

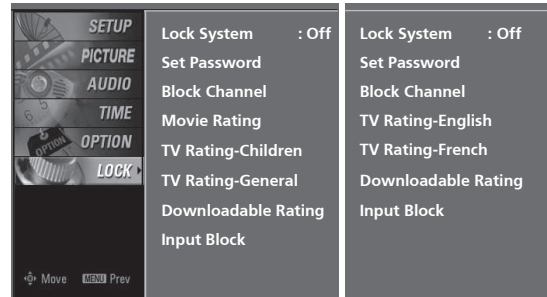
## Set Password

Change the password by inputting a new password twice.

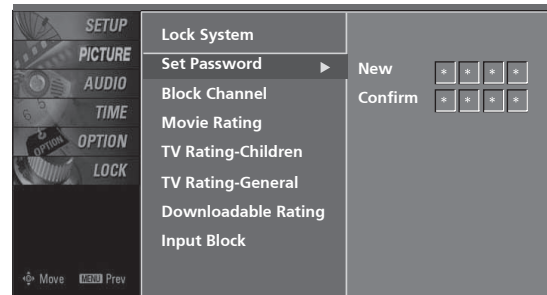
- 1 After inputting the password, use  $\wedge$  or  $\vee$  button to choose **Set Password**.
- 2 Press the  $\>$  button and then choose any 4 digits for your new password.  
As soon as the 4 digits are entered, re-enter the same 4 digits on the **Confirm**.  
Then your changed password has been memorized.
- 3 Press **RETURN** button to return to TV viewing or press **MENU** button to return to the previous menu.

For USA

For Canada



1



2

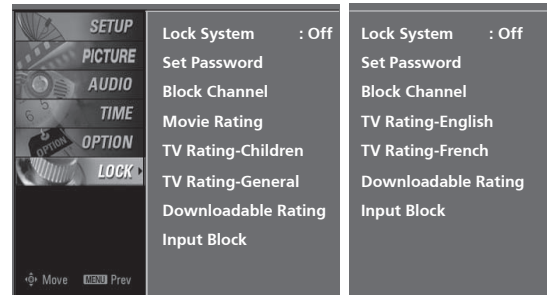
## Lock System

Enables or disables the blocking scheme you set up previously.

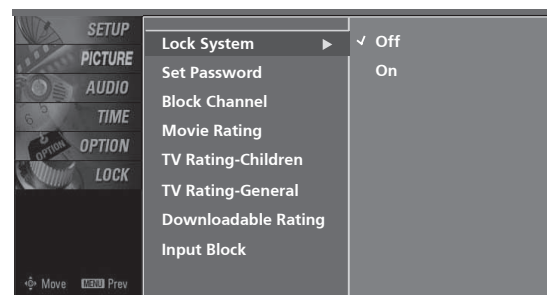
- 1 After inputting the password, use the  $\wedge$  or  $\vee$  button to choose **Lock System**.
- 2 Press the  $\>$  button and then use the  $\wedge$  or  $\vee$  button to select **On** or **Off**.
  - When you select **On**, the Lock System is enable.
- 3 Press **RETURN** button to return to TV viewing or press **MENU** button to return to the previous menu.

For USA

For Canada



1



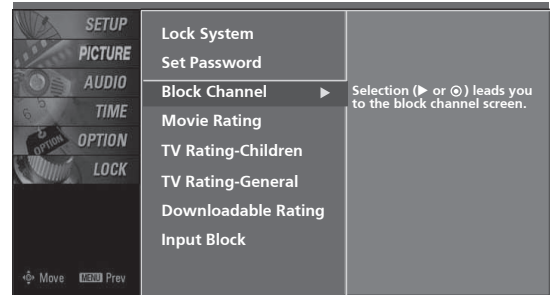
2

# PARENTAL CONTROL / RATINGS

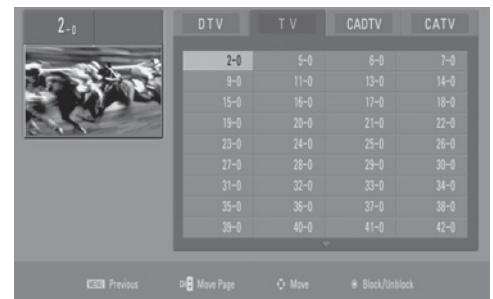
## CHANNEL BLOCKING

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  $\wedge$  or  $\vee$  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  $\wedge$   $\vee$   $\lt$   $\gt$  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.



