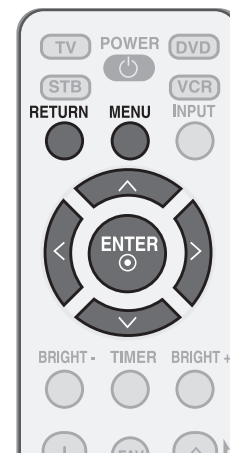# Digital Broadcasting System Captions

Choose the language you want the DTV/CADTV Captions to appear in.

Other Languages can be chosen for digital sources only if they are included on the program.

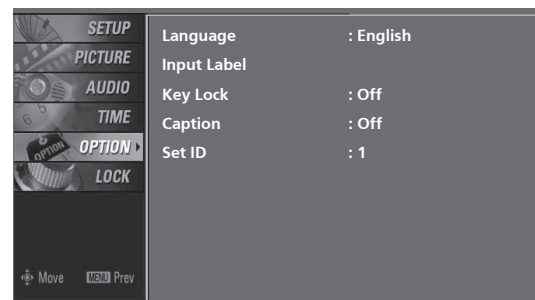This function in only available when **Caption** Mode is set **On**.

1 Press the **MENU** button and then use ∧ or ∨ button to select the **OPTION** menu.

2 Press the ⟩ button and then use ∧ or ∨ button to select **Caption**.

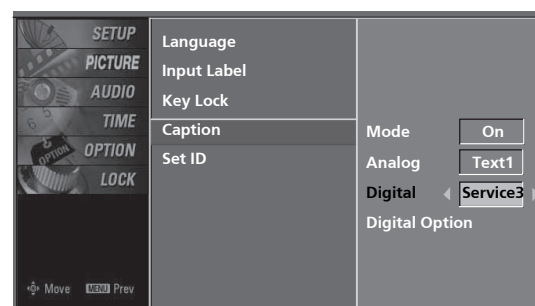- -

3 Press the ⟩ button and then use ∧ or ∨ button to select **Digital**.

- -

4 Use ⟨ or ⟩ button to select **Service1 ~ Service6**.

5 Press **RETURN** button to return to TV viewing or press **MENU** button to return to the previous menu.
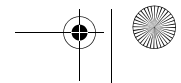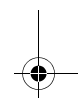
SETUP	Language	: English
PICTURE	Input Label	
AUDIO	Key Lock	: Off
TIME	Caption	: Off
OPTION ▶	Set ID	: 1
LOCK		

◆ Move   MENU Prev

1

SETUP	Language	
PICTURE	Input Label	
AUDIO	Key Lock	
TIME	Caption	Mode On
OPTION	Set ID	Analog Text1
LOCK		Digital ◀ Service3 ▶
		Digital Option

◆ Move   MENU Prev

2 **3** **4**

SOUND & LANGUAGE CONTROL

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SOUND & LANGUAGE CONTROL

Caption Option

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

This function in only available when **Caption** Mode is set **On**.

1 Press the **MENU** button and then use ∧ or ∨ button to select the **OPTION** menu.

2 Press the ⟩ button and then use ∧ or ∨ button to select **Caption**.

- -

3 Press the ⟩ button and then use ∧ or ∨ button to select **Digital Option**.

- -

4 Press the ⟩ button and then use ⟨ or ⟩ button to select **Custom**.

- -

5 Use ∧ or ∨ button to customize the **Style**, **Font**, etc., to your preference.

A preview icon is provided at the bottom of the screen, use it to see the caption language.

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

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

TIME SETTING

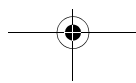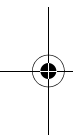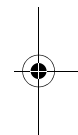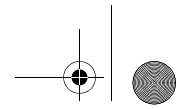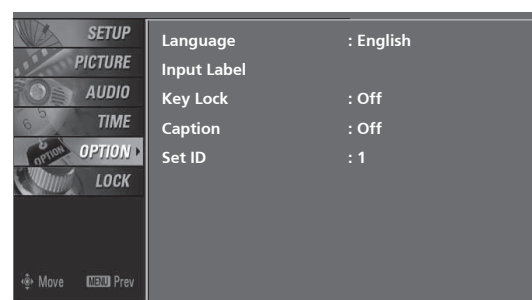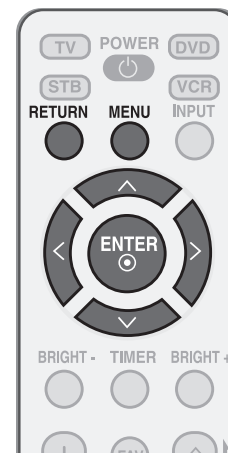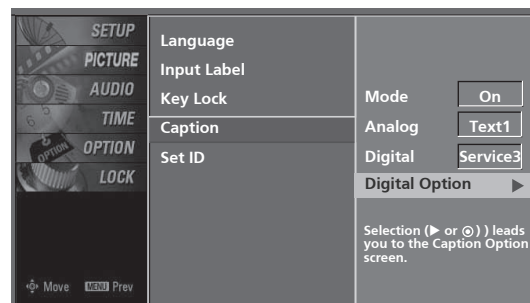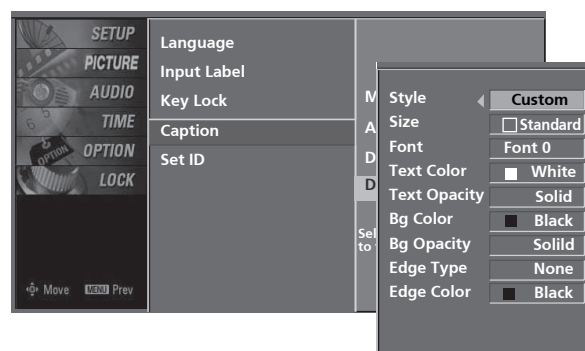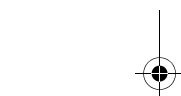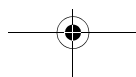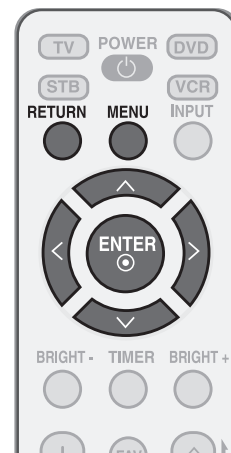## CLOCK SETTING

Auto Clock Setup

The time is set automatically from a digital channel signal. The digital channel signal includes information for the current time provided by the broadcasting station.
Set the clock manually if the current time is set incorrectly by the auto clock function.

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 **Clock**.

- -

3 Press the > button and then use ∧ or ∨ button to select **Auto**.

- -

4 Press the > button and then use ∧ or ∨ button to select your viewing area time zone: **Eastern**, **Central**, **Mountain**, **Pacific**, **Alaska** or **Hawaii**.

- -

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

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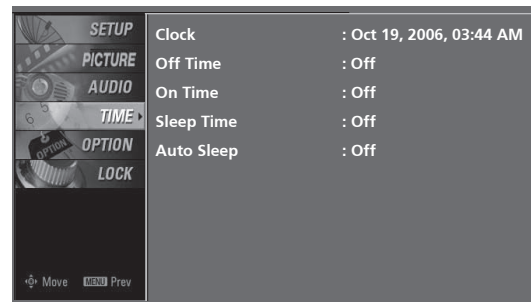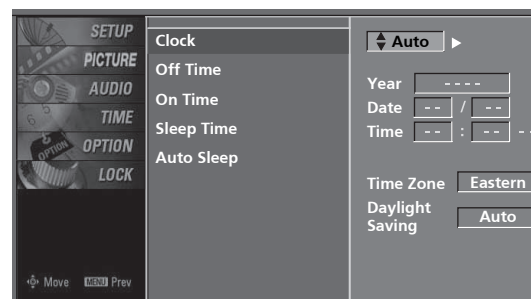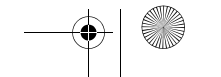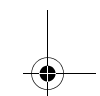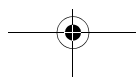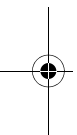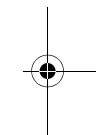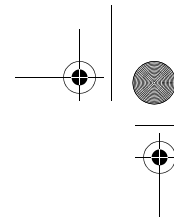
TIME SETTING

Manual Clock Setup

If the current time setting is wrong, reset the clock manually.
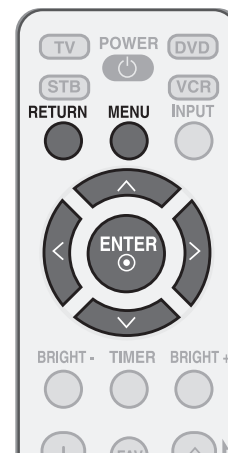
1 Press the **MENU** button and then use ∧ or ∨ button to select the **TIME** menu.

