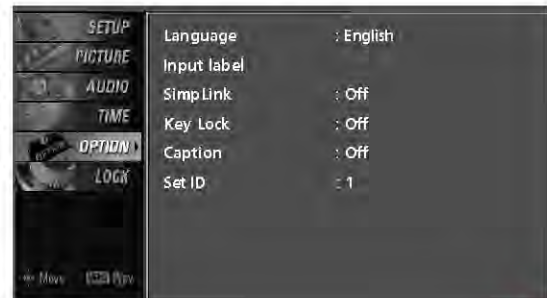


1 Press the **MENU** button and then use ▲ or ▼ button to select the **OPTION** menu.

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

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

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



Communication Parameters

- Baud rate : 9600 bps (UART)
- Data length : 8 bits
- Parity : None
- Stop bit : 1 bit
- Communication code : ASCII code
- Use a crossed (reverse) cable.

NOTE

This product has command echo back in the RS-232C Command.

APPENDIX

Command Reference List

	COMMAND1	COMMAND2	DATA (Hexadecimal)		COMMAND1	COMMAND2	DATA (Hexadecimal)
01. Power	k	a	0 ~ 1	12. OSD Select	k	l	0 ~ 1
02. Input Select	k	b	0 ~ 9	13. Remote Control/ Key Lock	k	m	0 ~ 1
03. Aspect Ratio	k	c	*	14. Treble	k	r	0 ~ 64
04. Screen Mute	k	d	0 ~ 1	15. Bass	k	s	0 ~ 64
05. Volume Mute	k	e	0 ~ 1	16. Balance	k	t	0 ~ 64
06. Volume Control	k	f	0 ~ 64	17. Color Temperature	k	u	0 ~ 3
07. Contrast	k	g	0 ~ 64	18. Red adjustment	k	v	0 ~ C8
08. Brightness	k	h	0 ~ 64	19. Green adjustment	k	w	0 ~ C8
09. Color	k	i	0 ~ 64	20. Blue adjustment	k	\$	0 ~ C8
10. Tint	k	j	0 ~ 64				
11. Sharpness	k	k	0 ~ 64				

	COMMAND1	COMMAND2	DATA0 (Hexadecimal)	DATA1 (Hexadecimal)	DATA2 (Hexadecimal)	DATA3 (Hexadecimal)	DATA4 (Hexadecimal)	DATA5 (Hexadecimal)
21. Tune Command	m	a	physical program high	major program low	major low	minor high	minor low	attribute
22. Channel Add/Del	m	b	0~1					
23. Key	m	c	key code					
24. Input Select	x	b	*					

Transmission / Receiving Protocol

Transmission

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

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

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

[Set ID] : You can adjust the set ID to choose desired TV ID number in Setup menu. Adjustment range is 1 ~ 99. When selecting Set ID '0', every connected the TV is controlled. Set ID is indicated as decimal (1 ~ 99) on menu and as Hexa decimal (0x0 ~ 0x63) on transmission/receiving protocol.

[DATA] : To transmit command data.

Transmit 'FF' data to read status of command.

[Cr] : Carriage Return

ASCII code '0x0D'

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

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

OK Acknowledgement

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

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

*in this model, TV will not send the status during the standby mode.

*data format

[command 2] : use as command.

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

[Data] : use the small character, if data is 0xab, it will send the 'a','b'

[OK] : use the large character

*in this model, TV will send the echo, CR, LF with ack message.

When it send the power on ack message, it will be like below.

Ex) ka 01 01 (CR)(LF)a 01 OK01x(CR)(LF)

Error Acknowledgement

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

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

Data1: Illegal Code

Data2: Not supported function

Data3: Wait more time

*in this model, TV will not send the status during the standby mode.

*data format

[command 2] : use as command.

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

[Data] : use the small character, if data is 0xab, it will send the 'a','b'

[NG] : use the large character

*in this model, TV will send the echo, CR, LF with ack message.

When it send the power on ack message, it will be like below.

Ex) ka 01 01 (CR)(LF)a 01 NG01x(CR)(LF)

01. Power (Command2:a)

To control Power On/Off of the TV.

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

Data 0 : Power Off Data 1 : Power On

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

* In a like manner, if other functions transmit 'FF' data based on this format, Acknowledgement data feedback presents status about each function.

* Note: In this model, TV will send the Acknowledge after power on processing completion.

There might be a time delay between command and acknowledge.

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

To select input source for the TV.

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

Data 0: DTV Data 1: Analog

Data 2: AV1 Data 3: AV2

Data 4: Component 1 Data 5: Component 2

Data 6: RGB-PC Data 7: HDMI 1

Data 8: HDMI2 Data 9: HDMI3

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

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

To adjust the screen format.

You can also adjust the screen format using the RATIO button on remote control or in the Picture menu.

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

Data 1: 4:3 4: Zoom 1

2: 16:9 5: Zoom 2

6: Set by program

⋮

Reserved

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

04. Screen Mute (Command2:d)

To select screen mute on/off.

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

Data 0 : Screen mute off (Picture on)

Data 1 : Screen mute on (Picture off)

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

05. Volume Mute (Command2:e)

To control volume mute on/off.

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

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

Data 0 : Volume mute on (Volume off)

Data 1 : Volume mute off (Volume on)

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

06. Volume Control (Command2:f)

To adjust volume.

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

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

Data Min : 0 ~ Max : 64

Refer to 'Real data mapping 1' as shown below.

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

07. Contrast (Command2:g)

To adjust screen contrast.

You can also adjust contrast in the Picture menu.