1



2 3

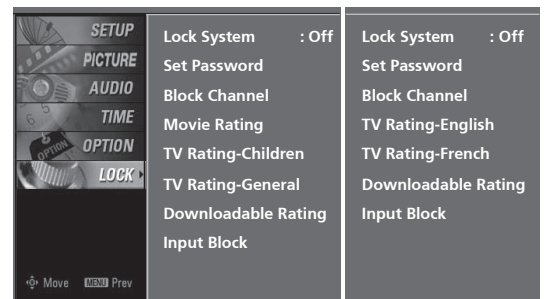
## EXTERNAL INPUT BLOCKING

Enables you to block an input.

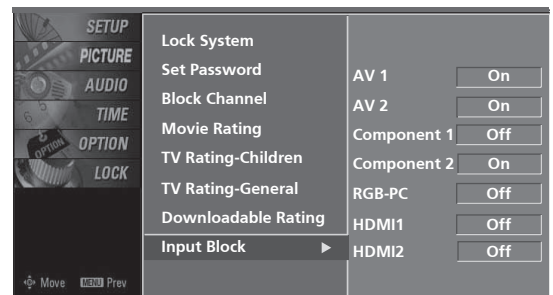
- 1 After inputting the password, use the  $\wedge$  or  $\vee$  button to choose **Input Block**.
- 2 Press the  $\>$  button and then use the  $\wedge$  or  $\vee$  button select a source.
- 3 Use the  $\lt$  or  $\gt$  button to select **On** or **Off** on the each source.
- 4 Press **RETURN** button to return to TV viewing or press **MENU** button to return to the previous menu.

For USA

For Canada



1



2 3

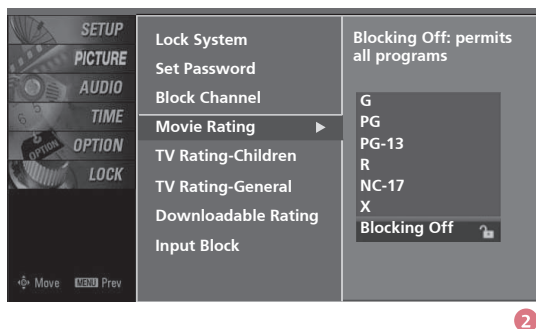
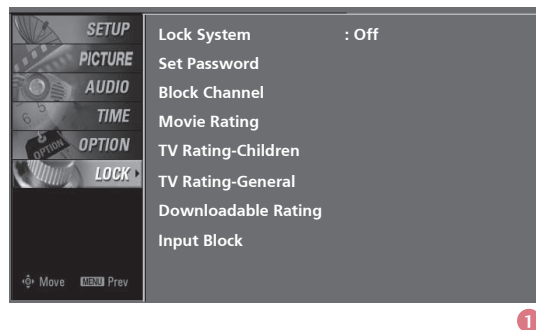
# MOVIE & TV RATING

## Movie Rating (MPAA) - for USA only

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

- 1 After inputting the password, use the  $\wedge$  or  $\vee$  button to choose **Movie Rating**.
- 2 Press the  $\triangleright$  button and then use the  $\wedge$  or  $\vee$  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.

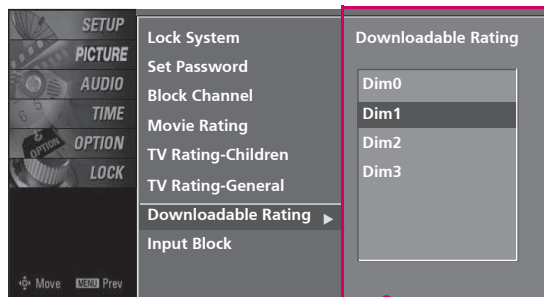
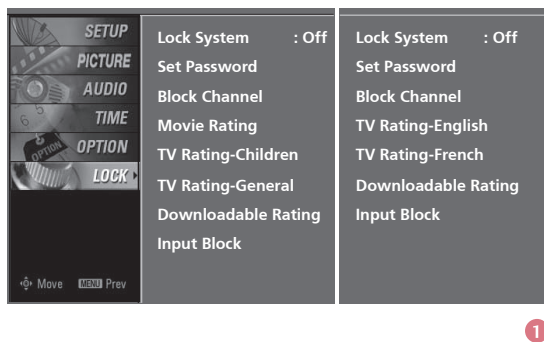


## Downloadable Rating

- 1 After inputting the password, use the  $\wedge$  or  $\vee$  button to choose **Downloadable Rating**.
- 2 Press the  $\triangleright$  button and then use the  $\wedge$  or  $\vee$  button to select **Dim0, Dim1, Dim2,** or **Dim3**.
- 3 Press the  $\triangleright$  button and then use the  $\wedge$  or  $\vee$  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.