2 Press the ⟩ button and then use ∧ or ∨ button to select **Clock**.

3 Press the ⟩ button and then use ∧ or ∨ button to select **Manual**.

4 Press the ⟩ button and then use ⟨ or ⟩ button to select either the year, date, or time option. Once selected, use ∧ or ∨ button to set the year, date, and time options.

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

SETUP	Clock : Oct 19, 2006, 03:44 AM
PICTURE	Off Time : Off
AUDIO	On Time : Off
TIME	Sleep Time : Off
OPTION	Auto Sleep : Off
LOCK	

Move   Prev

1

SETUP	Clock ◆ Manual ▶
PICTURE	Off Time
AUDIO	On Time
TIME	Sleep Time Year - - - -
OPTION	Auto Sleep Date - - / - -
LOCK	Time - - : - - - -

Move   Prev

2 **3**
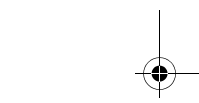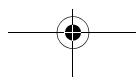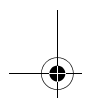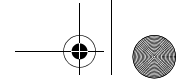
AUTO ON/OFF TIMER SETTING

This 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.
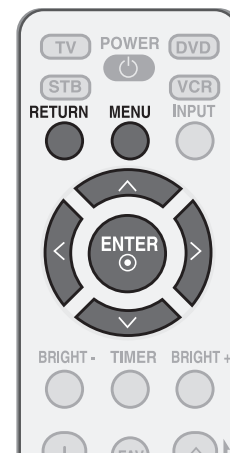
1 Press the **MENU** button and then use ︿ or ﹀ button to select the **TIME** menu.

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 the **On/Off Time** function, select **Off**.

4 Press the ﹥ button and then use ︿ or ﹀ button to the hour.

5 Press the ﹥ button and then use ︿ or ﹀ button to the minutes.

6 Only On Time
Press the ﹥ button and then use ︿ or ﹀ button to select the channel at turn-on.

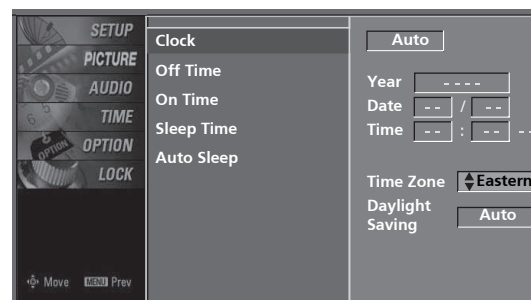Press the ﹥ button and then use ︿ or ﹀ button to the sound level at turn-on.

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

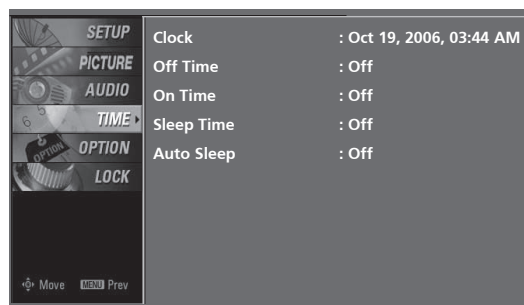| SETUP	Clock	: Oct 19, 2006, 03:44 AM
PICTURE	Off Time	: Off
AUDIO	On Time	: Off
TIME ▸	Sleep Time	: Off
OPTION	Auto Sleep	: Off
LOCK		

◆ Move   MENU Prev

❶

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

◆ Move   MENU Prev

❷ ❸ ❹ ❺ ❻

TIME SETTING

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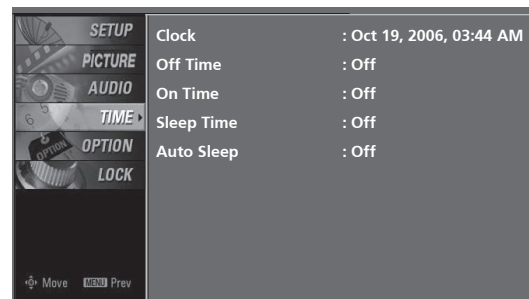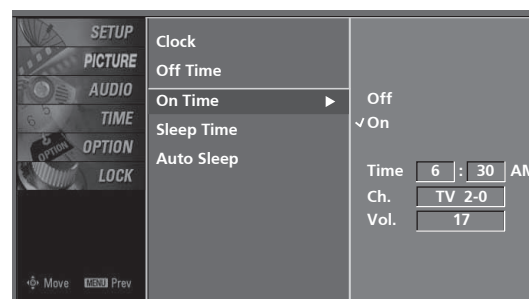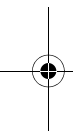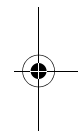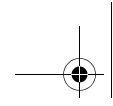
TIME SETTING

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.
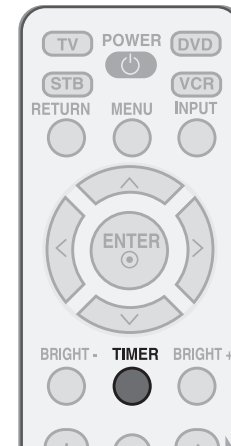
1 Press the **TIMER** button repeatedly to select the number of minutes. First the **Off** option appears on the screen, followed by the following sleep time options: 10, 20, 30, 60, 90, 120, 180, and 240 minutes.

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.

SETUP	Clock	: Oct 19, 2006, 03:44 AM
PICTURE	Off Time	: Off
AUDIO	On Time	: Off
TIME	Sleep Time	: Off
OPTION	Auto Sleep	: Off
LOCK		

Move Prev

SETUP	Clock	✓ Off
PICTURE	Off Time	10 min
AUDIO	On Time	20 min
TIME	Sleep Time ▶	30 min
OPTION	Auto Sleep	60 min
LOCK		90 min
		120 min
		180 min
		240 min

Move Prev
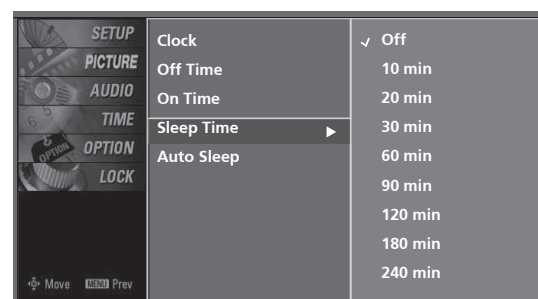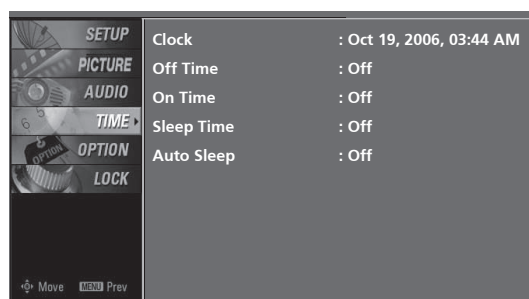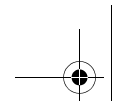
TIME SETTING

AUTO SHUT-OFF SETTING

TV will be automatically turned off, in case of no signal for 10 minutes.
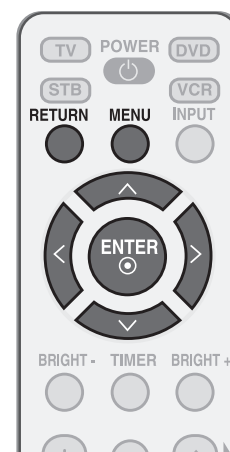
1 Press the **MENU** button and then use ∧ or ∨ button to select the **TIME** menu.

