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## 3 Alignments and Adjustments

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### 3-1 General Alignment Instruction

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1. Usually, a color LCD-TV needs only slight touch-up adjustment upon installation.  
Check the basic characteristics such as height, horizontal and vertical sync.
2. Use the specified test equipment or its equivalent.
3. Correct impedance matching is essential.
4. Avoid overload. Excessive signal from a sweep generator might overload the front-end of the TV. When inserting signal markers, do not allow the marker generator to distort test result.
5. Connect the TV only to an AC power source with voltage and frequency as specified on the backcover nameplate.
6. Do not attempt to connect or disconnect any wire while the TV is turned on. Make sure that the power cord is disconnected before replacing any parts.
7. To protect against shock hazard, use an isolation transformer.

## 3-2 Factory Mode Adjustments

### 3-2-1 Entering Factory Mode

To enter 'Service Mode' Press the remote -control keys in this sequence :

- If you do not have Factory remote - control



### 3-2-2 How to Access Service Mode

#### Using the Customer Remote

1. Turn the power off and set to stand-by mode
2. Press the remote buttons in this order; POWER OFF-MUTE-1-8-2-POWER ON to turn the set on.
3. The set turns on and enters service mode.
4. Press the Power button to exit and store data in memory.
  - If you fail to enter service mode, repeat steps 1 and 2 above.
5. Initial SERVICE MODE DISPLAY State

HDMI-DTV	
Calibration	Submicom Download
Option Byte	Checksum
White Balance	KS1410
W/B MOVIE	Dynamic Contrast
SVP-PX	EEPROM Access Count
FBE2	RESET
MSP44XX	
NTP3000	
T-BRDPAUS0_0024 Jan 22 2007	
T-BRDPAUS5_C008 [Sec : 08]	

- "T-BRDPAUS0\_0010 Dec 12 2006" and "T-BRDPAUS5\_C008" are firmware version.

#### 6. Buttons operations withn Service Mode

Menu	Full Menu Display/Move to Parent Menu
Direction Keys ▲/▼	Item Selection by Moving the Cursor
Direction Keys ◀/▶	Data Increase/Decrease for the Selected Item
Source	Cycles through the active input source that are connected to the unit

### 3-2-3 Factory Data

HDMI-DTV	
Calibration	Submicom Download
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T-BRDPAUS0_0024 Jan 22 2007	
T-BRDPAUS5_C008 [Sec : 08]	

AV Calibration
Comp Calibration
PC Calibration
HDMI Calibration

HDMI-DTV	
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NTP3000	
T-BRDPAUS0_0024 Jan 22 2007	
T-BRDPAUS5_C008 [Sec : 08]	

HDMI Polarity	10
Watchdog Enable	0
Spread Spectrum	>>
MODEL	BordPlus
Panel Option	32AM
PWM Dimming	INT
NIM Version	KS1410
SIDE A/V	On
RS-232 JACK	Debug
Gamma	OFF
HSCB	STD
LVDS_TX_Fmt	[2]
LVDS_TX_Bit	8Bit

Panel Display Time	70Hr
Mute Time[RF]	2
CH Memory	SAMEX
shop mode	Off
Downloadable RRT	On
PC Mode ident	Auto
IRE	Off
IRE Offset	60
HDMI Hot plug	Enable
HDMI Delay Time	1200
HDMI Mode Ident	Auto
Select FBE	ii FBE2X
WM_Calibration	0
SVP Caption level	16
No MGT Case Enable	Off
Hotel Mode	Off

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NTP3000	
T-BRDPAUS0_0024 Jan 22 2007	
T-BRDPAUS5_C008 [Sec : 08]	

Sub Brightness	128
R-Offset	512
G-Offset	512
B-Offset	512
Sub Contrast	128
R-Gain	512
G-Gain	512
B-Gain	512

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NTP3000	
T-BRDPAUS0_0024 Jan 22 2007	
T-BRDPAUS5_C008 [Sec : 08]	