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

Data Min : 0 ~ Max : 64

*Refer to 'Real data mapping 1' as shown below.

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

08. Brightness (Command2:h)

To adjust screen brightness.

You can also adjust brightness in the Picture menu.

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

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

*Refer to 'Real data mapping 1' as shown below.

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

*Real data mapping 1

0 : Step 0

⋮

A : Step 10 (SET ID 10)

⋮

F : Step 15 (SET ID 15)

10 : Step 16 (SET ID 16)

⋮

63 : Step 99 (SET ID 99)

64 : Step 100

09. Color (Command2:i)

To adjust the screen color.

You can also adjust color in the Picture menu.

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

Data Min : 0 ~ Max : 64

*Refer to 'Real data mapping 1'. See page 104.

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

10. Tint (Command2:j)

To adjust the screen tint.

You can also adjust tint in the Picture menu.

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

Data Red : 0 ~ Green : 64

*Refer to 'Real data mapping 1'. See page 104.

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

11. Sharpness (Command2:k)

To adjust the screen sharpness.

You can also adjust sharpness in the Picture menu.

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

Data Min: 0 ~ Max: 64

*Refer to 'Real data mapping 1'. See page 104.

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

12. OSD Select (Command2:l)

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

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

Data 0: OSD off Data 1: OSD on

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

13. Remote Control Lock Mode (Command2:m)

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

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

Data 0: Lock off Data 1: Lock on

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

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

14. Treble (Command2:r)

To adjust treble.

You can also adjust treble in the Audio menu.

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

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

*Refer to 'Real data mapping 1'. See page 104.

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

15. Bass (Command2:s)

To adjust bass.

You can also adjust bass in the Audio menu.

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

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

*Refer to 'Real data mapping 1'. See page 104.

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

16. Balance (Command2:t)

To adjust balance.

You can also adjust balance in the Audio menu.

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

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

*Refer to 'Real data mapping 1'. See page 104.

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

17. Color Temperature (Command2:u)

To adjust color temperature.

You can also adjust color temperature in the Picture menu.

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

Data 0: Medium 1: Cool 2: Warm 3: User

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

18. Red adjustment(Command:v)

To adjust red in color temperature

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

Data Min:0 ~ Max:C8

*Refer to "Real data mapping 2". See page 106.

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

19. Green adjustment(Command:w)

To adjust green in color temperature.

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

Max:C8

*Refer to "Real data mapping 2". See page 106.

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

20. Blue adjustment(Command:\$)

To adjust blue in color temperature.

Transmission [k][\$] [Set ID][Data][Cr]

Data Min:0 ~ Max:C8

*Refer to "Real data mapping 2". See page 106.

Acknowledgement [\$] [Set ID][OK/NG][Data][x]

*Real data mapping 2

0 : -20

5 : -19

A : -18

⋮

5F : -1

64 : 0

69 : +1

⋮

C3 : +19

C8 : +20

21. Tune Command (Command: m a)

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

Transmission [m][a][Set ID][Data0][Data1][Data2][Data3][Data4][Data5][Cr]

Data 0: Physical Channel Number(Transmit by Hexadecimal code)

NTSC air:02~45

NTSC cable: 01, 0E~7D

ATSC air:01~45

ATSC cable:01~87

Data 1,Data2: Major Channel Number (two part) /

Channel Number (One part)

Data 1: High byte

Data 2: Low byte

Two part channel number:

Major number-Minor number

One part channel number:

If the channel band is ATSC digital cable, it can be used. In case of using one part channel number, minor channel does not need.

Data 3, Data 4: Minor Channel Number

Data 3: High byte , Data 4: Low byte

Data5:

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

All data are transmitted by Hexadecimal code

* 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).

But if the channel band is ATSC air or ATSC cable, there are two cases that physical channel enable or disable.

If the physical channel sending is meaningful, you should set this bit low(0). If the physical channel sending is meaningless, you should set this bit high(1).

Example)

1. Analog channel: NTSC cable, channel number(35), main picture Command: ma 00 23 xx xx xx 01
attribute(0x01): main picture, two part(it's not mandatory), using physical channel, NTSC cable 'xx'
data: don't care major and minor channel number in case analog channel tuning.
2. Digital channel: ATSC air, channel number(don't know physical channel, major(30), minor(3)), sub picture Command: ma 00 xx 00 1E 00 03 A2
attribute(0xA2): sub picture, two part, not using physical channel, ATSC air 'xx'
data: don't care analog channel number in case digital channel tuning.
3. Digital channel: ATSC air, channel number(physical(20),major(20), minor(3)), sub picture Command: ma 00 14 00 14 00 03 82

attribute(0x82): sub picture, two part, using physical channel, ATSC air.

Acknowledgement[a] [] [Set ID] [] [OK] [Data0] [Data 1] [Data 2] [Data 3] [Data 4] [x] [a] [] [Set ID] [] [NG] [Data0] [x]

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

To add and delete the channels

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

Data 0: Channel Delete Data 1: Channel Add

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

23. Key (Command: m c)

To send IR remote key code.

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

Data Key code: Refer to page 99.

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

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

To select input source for TV.

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

Data 00 : DTV (Antenna) Data 01 : DTV (Cable)

Data 10 : Analog (Antenna) Data 11 : Analog (Cable)

Data 20 : AV1 Data 21 : AV2

Data 40 : Component 1 Data 41 : Component 2

Data 50 : RGB-PC Data 60 : HDMI1

Data 90 : HDMI2 Data 91 : HDMI3

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

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