2 Press the ⟩ button and then use ∧ or ∨ button to select **Auto Sleep**.

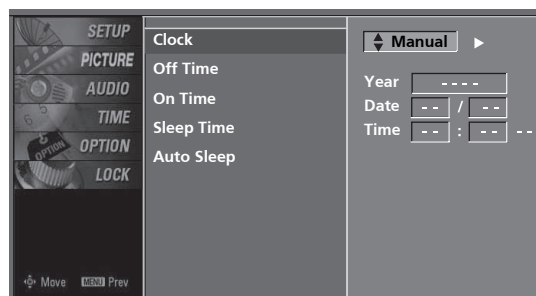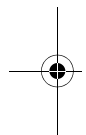**3** Press the ⟩ button and then use ∧ or ∨ button to select **On** or **Off**.

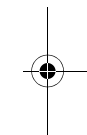**4** Press **RETURN** button to return to TV viewing or press **MENU** button to return to the previous menu.

SETUP	Clock	: Oct 19, 2006, 03:44 AM
PICTURE	Off Time	: Off
AUDIO	On Time	: Off
TIME	Sleep Time	: Off
OPTION	Auto Sleep	: Off
LOCK		

◆ Move [MENU] Prev

1

SETUP	Clock	
PICTURE	Off Time	TV will be automatically turned off, in case of No Signal for 10 minutes.
AUDIO	On Time	
TIME	Sleep Time	
OPTION	Auto Sleep ▶	✓ Off
LOCK		On

◆ Move [MENU] Prev

2 **3**

TIME SETTING

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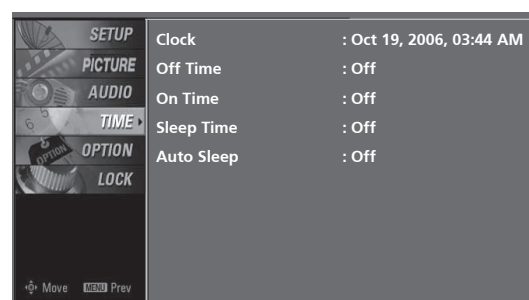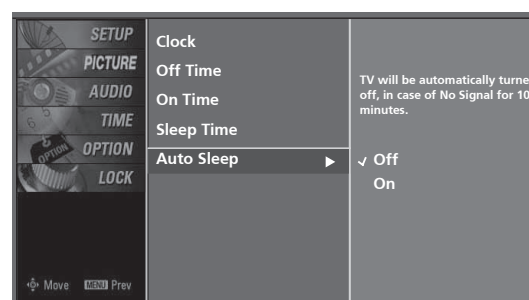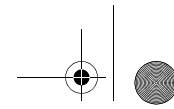
PARENTAL CONTROL / RATINGS

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-PG   (Parental guidance suggested)
■ TV-14   (Parents strongly cautioned)

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

SET PASSWORD & LOCK SYSTEM

Setting up Your Password

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

A password is required to gain access to this menu.

1 Press the **MENU** button and then use ∧ 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".

SETUP	Lock System : Off
PICTURE	Set Password
AUDIO	Block Channel
TIME	Movie Rating
OPTION	TV Rating-Children
LOCK	TV Rating-General
	Downloadable Rating
	Input Block
Move Prev	

PARENTAL CONTROL / RATINGS
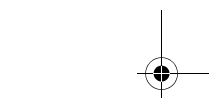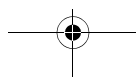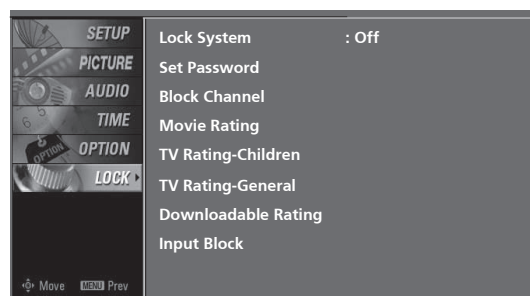
Set Password

Change the password by inputting a new password twice.

1 After inputting the password, use ∧ or ∨ button to choose **Set Password**.

2 Press the ⟩ button and then choose any 4 digits for your new password.
As soon as the 4 digits are entered, re-enter the same 4 digits on the **Confirm**.
Then your changed password has been memorized.

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

SETUP	Lock System	: Off
PICTURE	Set Password	
AUDIO	Block Channel	
TIME	Movie Rating	
OPTION	TV Rating-Children	
LOCK ▸	TV Rating-General	
	Downloadable Rating	
	Input Block	

Move MENU Prev

1

SETUP	Lock System	
PICTURE	Set Password ▸	New * * * *
AUDIO	Block Channel	Confirm * * * *
TIME	Movie Rating	
OPTION	TV Rating-Children	
LOCK	TV Rating-General	
	Downloadable Rating	
	Input Block	

Move MENU Prev
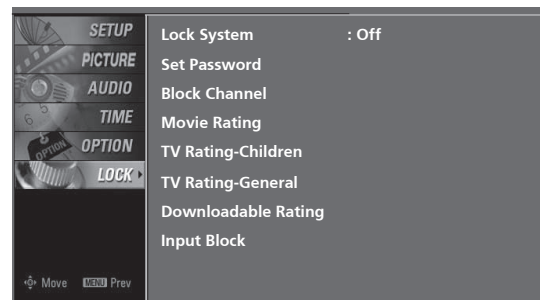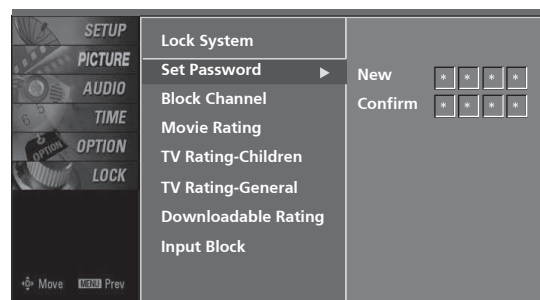
2
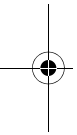
Lock System

Enables or disables the blocking scheme you set up previously.

1 After inputting the password, use the ∧ or ∨ button to choose **Lock System**.

2 Press the ⟩ button and then use the ∧ or ∨ button to select **On** or **Off**.

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

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

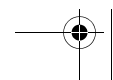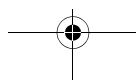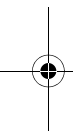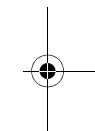| SETUP	Lock System	: Off
PICTURE	Set Password	
AUDIO	Block Channel	
TIME	Movie Rating	
OPTION	TV Rating-Children	
LOCK ▸	TV Rating-General	
	Downloadable Rating	
	Input Block	