For USA

For Canada



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

### NOTE

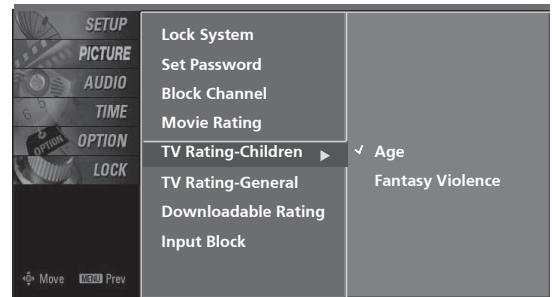
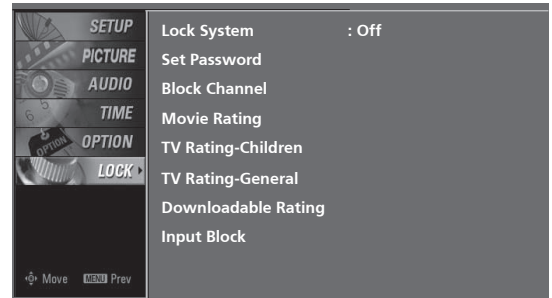
- ▶ This function may become available in the future and will be available only for digital channels.
- ▶ This function operates only when TV has received Region5 Rating data.

# PARENTAL CONTROL / RATINGS

## TV Rating Children - for USA only

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

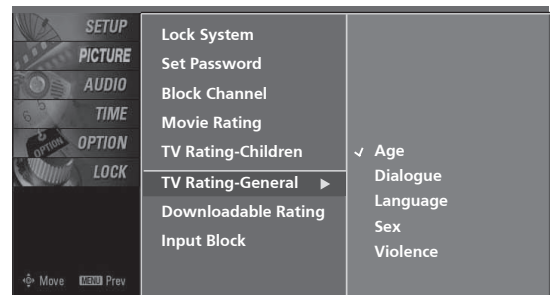
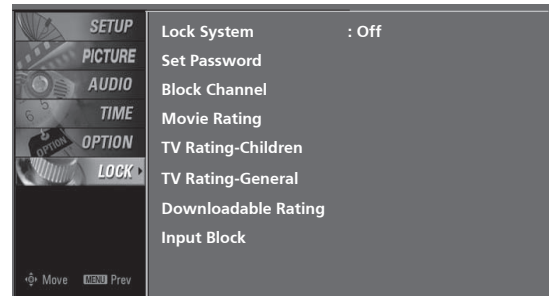
- 1 After inputting the password, use the  $\wedge$  or  $\vee$  button to choose **TV Rating-Children**.
- 2 Press the  $\>$  button and then use the  $\wedge$  or  $\vee$  button select **Age**, or **Fantasy Violence**.  
Press the  $\>$  button and then use the  $\wedge$  or  $\vee$  button select 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.



## TV Rating General - for USA only

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

- 1 After inputting the password, use the  $\wedge$  or  $\vee$  button to choose **TV Rating-General**.
- 2 Press the  $\>$  button and then use the  $\wedge$  or  $\vee$  button to select **Age**, **Dialogue**, **Language**, **Sex** or **Violence**.  
Press the  $\>$  button and then use the  $\wedge$  or  $\vee$  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.

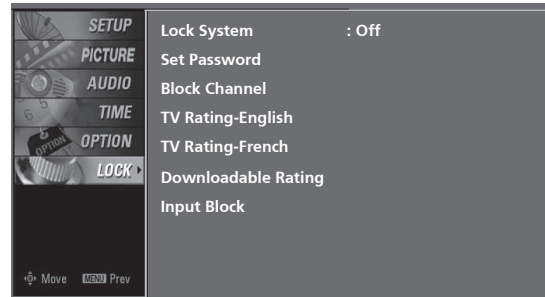


## TV Rating English - for CANADA only

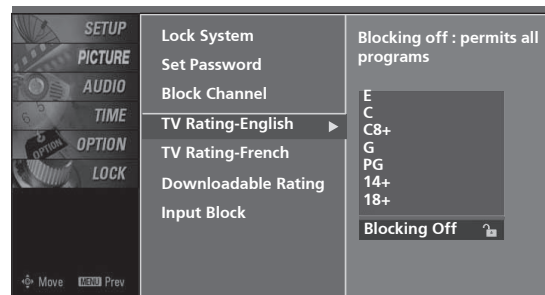
Selecting Canadian English language rating system.