W/B MOVIE ON/OFF	Off	Nor_Rgain	0
MODE	Dynamic	Nor_Bgain	0
Color Tone	Cool1	Nor_Roffset	0
Msub Contrast	128	Nor_Boffset	0
Msub Bright	128	C2_Rgain	0
W1_Rgain	0	C2_Bgain	0
W1_Bgain	0	C2_Roffset	0
W1_Roffset	0	C2_Boffset	0
W1_Boffset	0	Movie Contrast	80
W2_Rgain	0	Movie Bright	50
W2_Bgain	0	Movie Color	55
W2_Roffset	0	Movie Sharpness	20
W2_Boffset	0		

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MSP44XX	
NTP3000	
T-BRDPAUS0_0024 Jan 22 2007	
T-BRDPAUS5_C008 [Sec : 08]	

Sharpness	>>
LNA PLUS	>>
UV Dealy	>>
PGA	>>
Calibration Target	>>
CLK_A	16
CLK_B	133
Roffset	67
Goffset	67
Boffset	67
BGain	274
GGain	274
BGain	274

H2gain	10
H4gain	10
V2gain	10
V4gain	10
Sr2gain	0
Sr4gain	0
Sl2gain	0
Sl4gain	0
Peakth1	8
Peakth2	47
Sub_Color	75

Sharpness	>>
LNA PLUS	>>
UV Dealy	>>
PGA	>>
Calibration Target	>>
CLK_A	16
CLK_B	133
Roffset	67
Goffset	67
Boffset	67
BGain	274
GGain	274
BGain	274

dB0_Peaking_th1	0
dB0_Vpeaking_th1	0
dB1_NoiseAmount	0
dB1_Peaking_th1	0
dB1_Vpeaking_th1	0
dB2_NoiseAmount	0
dB2_Peaking_th1	0
dB2_Vpeaking_th2	0
dB3_NoiseAmount	0
dB3_Peaking_th1	0
dB3_Vpeaking_th1	0

Sharpness	>>
LNA PLUS	>>
UV Dealy	>>
PGA	>>
Calibration Target	>>
CLK_A	16
CLK_B	133
Roffset	67
Goffset	67
Boffset	67
BGain	274
GGain	274
BGain	274

U Delay	0
V Delay	0

### 3 Alignments and Adjustments

Sharpness	>>	
LNA PLUS	>>	
UV Dealy	>>	
PGA	>>	
Calibration Target	>>	
CLK_A	16	
CLK_B	133	
Roffset	67	
Goffset	67	
Boffset	67	
BGain	274	
GGain	274	
BGain	274	
		TCD3_Contrast 119
		TCD3_Bright 44
		TCD3_YC_Delay 0
		ANALOG_Y_Offset 64
		ANALOG_PB_Offset 128
		ANALOG_PR_Offset 128
		ANALOG_Y_Gain 183
		ANALOG_PB_Gain 128
		ANALOG_PR_Gain 128

Sharpness	>>	1st_AV_LOW	0x10	2st_AV_High	0xEB
LNA PLUS	>>	1st_AV_High	0xDC	2st_AV_Delta	0x8
UV Dealy	>>	1st_AV_Delta	0x4	2st_COMP_LOW	0x1
PGA	>>	1st_COMP_LOW	0x10	2st_COMP_High	0xB
Calibration Target	>>	1st_COMP_High	0xEB	2st_COMP_Delta	0x8
CLK_A	16	1st_COMP_Delta	0x4	2st_PC_LOW	0x1
CLK_B	133	1st_PC_LOW	0x4	2st_PC_High	0xEB
Roffset	67	1st_PC_High	0xEB	2st_PC_Delta	0x8
Goffset	67	1st_PC_Delta	0x4	2st_HDMI_LOW	0x1
Boffset	67	NONE		2st_HDMI_High	0xEB
BGain	274	NONE		2st_HDMI_Delta	0x8
GGain	274	NONE			
BGain	274	2st_AV_LOW	0x1		