Move MENU Prev

1

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

Move MENU Prev

2

PARENTAL CONTROL / RATINGS
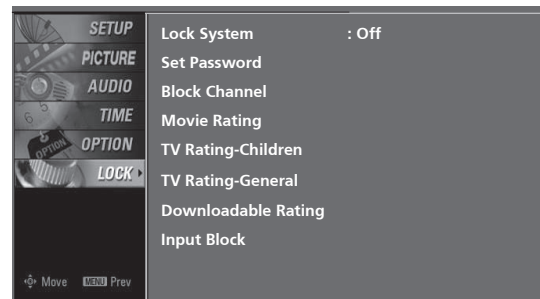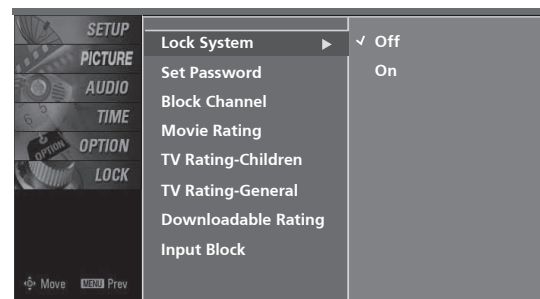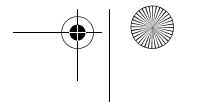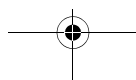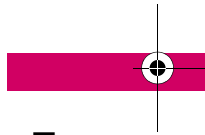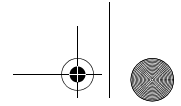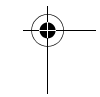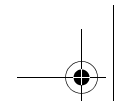
PARENTAL CONTROL / RATINGS

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 **RETURN** button to return to TV viewing or press **MENU** button to return to the previous menu.
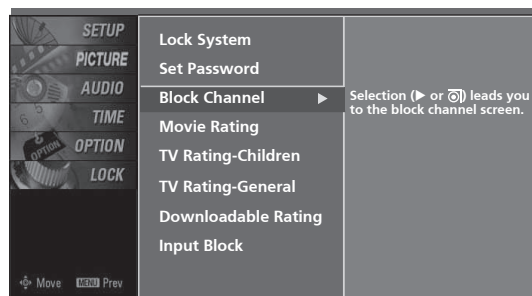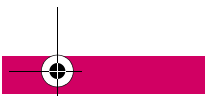
EXTERNAL INPUT BLOCKING

Enables you to block an input.

1 After inputting the password, use the ∧ or ∨ button to choose **Input Block**.

2 Press the ⟩ button and then use the ∧ or ∨ button select a source.

3 Use the ⟨ or ⟩ button to select **On** or **Off** on the each source.

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

PARENTAL CONTROL / RATINGS

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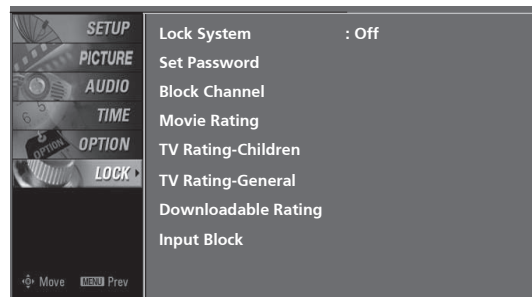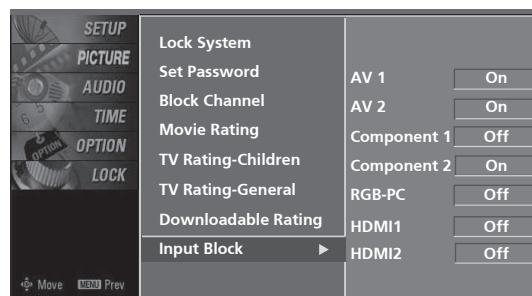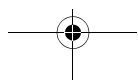
MOVIE & TV RATING

Movie Rating (MPAA)

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

1 After inputting the password, use the ∧ or ∨ button to choose **Movie Rating**.
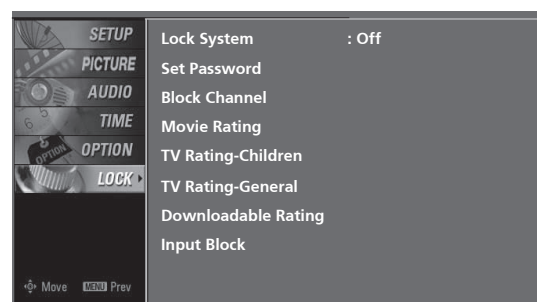
2 Press the > button and then use the ∧ or ∨ button to select **G**, **PG**, **PG-13**, **R**, **NC-17** or **X**.
- G (General audience)
- PG (Parental guidance suggested)
- PG-13 (Parents strongly cautioned)
- R (Restricted)
- NC-17 (No one 17 and under admitted)
- X (Adult only)
- Blocking Off (Permits all programs)

  ▶ If you set PG-13: G and PG movies will be available, PG-13, R, NC-17 and X will be blocked.
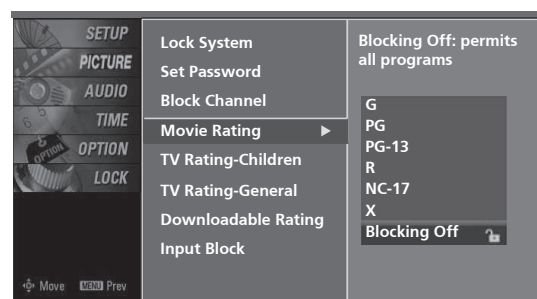
3 Press **RETURN** button to return to TV viewing or press **MENU** button to return to the previous menu.

PARENTAL CONTROL / RATINGS

69
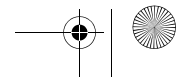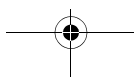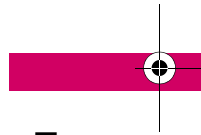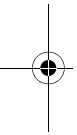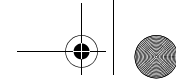
PARENTAL CONTROL / RATINGS

TV Rating Children

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

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

- -

2 Press the ⟩ button and then use the ∧ or ∨ button select **Age**, or **Fantasy Violence**.
Press the ⟩ button and then use the ∧ or ∨ button select block options.

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

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

SETUP	Lock System : Off
PICTURE	Set Password
AUDIO	Block Channel
TIME	Movie Rating
OPTION	TV Rating-Children
LOCK	TV Rating-General
	Downloadable Rating
	Input Block

⊕ Move   MENU Prev

1

SETUP	Lock System	
PICTURE	Set Password	
AUDIO	Block Channel	
TIME	Movie Rating	
OPTION	TV Rating-Children ▶	✓ Age
LOCK	TV Rating-General	Fantasy Violence
	Downloadable Rating	
	Input Block	

⊕ Move   MENU Prev
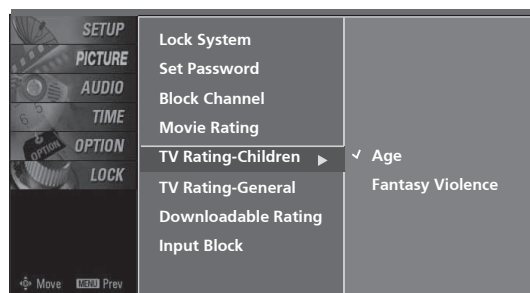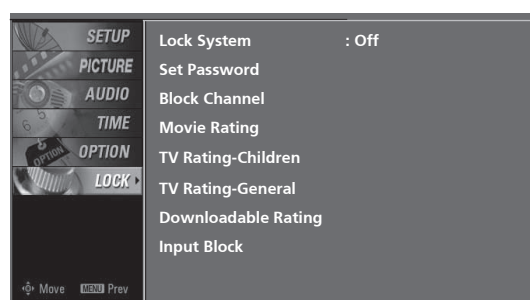
TV Rating General

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**.

- -
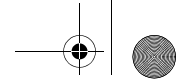
2 Press the ⟩ button and then use the ∧ or ∨ button to select **Age**, **Dialogue**, **Language**, **Sex** or **Violence**.
Press the ⟩ button and then use the ∧ or ∨ button to select block options.

- ■ 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 **RETURN** button to return to TV viewing or press **MENU** button to return to the previous menu.