- 1 After inputting the password, use the  $\wedge$  or  $\vee$  button to choose **TV Rating-English**.
- 2 Press the  $\triangleright$  button and then use the  $\wedge$  or  $\vee$  button to select **E, C, C8+, G, PG, 14+, 18+,** or **Blocking Off**.
  - E (Exempt)
  - C (Children)
  - C8+ (Children eight years and older)
  - G (General programming, suitable for all audiences)
  - PG (Parental Guidance )
  - 14+ (Viewers 14 years and older)
  - 18+ (Adult programming)
  - Blocking Off (Permits all programs)

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



1



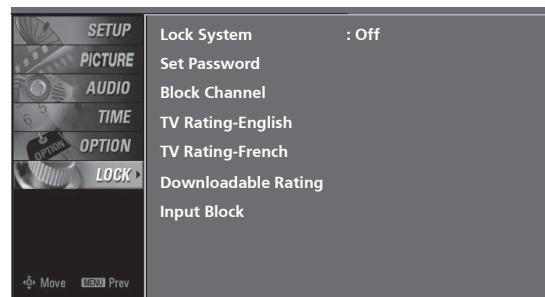
2

## TV Rating French - for CANADA only

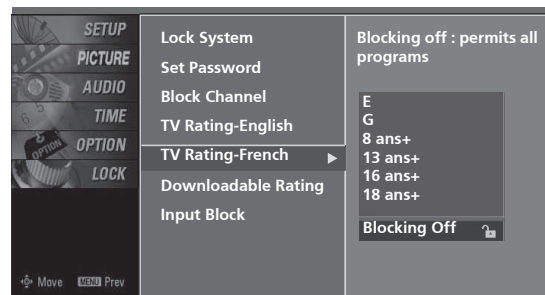
Selecting Canadian French language rating system.

- 1 After inputting the password, use the  $\wedge$  or  $\vee$  button to choose **TV Rating-French**.
- 2 Press the  $\triangleright$  button and then use the  $\wedge$  or  $\vee$  button to select **E, G, 8 ans+, 13 ans+, 16 ans+, 18 ans+,** or **Blocking Off**.
  - E (Exempt)
  - G (General)
  - 8 ans+ (General-Not convenient for little children)
  - 13 ans+ (Not convenient for children of 13 years and younger)
  - 16 ans+ (Not convenient for children of 16 years and younger)
  - 18 ans+ (This programs is only for adults)
  - Blocking Off (Permits all programs)

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



1



2

# 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 TV 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).

**The audio function does not work.**

Picture OK & No sound	<ul style="list-style-type: none"><li>■ Press the VOL or VOLUME button.</li><li>■ Sound muted? Press MUTE button.</li><li>■ Try another channel. The problem may be with the broadcast.</li><li>■ Are the audio cables installed properly?</li></ul>
No output from one of the speakers	<ul style="list-style-type: none"><li>■ Adjust Balance in menu option.</li></ul>
Unusual sound from inside the product	<ul style="list-style-type: none"><li>■ 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.</li></ul>

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

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

# 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		Z42LC6DF (Z42LC6DF-UN)	Z47LC6DF (Z47LC6DF-UN)
Dimensions (Width x Height x Depth)	Including stand	1038.1 x 751.6 x 335.6 mm 40.9x 29.6 x 13.2 inches	1146 x 800.3 x 348.3 mm 45.1 x 31.5x 13.7 inches
	Excluding stand	1038.1 x 687.9 x 88.5 mm 40.9 x 27.1 x 3.5 inches	1146 x 754.7 x 103.0 mm 45.1 x 29.7 x 4.1 inches
Weight	Including stand	25.5 kg / 56.2 lbs	31.5 kg / 69.4 lbs
	Excluding stand	22.1 kg / 48.7 lbs	26.5 kg / 58.4 lbs
Power requirement Television System Program Coverage External Antenna Impedance		AC 100-240V ~ 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.