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HDMI-DTV		Patt-Sel	0	Skin-Enable	1
Calibration	Submicom Download	B-Slope Gain	60	Skin-Tu	118
Option Byte	Checksum	B-Tilt Min	30	Skin-Tv	118
White Balance	KS1410	B-Tilt Max	110	Sub Color	128
W/B MOVIE	Dynamic Contrast	Lfunc Basis	70	M-Skin-Tu	128
SVP-PX	EEPROM Access Count	Hfunc Basis	75	M-Skin-Tv	128
FBE2	RESET	Mean offset1	30	M-Au-Sub color	128
MSP44XX		Mean offset2	235	MW_Skin Tu	128
NTP3000		Mean slope	112	MW_Skin Tv	128
T-BRDPAUS0_0024 Jan 22 2007		Input Offset	128	M-Wi-Sub color	128
T-BRDPAUS5_C008 [Sec : 08]		Acr Offset	20		
		Arc Th1	10		
		Acr th2	110		

HDMI-DTV		FM_Precale	31
Calibration	Submicom Download	NICAM_Prescale	7
Option Byte	Checksum	SpdifDely	0
White Balance	KS1410	InternalDelayDtv	0
W/B MOVIE	Dynamic Contrast	InternalDelayAnalog	45
SVP-PX	EEPROM Access Count	Carrier Mute	1
FBE2	RESET	Pilot High	13
MSP44XX		Pilot Low	7
NTP3000		Scart1 Out Volume	109
T-BRDPAUS0_0024 Jan 22 2007		Scart2 Out Volume	115
T-BRDPAUS5_C008 [Sec : 08]			

HDMI-DTV		Amp Volume	30
Calibration	Submicom Download	PWM MOD	243
Option Byte	Checksum	Drc Thresh	12
White Balance	KS1410	Speaker EQ	0
W/B MOVIE	Dynamic Contrast		
SVP-PX	EEPROM Access Count		
FBE2	RESET		
MSP44XX			
NTP3000			
T-BRDPAUS0_0024 Jan 22 2007			
T-BRDPAUS5_C008 [Sec : 08]			

HDMI-DTV	
Calibration	Submicom Download
Option Byte	Checksum
White Balance	KS1410
W/B MOVIE	Dynamic Contrast
SVP-PX	EEPROM Access Count
FBE2	RESET
MSP44XX	
NTP3000	
T-BRDPAUS0_0024 Jan 22 2007	
T-BRDPAUS5_C008 [Sec : 08]	

Submicom Download	0
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HDMI-DTV	
Calibration	Submicom Download
Option Byte	Checksum
White Balance	KS1410
W/B MOVIE	Dynamic Contrast
SVP-PX	EEPROM Access Count
FBE2	RESET
MSP44XX	
NTP3000	
T-BRDPAUS0_0024 Jan 22 2007	
T-BRDPAUS5_C008 [Sec : 08]	

Checksum	[0000]
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HDMI-DTV	
Calibration	Submicom Download
Option Byte	Checksum
White Balance	KS1410
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SVP-PX	EEPROM Access Count
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NTP3000	
T-BRDPAUS0_0024 Jan 22 2007	
T-BRDPAUS5_C008 [Sec : 08]	

RF_AGC	0x8A	VSB_EQ_STEP	0x6111
VSB-CR_GAIN	0x2E	VSB_PTL_STEP	0x522
VSB-CR_K1_1_NARROW	0xE	VSB_PTL_ALPHA	0x55
VSB-CR_K1_1_WIDE	0xC	QAM_AGC	0x2A38
VSB-CR_K1_2_NARROW	0xD	QAM_EQ_STEP1	0x312F
VSB-CR_K1_2_WIDE	0xC	QAM+EQ_STEP2	0xA8B0
VSB-CR_K2_1_NARROW	0x12	QAM_PTL_K1	0X37
VSB-CR_K2_1_WIDE	0x10	QAM_PTL_K2	0x2D
VSB-CR_K2_2_NARROW	0x11		
VSB-CR_K2_2_WIDE	0x10		
VSB_EQ_CTRL1	0x30E		
VSB_EQ_CTRL2	0x104		
VSB_EQ_INIT_STEP	0x3161		