SETUP	Lock System : Off
PICTURE	Set Password
AUDIO	Block Channel
TIME	Movie Rating
OPTION	TV Rating-Children
LOCK	TV Rating-General
	Downloadable Rating
	Input Block

⊕ Move   MENU Prev

1

SETUP	Lock System	
PICTURE	Set Password	
AUDIO	Block Channel	
TIME	Movie Rating	
OPTION	TV Rating-Children	✓ Age
LOCK	TV Rating-General ▶	Dialogue
	Downloadable Rating	Language
	Input Block	Sex
		Violence

⊕ Move   MENU Prev

2

PARENTAL CONTROL / RATINGS
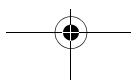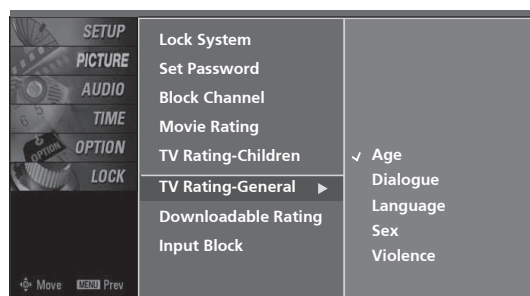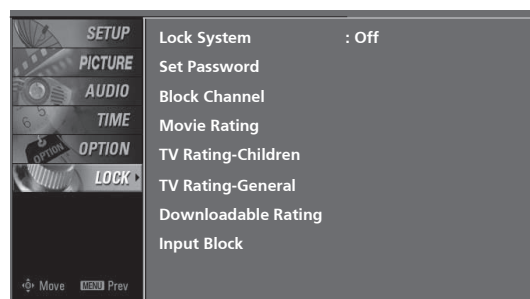
DOWNLOADABLE RATING

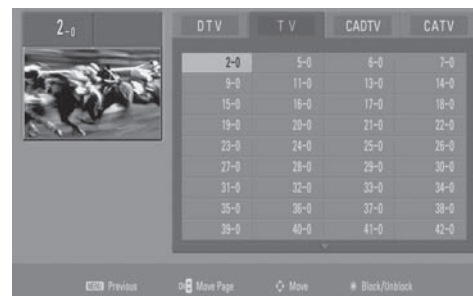**1** After inputting the password, use the ∧ or ∨ button to choose **Downloadable Rating**.

2 Press the ＞ button and then use the ∧ or ∨ button to select **Dim0**, **Dim1**, **Dim2**, or **Dim3**.

- -

3 Press the ＞ button and then use the ∧ or ∨ button to select **D1L1**, **D1L2**, or **D1L3**.

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

❗ NOTE

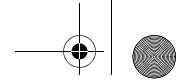▶ This function may become available in the future and will be available only for digital channels.
▶ This function operates only when TV has received Region5 Rating data.

SETUP	Lock System	: Off
PICTURE	Set Password	
AUDIO	Block Channel	
TIME	Movie Rating	
OPTION	TV Rating-Children	
LOCK	TV Rating-General	
	Downloadable Rating	
	Input Block	
✦ Move MENU Prev		

1

SETUP	Lock System	Downloadable Rating
PICTURE	Set Password	Dim0
AUDIO	Block Channel	Dim1
TIME	Movie Rating	Dim2
OPTION	TV Rating-Children	Dim3
LOCK	TV Rating-General	
	Downloadable Rating ▶	
	Input Block	
✦ Move MENU Prev		

2

▶ Based on rating table, your TV's OSD (On Screen Display) may differ slightly from what is shown in this manual.

PARENTAL CONTROL / RATINGS

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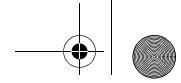
APPENDIX

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.

The video function does not work.	
No picture &No sound	■ Check whether the product is turned on. ■ Try another channel. The problem may be with the broadcast. ■ Is the power cord inserted into wall power outlet? ■ Check your antenna direction and/or location. ■ Test the wall power outlet, plug another product's power cord into the outlet where the product's power cord was plugged in.
Picture appears slowly after switching on	■ This is normal, the image is muted during the product startup process. Please contact your service center, if the picture has not appeared after five minutes.
No or poor color or poor picture	■ Adjust Color in menu option. ■ Keep a sufficient distance between the product and the VCR. ■ Try another channel. The problem may be with the broadcast. ■ Are the video cables installed properly? ■ Activate any function to restore the brightness of the picture.
Horizontal/vertical bars or picture shaking	■ Check for local interference such as an electrical appliance or power tool.
Poor reception on some channels	■ Station or cable product experiencing problems, tune to another station. ■ Station signal is weak, reorient antenna to receive weaker station. ■ Check for sources of possible interference.
Lines or streaks in pictures	■ Check antenna (Change the direction of the antenna).
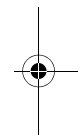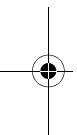
APPENDIX
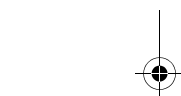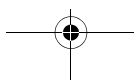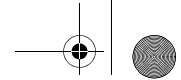
The audio function does not work.	
Picture OK & No sound	■ Press the VOL or VOLUME button. ■ Sound muted? Press MUTE button. ■ Try another channel. The problem may be with the broadcast. ■ Are the audio cables installed properly?
No output from one of the speakers	■ Adjust Balance in menu option.
Unusual sound from inside the product	■ A change in ambient humidity or temperature may result in an unusual noise when the product is turned on or off and does not indicate a fault with the product.

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

APPENDIX

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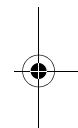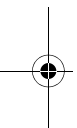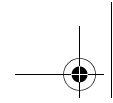
APPENDIX

MAINTENANCE

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

Cleaning the Screen

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.
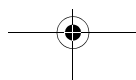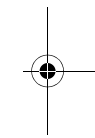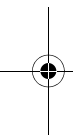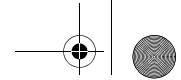
PRODUCT SPECIFICATIONS

MODELS		Z32LC6D (Z32LC6D-UK, Z32LC6D-UM)	Z37LC6D (Z37LC6D-UK, Z37LC6D-UM)
Dimensions (Width x Height x Depth)	Including stand	31.7 x 23.5 x 10.7 inches 806.4 x 598.9 x 273.9 mm	36.7 x 26.6 x 11.2 inches 934.3 x 675.9 x 285.6 mm
	Excluding stand	31.7 x 21.3 x 3.1 inches 806.4 x 542.4 x 79.0 mm	36.7 x 24.7 x 3.4 inches 934.3 x 628.5 x 88.5 mm
Weight	Including stand Excluding stand	29.9 pounds / 13.6 kg 26.0 pounds / 11.8 kg	41.8 pounds / 19.0 kg 37.0 pounds / 16.8 kg
Power requirement Television System Program Coverage External Antenna Impedance		AC100-240V ~ 50/60Hz NTSC-M, ATSC, 64 & 256 QAM VHF 2-13, UHF 14-69, CATV 1-135, DTV 2-69, CADTV 1-135 75 ohm	
Environment condition	Operating Temperature Operating Humidity	32 ~ 104°F (0 ~ 40°C) Less than 80%	
	Storage Temperature Storage Humidity	-4 ~ 140°F (-20 ~ 60°C) Less than 85%	

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

APPENDIX

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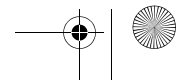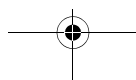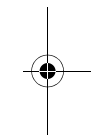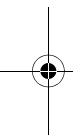
APPENDIX
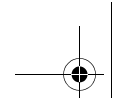
PROGRAMMING THE REMOTE CONTROL

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.
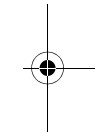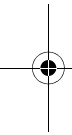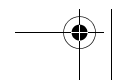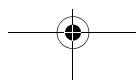
Remote Control Code

VCR

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

APPENDIX

HDSTB

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

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					
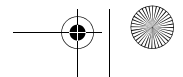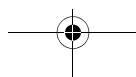
IR CODES

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

Tc

T1
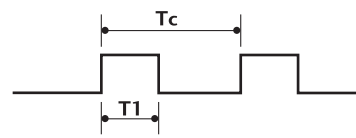
Carrier frequency
FCAR = 1/TC = fOSC/12
Duty ratio = T1/TC = 1/3