## 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		

## Cable Box

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

# IR CODES

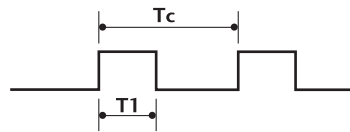
## 1. How to Connect

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

## 2. Remote Control IR Codes

### ■ Output waveform

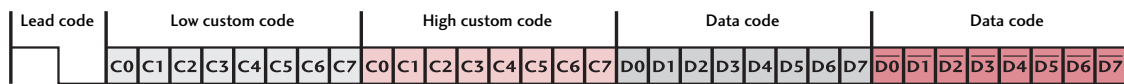
Single pulse, modulated with 37.917KHz signal at 455KHz



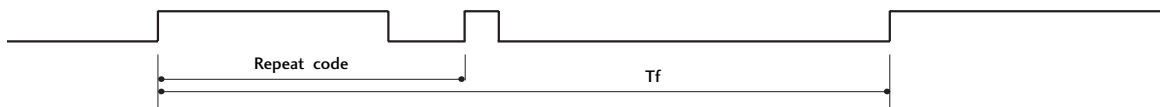
Carrier frequency  
 $FCAR = 1/TC = fOSC/12$   
 Duty ratio =  $T1/TC = 1/3$

### ■ Configuration of frame

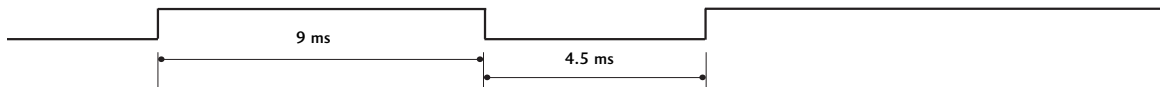
1st frame



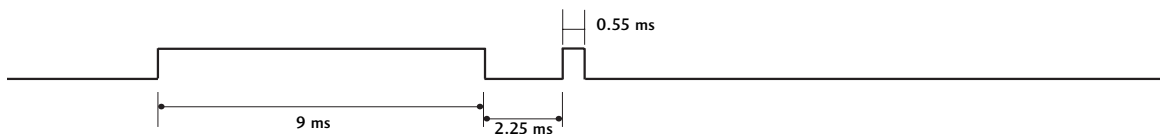
Repeat frame



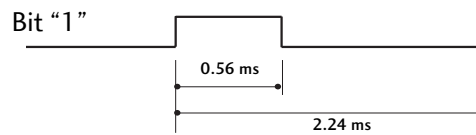
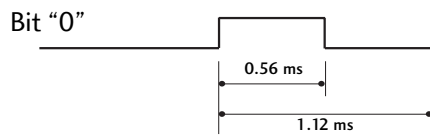
### ■ Lead code