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MSP44XX	
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T-BRDPAUS0_0024 Jan 22 2007	
T-BRDPAUS5_C008 [Sec : 08]	

Dynamic CE	Off
Dynamic Dimming	Off
FBE2 Y_MEAN READ	

HDMI-DTV	
Calibration	Submicom Download
Option Byte	Checksum
White Balance	KS1410
W/B MOVIE	Dynamic Contrast
SVP-PX	EEPROM Access Count
FBE2	RESET
MSP44XX	
NTP3000	
T-BRDPAUS0_0024 Jan 22 2007	
T-BRDPAUS5_C008 [Sec : 08]	

Addr:2906, Cnt:	75	Addr:2907, Cnt:	6
Addr:2905, Cnt:	55	Addr:0, Cnt:	5
Addr:2904, Cnt:	35	Addr:0, Cnt:	4
Addr:2903, Cnt:	35	Addr:0, Cnt:	4
Addr:2902, Cnt:	32	Addr:0, Cnt:	4
Addr:2901, Cnt:	32	Addr:0, Cnt:	4
Addr:2900, Cnt:	31	Addr:0, Cnt:	4
Addr:37B, Cnt:	28	Addr:0, Cnt:	4
Addr:37A, Cnt:	13	Addr:0, Cnt:	4
Addr:379, Cnt:	9	Addr:0, Cnt:	4
Addr:732E, Cnt:	7	Addr:0, Cnt:	4
Addr:32A5, Cnt:	7		
Addr:2908, Cnt:	6		

HDMI-DTV	
Calibration	Submicom Download
Option Byte	Checksum
White Balance	KS1410
W/B MOVIE	Dynamic Contrast
SVP-PX	EEPROM Access Count
FBE2	RESET
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NTP3000	
T-BRDPAUS0_0024 Jan 22 2007	
T-BRDPAUS5_C008 [Sec : 08]	



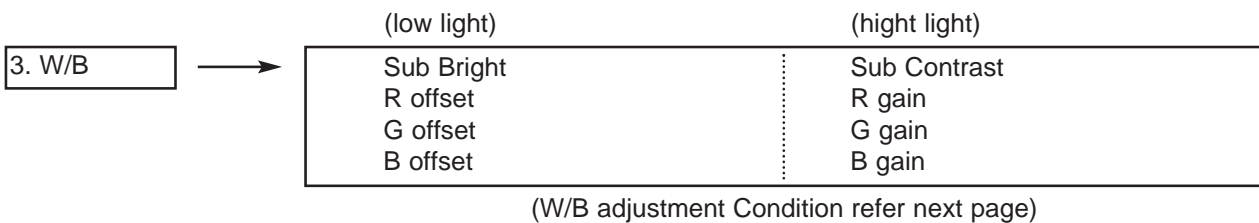
### 3-3 White Balance - Calibration

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#### 3-3-1 White Balance -Calibration



#### 3-3-2 White Balance - Adjustment



#### 3-3-3 Conditions for Measurement

1. On the basis of toshiba ABL pattern : High Light level (57 IRE)

- INPUT SIGNAL GENERATOR : CA-210

\* Mode NO 3 : 744 x 484 @ 60Hz

NO 6 : 1280 x720 @ 60 Hz (Component 720P)

NO 21 : 1024 x 768 @ 60 Hz

\* Pattern NO 15 : Color bar

NO 16 : 92 ABL pattern

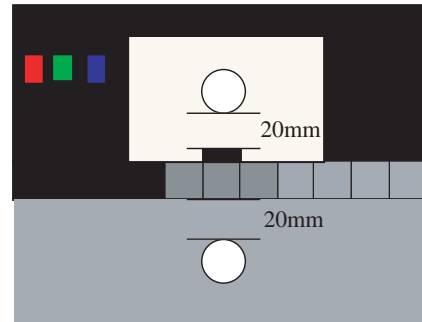
NO 17 : 16 gray

## 3-4 White Ratio (Balance) Adjustment

1. You can adjust the white ratio in factory mode (1:Calibration, 3:White-Balance).
2. Since the adjustment value and the data value vary depending on the input source, you have to adjust these in CVBS, Component 1 and HDMI 1 modes.
3. The optimal values for each mode are configured by default. (Refer to Table 1, 2.)