■ **Configuration of frame**

1st frame

Lead code	Low custom code	High custom code	Data code	Data code
	C0 C1 C2 C3 C4 C5 C6 C7	C0 C1 C2 C3 C4 C5 C6 C7	D0 D1 D2 D3 D4 D5 D6 D7	D0 D1 D2 D3 D4 D5 D6 D7

Repeat frame

Repeat code

Tf

■ **Lead code**

9 ms

4.5 ms

■ **Repeat code**

0.55 ms

9 ms

2.25 ms

■ **Bit description**

Bit "0"

0.56 ms

1.12 ms

Bit "1"

0.56 ms

2.24 ms
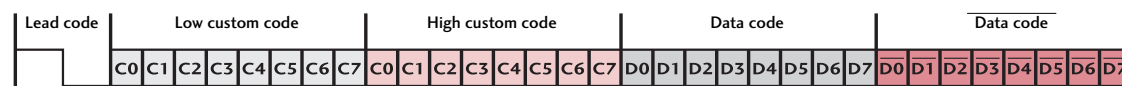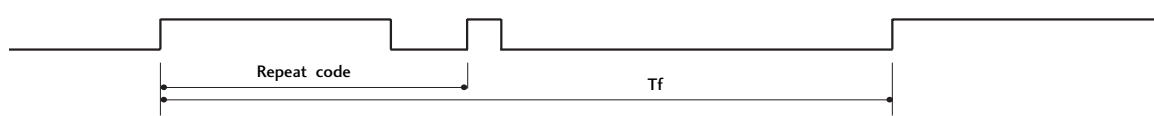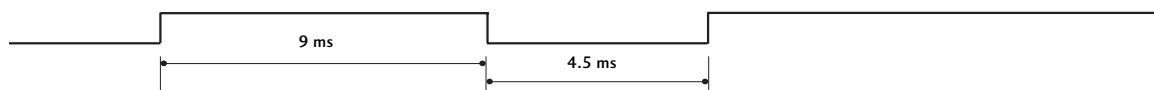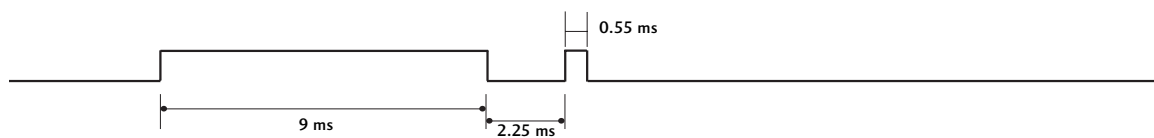
■ **Frame interval: Tf**

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

Tf

Tf

Tf=108ms @455KHz
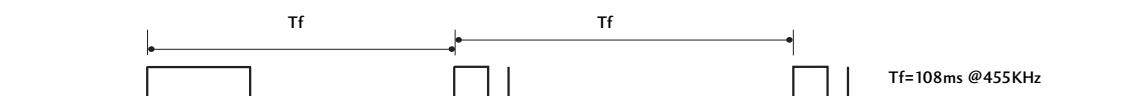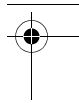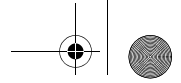
APPENDIX

APPENDIX

Code (Hexa)	Function	Note
08	POWER	Remote control Button (Power On/Off)
43	MENU	Remote control Button
0B	INPUT	Remote control Button
10-19	Number Key 0-9	Remote control Button
4C	- (Dash)	Remote control Button
1A	FLASHBK	Remote control Button
09	MUTE	Remote control Button
02	VOL +	Remote control Button
03	VOL -	Remote control Button
00	CH ∧	Remote control Button
01	CH ∨	Remote control Button
1E	FAV	Remote control Button
40	∧	Remote control Button
41	∨	Remote control Button
07	‹	Remote control Button
06	›	Remote control Button
44	ENTER	Remote control Button
5B	RETURN	Remote control Button
E0	BRIGHT +	Remote control Button
E1	BRIGHT -	Remote control Button
0E	TIMER	Remote control Button
CB	ADJUST	Remote control Button
79	RATIO	Remote control Button
4D	PICTURE	Remote control Button
52	SOUND	Remote control Button
0A	SAP	Remote control Button
39	CC	Remote control Button
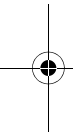
APPENDIX
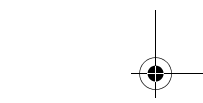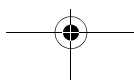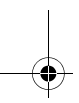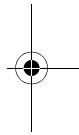
EXTERNAL CONTROL THROUGH RS-232C

The RS-232C port allows you connect the RS-232C input jack to an external control device (such as a computer or an A/V control system) to control the TV's functions externally.

■ Note: RS-232C on this unit is intended to be used with third party RS-232 control hardware and software. The instructions below are provided to help with programming software or to test functionality using telenet software.

RS-232C Setup

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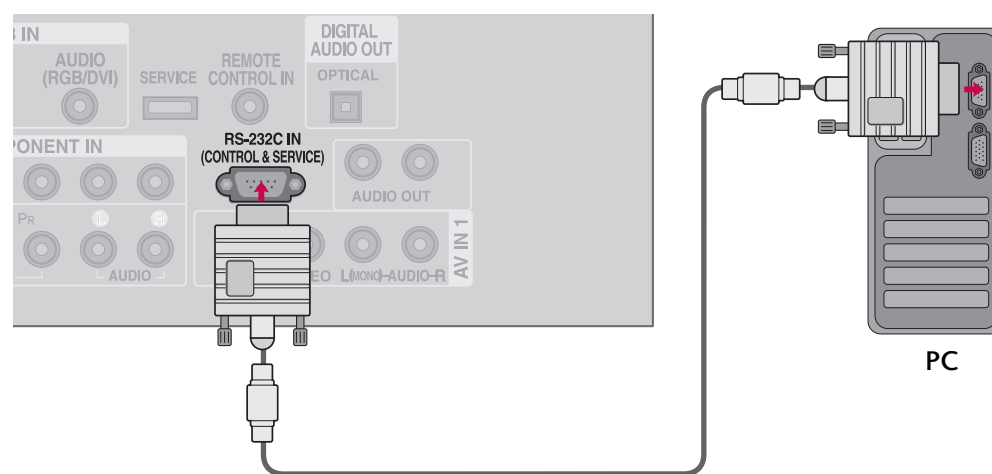
Type of Connector; D-Sub 9-Pin Male

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

APPENDIX

81
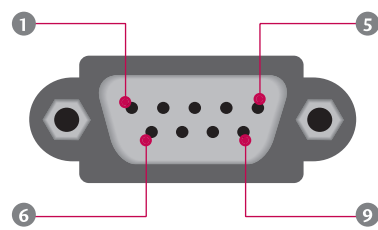
APPENDIX

RS-232C Configurations

Either cable below can be used.