### ■ Repeat code

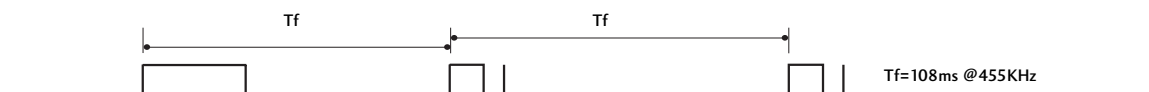


### ■ Bit description



### ■ Frame interval: Tf

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



Code (Hexa)	Function	Note	Code (Hexa)	Function	Note
0B	INPUT	Remote control Button	BF	COMPONENT 1	Discrete IR Code
08	POWER	Remote control Button (Power On/Off)			(Component1 Input Selection)
79	RATIO	Remote control Button	D4	COMPONENT 2	Discrete IR Code
0E	TIMER	Remote control Button			(Component2 Input Selection)
10-19	Number Key 0-9	Remote control Button	D5	RGB-PC	Discrete IR Code
4C	- (Dash)	Remote control Button			(RGB-PC Input Selection)
1A	FLASHBK	Remote control Button	CE	HDMI1	Discrete IR Code
09	MUTE	Remote control Button			(HDMI1 Input Selection)
02	VOL +	Remote control Button	CC	HDMI2	Discrete IR Code
03	VOL -	Remote control Button			(HDMI2 Input Selection)
00	CH ^	Remote control Button	E9	HDMI3	Discrete IR Code
01	CH v	Remote control Button			(HDMI3 Input Selection)
1E	FAV	Remote control Button	76	Ratio 4:3	Discrete IR Code
39	CC	Remote control Button			(Only 4:3 Mode)
40	^	Remote control Button	77	Ratio 16:9	Discrete IR Code
41	v	Remote control Button			(Only 16:9 Mode)
07	<	Remote control Button	AF	Ratio Zoom	Discrete IR Code
06	>	Remote control Button			(Only Zoom1 Mode)
44	ENTER	Remote control Button	C4	POWER ON	Discrete IR Code
E1	BRIGHT -	Remote control Button			(Only Power On)
43	MENU	Remote control Button	C5	POWER OFF	Discrete IR Code
E0	BRIGHT +	Remote control Button			(Only Power Off)
52	SOUND	Remote control Button	B0	PLAY	Remote control Button
4D	PICTURE	Remote control Button	BA	PAUSE	Remote control Button
5B	MENU	Remote control Button	B1	STOP	Remote control Button
0A	SAP	Remote control Button	BD	REC	Remote control Button
D6	TV	Discrete IR Code	8F	REW	Remote control Button
		(TV Input Selection)	8E	FF	Remote control Button
5A	AV 1	Discrete IR Code	B2	GO TO PREV	Remote control Button
		(AV1 Input Selection)	B3	GO TO NEXT	Remote control Button
D0	AV 2	Discrete IR Code	7D	MARK	Remote control Button
		(AV2 Input Selection)			

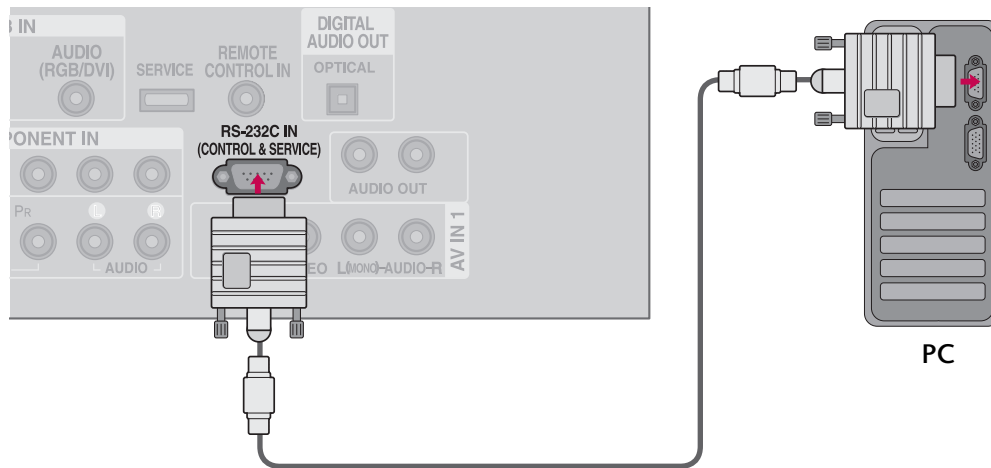
# APPENDIX

## 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.

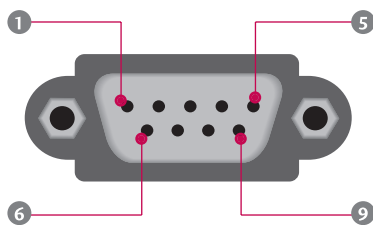
- Note: RS-232C on this unit is intended to be used with third party RS-232 control hardware and software. The instructions below are provided to help with programming software or to test functionality using telenet software.