It varies with Panel's size and Specification.

- Equipment : CA-210
- Pattern: MIK K-7256 #92 "Flat W/B Pattern" as standard
  - Use other equipment only after comparing the result with that of the Master equipment.
- Set Aging time : 60min ↑
- Calibration and Manual setting for WB adjustment.



HDMI : Time #6 702P, Pattern #24 Chessboard Calibration → adjustment #92 pattern

COMP : Time #6 702P, Pattern #24 Chessboard Calibration

CVBS : Time #3 NTSC-J, Pattern #24 Chessboard Calibration

PC : Time #21 1024\*768, Pattern #24 Chessboard Calibration

### -White Balance Manual Adjustment (ABL Pattern)

	Adjustment Coordinate				
		x	y	Y(L)	T(K) ± MPCD
CVBS (NTSC)	L/L	272	278	-	12,000 (i <sup>3</sup> /40)
	L/L	272	278	16.3cd/m <sup>2</sup> ÷ (4.8 Ft)	12,000 (i <sup>3</sup> /40)
COMP (720P)	H/L	272	278	-	12,000 (i <sup>3</sup> /40)
	L/L	272	278	16.6cd/m <sup>2</sup> ÷ (4.9 Ft)	12,000 (i <sup>3</sup> /40)
HDMI (720P)	H/L	272	278	-	12,000 (i <sup>3</sup> /40)
	L/L	272	278	16.6cd/m <sup>2</sup> ÷ (4.9 Ft)	12,000 (i <sup>3</sup> /40)

### -Adjustment Specification

White Balance : High light (± 2), Low light (± 3)

Luminance : High light (Don't care), Low light (± 0.2 Ft/L)

## 3-5 Servicing Information

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### 3-5-1 USB Download Method

#### 1. Downloading boot code

- (1) Change the the boot code's file name into "boot.bin" and application code's into "appl.rom"
- (2) Copy the Upgrade Files into the path "\bordplus\us" in USB flash driver.
- (3) Turn off LCD TV.
- (4) Insert the USB flash driver into the " WISELINK " jack on side of LCD TV.
- (5) Turn on LCD TV.
- (6) Press " MENU "
- (7) Select " SETUP "
- (8) Select " SW Upgrade "
- (9) Select " USB "
- (10) The banner OSD "Scanning for USB..." is displayed.
- (11) The banner OSD "Completed..." is displayed when the updating is completed.
- (12) Remove the USB flash driver from LCD TV.
- (13) Check the program version.

#### 2. Downloading application code

- (1) Change the the boot code's file name into "boot.bin" and application code's into "appl.rom"
- (2) Copy the Upgrade Files into the path "\bordplus\us" in USB flash driver.
- (3) Turn off LCD TV.
- (4) Insert the USB flash driver into the " WISELINK " jack on side of LCD TV.
- (5) Turn on LCD TV.
- (6) Press " MENU "
- (7) Select " SETUP "
- (8) Select " SW Upgrade "
- (9) Select " USB "
- (10) The banner OSD "Scanning for USB..." is displayed.
- (11) The banner OSD "Completed..." is displayed when the updating is completed.
- (12) Remove the USB flash driver from LCD TV.
- (13) Check the program version.

#### \* How to check Program Version

1. Press " MENU "
2. Select " SETUP "
3. Select " INFORMATION HELP "
4. Highlight " ON " option
5. Press " INFO " button on the remote control.

Memo