7-Wire Configuration (Serial female-female NULL modem cable)		
	PC	TV
RXD	2 ——— 3	TXD
TXD	3 ——— 2	RXD
GND	5 ——— 5	GND
DTR	4 ——— 6	DSR
DSR	6 ——— 4	DTR
RTS	7 ——— 8	CTS
CTS	8 ——— 7	RTS
	D-Sub 9	D-Sub 9

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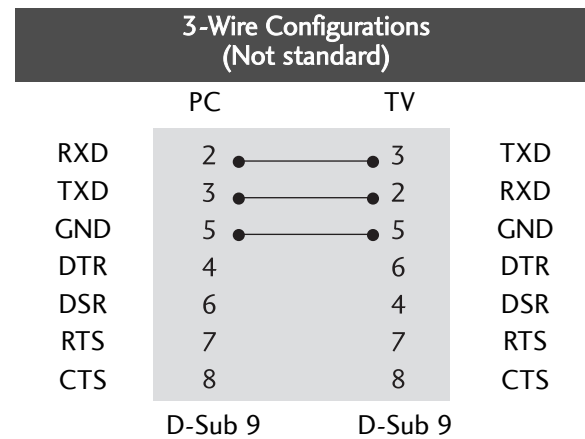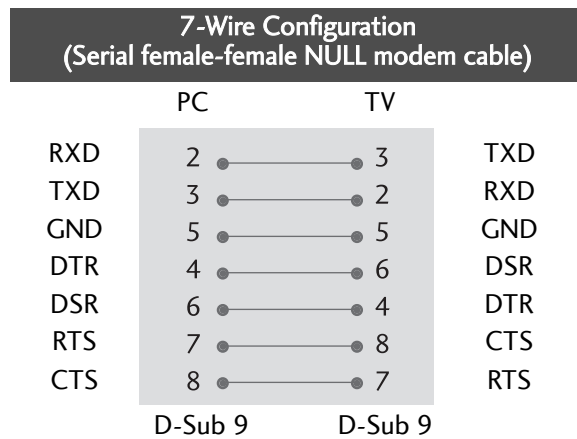
Set ID

Use this function to specify a TV ID number.
Refer to 'Real Data Mapping1'. ▶**p.85.**
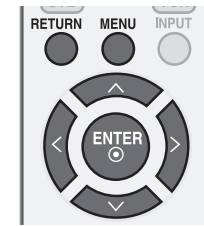
1 Press the **MENU** button and then use ∧ or ∨ button to select the **OPTION** menu.

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 **RETURN** button to return to TV viewing or press **MENU** button to return to the previous menu.

	SETUP	Language	: English
	PICTURE	Input Label	
	AUDIO	Key Lock	: Off
	TIME	Caption	: Off
	OPTION	Set ID	: 1
	LOCK		

①

	SETUP	Language	
	PICTURE	Input Label	
	AUDIO	Key Lock	
	TIME	Caption	
	OPTION	Set ID ▶	1
	LOCK		

② ③
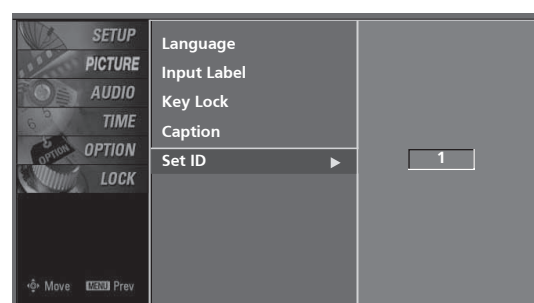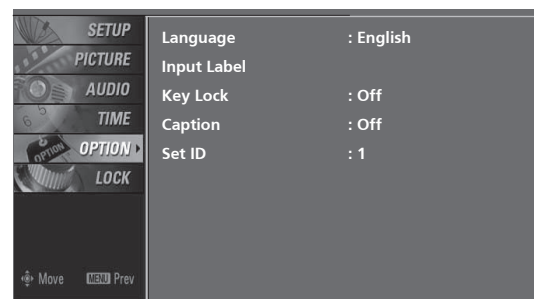
Communication Parameters

- 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
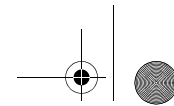
Command Reference List

	COMMAND1	COMMAND2	DATA (Hexadecimal)		COMMAND1	COMMAND2	DATA (Hexadecimal)
01. Power	k	a	0 ~ 1	15. Treble	k	r	0 ~ 64
02. Input Select	k	b	(▶p.84)	16. Bass	k	s	0 ~ 64
03. Input Select	x	b	(▶p.84)	17. Balance	k	t	0 ~ 64
04. Aspect Ratio	k	c	(▶p.84)	18. Color Temperature	k	u	0 ~ 3
05. Screen Mute	k	d	0 ~ 1	19. Red Adjustment	k	v	0 ~ C8
06. Volume Mute	k	e	0 ~ 1	20. Green Adjustment	k	w	0 ~ C8
07. Volume Control	k	f	0 ~ 64	21. Blue Adjustment	k	$	0 ~ C8
08. Contrast	k	g	0 ~ 64	23. Channel Add/Del	m	b	0 ~ 1
09. Brightness	k	h	0 ~ 64	24. Key	m	c	(▶p.87)
10. Color	k	i	0 ~ 64	25. Back Light	m	g	0 ~ 64
11. Tint	k	j	0 ~ 64				
12. Sharpness	k	k	0 ~ 64				
13. OSD Select	k	l	0 ~ 1				
14. Remote Control Lock Mode	k	m	0 ~ 1				

	COMMAND1	COMMAND2	DATA0 (Hexadecimal)	DATA1 (Hexadecimal)	DATA2 (Hexadecimal)	DATA3 (Hexadecimal)	DATA4 (Hexadecimal)	DATA5 (Hexadecimal)
22. Channel Tuning	m	a	physical program high	major program low	major low	minor high	minor low	attribute

Transmission / Receiving Protocol

Transmission

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

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

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

[Set ID]: You can adjust the set ID to choose desired 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 the command data. Transmit the 'FF' data to read status of command.

[Cr]: Carriage Return ASCII code '0x0D'

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

* In this model, 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 0 x ab, it will send the 'a', 'b'.

[OK]: Use the large character.

Error Acknowledgement

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

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

Data1: Illegal Code

Data2: Not supported function

Data3: Wait more time

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

* Data Format

[Command 2]: Use as command.

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

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

[OK]: Use the large character.
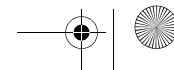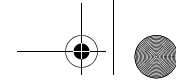
APPENDIX

APPENDIX

01. Power (Command: k 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 (Command: k 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: AV 1   Data 3: AV 2
Data 4: Component 1   Data 5: Component 2
Data 7: RGB-PC   Data 8: HDMI1
Data 9: HDMI2

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

* If you select input source, we recommend **"command x b"**.

03. Input Select (Command: x b)

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: AV 1   Data 21: AV 2
Data 40: Component 1   Data 41: Component 2
Data 60: RGB-PC   Data 90: HDMI1
Data 91: HDMI2

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

04. Aspect Ratio (Command: k c)

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   5: Zoom 2
    2: 16:9   6: Set by program
    4: Zoom 1   9: Just Scan
         ⋮
         Reserved

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

05. Screen Mute (Command: k 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]

06. 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 0: Volume mute on (Volume off)
Data 1: Volume mute off (Volume on)

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

07. 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: 0 ~ Max: 64 (*transmit by Hexadecimal code)

* Refer to 'Real data mapping 1'. See page 85.

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

08. 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: 0 ~ Max: 64 (*transmit by Hexadecimal code)

* Refer to 'Real data mapping 1'. See page 85.

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

09. 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: 0 ~ Max: 64 (*transmit by Hexadecimal code)

* Refer to 'Real data mapping 1'. See page 85.

Acknowledgement [h] [ ] [Set ID] [ ] [OK/NG] [Data] [x]
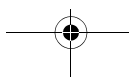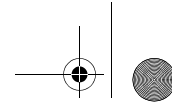
10. Color (Command: k i)

To adjust screen color.

You can also adjust color in the PICTURE menu.

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

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

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

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

11. Tint (Command: k j)

To adjust screen tint.

You can also adjust tint in the PICTURE menu.

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

Data Red: 0 ~ Green: 64 (*transmit by Hexadecimal code)

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

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

12. Sharpness (Command: k k)

To adjust screen sharpness.

You can also adjust sharpness in the PICTURE menu.

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

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

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

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

13. OSD Select (Command: k 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]

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

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

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

Data 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.

15. Treble (Command: k r)

To adjust treble.

You can also adjust treble in the AUDIO menu.

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

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

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

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

16. Bass (Command: k s)

To adjust bass.

You can also adjust bass in the AUDIO menu.

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

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

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

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

17. Balance (Command: k t)

To adjust balance.

You can also adjust balance in the AUDIO menu.