### RS-232C Setup



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

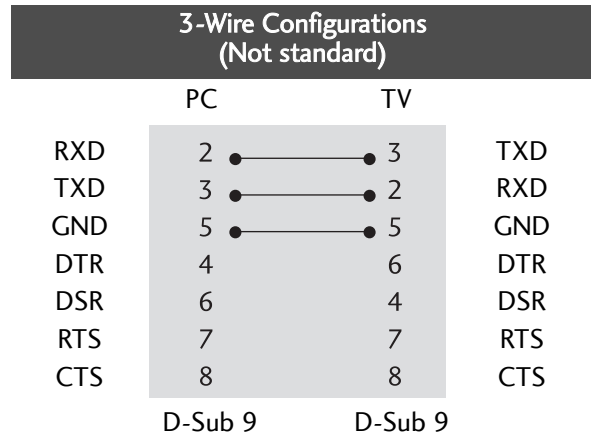
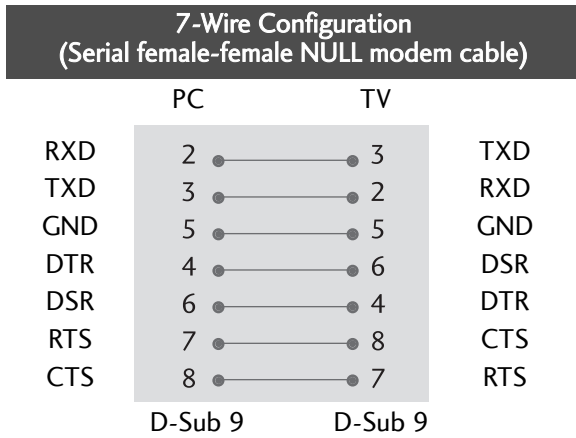
No.	Pin Name
1	No connection
2	RXD (Receive data)
3	TXD (Transmit data)
4	DTR (DTE side ready)
5	GND
6	DSR (DCE side ready)
7	RTS (Ready to send)
8	CTS (Clear to send)
9	No Connection





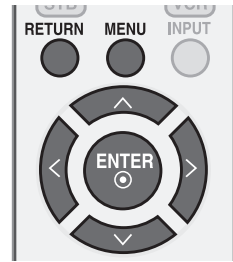
## RS-232C Configurations

Either cable below can be used.

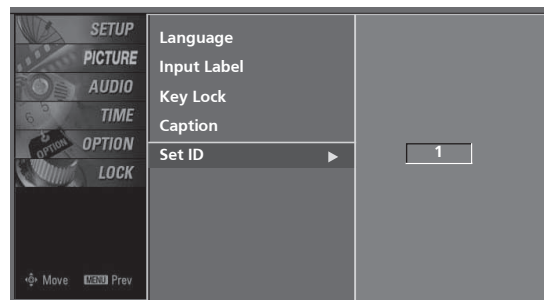
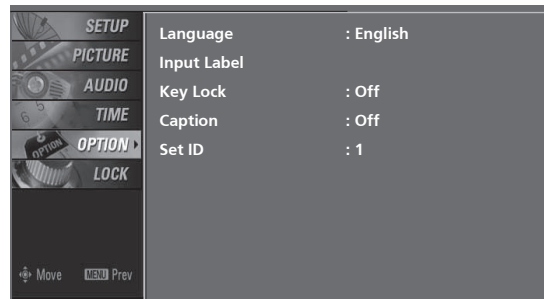


## Set ID

Use this function to specify a TV ID number.  
Refer to 'Real Data Mapping1'. ▶ p.86



- 1 Press the **MENU** button and then use  $\wedge$  or  $\vee$  button to select the **OPTION** menu.
- 2 Press the  $\>$  button and then use  $\wedge$  or  $\vee$  button to select **Set ID**.
- 3 Press the  $\>$  button and then use  $\wedge$  or  $\vee$  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.



## 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.

## 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.85)	16. Bass	k	s	0 ~ 64
03. Input Select	x	b	(▶ p.85)	17. Balance	k	t	0 ~ 64
04. Aspect Ratio	k	c	(▶ p.85)	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.88)
10. Color	k	i	0 ~ 64	25. Back Light	m	g	0 ~ 64
11. Tint	k	j	0 ~ 64	26. Auto Configuration	j	u	(▶ p.88)
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'.

[NG]: Use the large character.

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

To control Power On/Off of the TV.

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

Data 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                              Data10: HDMI3

*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                              Data 92: HDMI3

*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 86.

*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 86.

*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 86.

*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
--	---------

---

## 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 86.

*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	0	NTSC Air
1 Sub	1 One	1 No Use	x	0	0	0	0	1	NTSC Cable
			x	0	0	1	0	0	ATSC Air
			x	0	0	1	1	0	ATSC Cable_std
			x	0	1	0	0	0	ATSC Cable_hrc
			x	0	1	0	1	1	ATSC Cable_irc
			x	0	1	1	0	0	ATSC cable_auto
			x	0	1	1	1	1	Reserved
			x	x	x	x	x	x	...
			x	1	1	1	1	1	Reserved

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 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 81.

```
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 86.

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

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

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

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

Data 1: To set

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

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# APPENDIX

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