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

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

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

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

18. Color Temperature (Command: k u)

To adjust color temperature.

You can also adjust color temperature in the PICTURE menu.

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

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

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

19. Red Adjustment (Command: k 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' as shown below.

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

20. Green Adjustment (Command: k w)

To adjust green in color temperature.

Transmission [k] [w] [ ] [Set ID] [ ] [Data] [Cr]
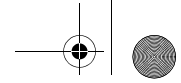
Data Min: 0 ~ Max: C8

* Refer to 'Real data mapping 2' as shown below.

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

*Real data mapping 1	*Real data mapping 2
0: Step 0	0: -20
⋮	5: -19
A: Step 10 (SET ID 10)	A: -18
⋮	⋮
F: Step 15 (SET ID 15)	5F: -1
10: Step 16 (SET ID 16)	64: 0
⋮	69: +1
63: Step 99 (SET ID 99)	⋮
64: Step 100	C3: +19
	C8: +20
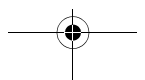
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21. Blue Adjustment (Command: k $)

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 85.

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

22. Channel Tuning (Command: m a)

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

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

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

Data 0: Physical Channel Number

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

　　ATSC air: 01~45, ATSC cable: 01~87

Data1 & 2: Major Channel Number

　　Data1: High byte　　Data2: Low byte

　　Two bytes are available for the Major and Minor, normally only the second byte is used.

Data3 & 4: Minor Channel Number

　　Not needed for NTSC.
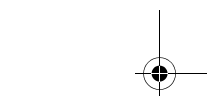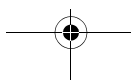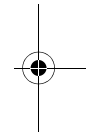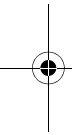
Data5:

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

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

* 7th bit: For which source do you want to change the channel.
* 6th bit: Use a two part or one part channel. Most cases just use 0 since it's ignored when using NTSC.
* 5th bit: Use 0 with NTSC since it can only use the physical channel number. Normally use 1 for ATSC since most times it doesn't matter what the physical number is.
* 4th bit: Set to 0.
* 3-0 bits: Choose signal type.
* Tune Command Examples:
  1. Tune to the analog (NTSC) cable channel 35.
     Data 0 = Physical of 35 = 23
     Data 1 & 2 = No Major = 00 00
     Data 3 & 4 = No Minor = 00 00
     Data 5 = 0000 0001 in binary = 01
     Total = ma 00 23 00 00 00 00 01
  2. Tune to the digital (ATSC) local channel 30-3.
     Data 0 = Don't know Physical = 00
     Data 1 & 2 = Major is 30 = 00 1E
     Data 3 & 4 = Minor is 3 = 00 03
     Data 5 = 0010 0010 in binary = 22
     Total = ma 00 00 00 1E 00 03 22

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

23. 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]

24. Key (Command: m c)

To send IR remote key code.

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

Data Key code: Refer to page 80.

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

25. Back Light (Command: m g)

To adjust screen back light.

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

Data Min: 0 ~ Max: 64 (*transmit by Hexadecimal code)
* Refer to 'Real data mapping 1'. See page 85.

Acknowledgement [g] [ ] [Set ID] [ ] [OK/NG] [Data] [x]
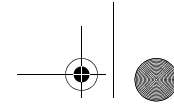
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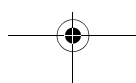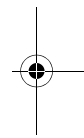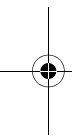
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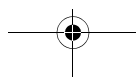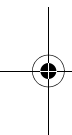
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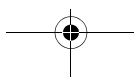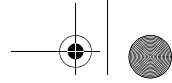
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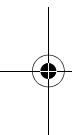
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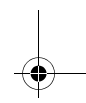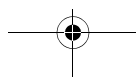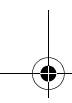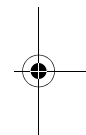
The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

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

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

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

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

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

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

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

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

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

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

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

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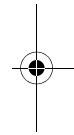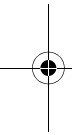
APPENDIX

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

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the library into a program that is not a library.

4. You may copy and distribute the library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machinereadable source code, which must be distributed under the terms of sections 1 and 2 above on a medium customarily used for software interchange.

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

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this license.

However, linking a "work that uses the library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the library), rather than a "work that uses the library". The executable is therefore covered by this license. Section 6 states terms for distribution of such executable.

When a "work that uses the library" uses material from a header file that is part of the library, the object code for the work may be a derivative work of the library even though the source code is not.

Whether this is true is especially significant if the work can be linked without the library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessories, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a

derivative work. (Executable containing this object code plus portions of the library will still fall under Section 6.)

Otherwise, if the work is a derivative of the library, you may distribute the object code for the work under the terms of Section 6. Any executable containing that work also fall under Section 6, whether or not they are linked directly with the library itself.

6. As an exception to the sections above, you may also combine or link a "work that uses the library" with the library to produce a work containing portions of the library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the library is used in it and that the Library and its use are covered by this license. You must supply a copy of this license. If the work during execution displays copyright notices, you must include the copyright notice for the library among them, as well as a reference directing the user to the copy of this license. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the library and then relink to produce a modified executable containing the modified library. (It is understood that the user who changes the contents of definitions files in the library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.
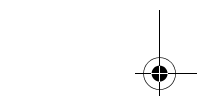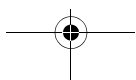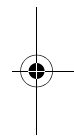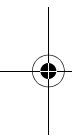
For an executable, the required form of the "work that uses the library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the library together in an executable that you distribute.

7. You may place library facilities that are a work based on the library side-by-side in a single library together with other library facilities not covered by this license, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the library, and explaining where to find the accompanying uncombined form of the same work.

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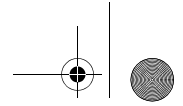
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Signature of Ty Coon, 1 April 1990
Ty Coon, President of Vice

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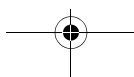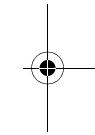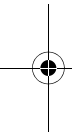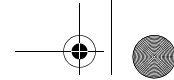
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Version 1.1

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1. Definitions.

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B. Any new file that contains any part of the original code or previous modifications.

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1.11. "Source code" means the preferred form of the covered code for making modifications to it, including all modules it contains, plus any associated interface definition files, scripts used to control compilation and installation of an executable, or source code differential comparisons against either the original code or another well known, available covered code of the contributor's choice. The source code can be in a compressed or archival form, provided the appropriate decompression or de-archiving software is widely available for no charge.

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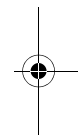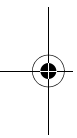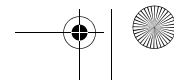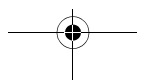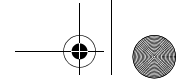
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3.2.   Availability of source code.
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You must cause all covered code to which you contribute to contain a file documenting the changes You made to create that covered code and the date of any change. You must include a prominent statement that the modification is derived, directly or indirectly, from original code provided by the initial developer and including the name of the initial developer in (a) the source code, and (b) in any notice in an executable version or related documentation in which you describe the origin or ownership of the covered code.

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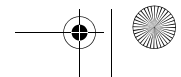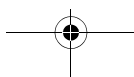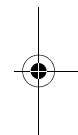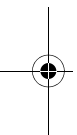
(c) Representations.
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APPENDIX

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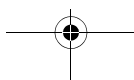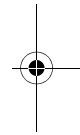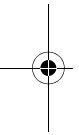
APPENDIX

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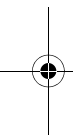
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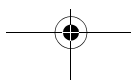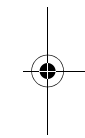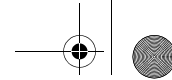
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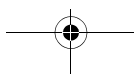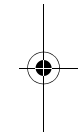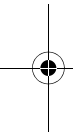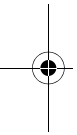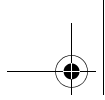
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APPENDIX

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