2. Alignment and Adjustments

2-1 When Entering Service Mode:

2-1-1 Service Mode Entry Method

1. Turn off the power to make the SET STAND-BY mode.
2. In order to enter the Service Mode, Press "Mute" → "1" → "8" → "2" → "POWER" button on the Remote Control. In case entry into SERVICE MODE is unsuccessful, repeat the procedures above.

2-1-2 Initial DISPLAY State in times of SERVICE MODE Switch overs

2-1-2(A) OSD DISPLAY

Factory

1. DDP1011
2. GM1601
3. DNIe
4. FLI2310
5. CXA2171
6. Vsp9437
7. Upd64083
8. CCA
9. SP Actuator
10. OPTION

VER:T_AT2NUS_XXXX

2-1-2(B) BUTTONS OPERATIONS WITHIN 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

2-1-3 Details of Control

1) DDP1011

No	Item	Range	Default	Remark
1	V-Position	0 ~ 60	40	Screen upper and lower adjustments
2	H-Position	0 ~ 120	70	Screen left and right adjustments
3	LAMP SYNC		Pulse(P)	Pulse(P), Pass(T)
4	INDEX DELAY	0 ~ 359	47	Terminal that controls the motor of the color wheel
5	SEQ SELECT	0 ~ 15	5	Sequence Selection
6	V-FLIP	Normal/FLIP	Normal	Vertical Flip Operation
7	H-FLIP	Normal/FLIP	Normal	Horizontal Flip Operation
8	GAMMA	0 ~ 15	2	Gamma Table Selection
9	SLR	Off/On	Off	SLR Function Selection
10	DMD_BIAS	B,C,D,E,F	E	DMD Bias bin vlotage selection
11	Lamp Boost	0 ~ 63	20	Lamp Boost value selection
12	Lamp Sync Delay	-	0	Lamp Sync delay value selection
13	Lamp Select	-	Philips	Philips, Toshiba, Nosync, OSRAM type selection
14	Test Pattern	-	0	Test Pattern Selection

2) GM1601

No	Item	Range	Default	Remark
1	Auto Color (PC,Component,HD)	Set/Reset		Auto Color Function execution
2	Auto Adjust (PC)			Auto Adjustment Function execution
3	Red_Offset2	0 ~ 255	32	Red_Offset2 Control
4	Red_Gain	0 ~ 255	192	Red_Gain Control
5	Green_Offset2	0 ~ 255	32	Green_Offset2 Control
6	Green_Gain	0 ~ 255	192	Green_Gain Control
7	BLue_Offset2	0 ~ 255	32	Blue_Offset2 Control
8	BLue_Gain	0 ~ 255	192	Blue_Gain Control
9	ADC_Band	20,100,160,290	20Mhz	Signal Bandwidth Value Selection
10	Min Y Vaule	0 ~ 255	0	
11	Max Y Vaule	0 ~ 255	0	
12	Sharpness-H	6 ~ 11	6	
13	Sharpness-V	6 ~ 11	8	
14	Spread Spectrum		Off	
15	SP_Amplitude		3	
16	SP_Period		1	
17	Csync Slow Lock		On	
18	Sync Tip Level		125mV	
19	ADC Calibration		-	
20	Red_Offset 1		32	
21	Green_Offset 1		32	
22	Blue_Offset 1		32	

3) DNIe

No	Item	Range	Default	Remark
1	PATT_SEL		0	Test Pattern Selection
2	SNI_PROC_SET		891	DNIe Block Enb/Bypass
3	NR_MAX_Y/C	0 ~ 255	48	Temporal NR Gain
4	NR_MIN_Y/C	0 ~ 255	16	Temporal NR Gain
5	NR_HPF_TH	0 ~ 7	4	Spatial NR Gain
6	NR_EDGE_TH	0 ~ 7	5	
7	NR_SEL	0,1,2,3	2	NR Mode Selection
8	NEOnDE	0,1	0	DE Parameter Value Selection
9	NEOnDCE	0,1	0	DCE Parameter Value Selection
10	NEOnCE	0,1	0	CE Parameter Value Selection
11	RTH2	0 ~ 15	8	NEOnDE User Set Up
12	Core	0 ~ 15	4	NEOnDCE User Set Up
13	ALPHAL	0 ~ 255	128	CE Gain
14	ALPHAU	0 ~ 255	128	
15	CE_CUTOFF	0 ~ 255	32	Boundary value for the lowerr part of Contrast Enhance
16	CE_UPPER	0 ~ 255	220	Boundary value for the lowerr part of Contrast Enhance
17	CE Gain Max L/U	0 ~ 255	160	CE Gain
18	DCE_GAIN_L/U	0 ~ 255	120	DCE Gain
19	B_RATIO		12000	Low level information for the minimum value
20	BLACK_TILT	0 ~ 255	100	Black Stretch Area
21	Black Gain Max	0 ~ 1023	358	
22	W_RATIO	~	12000	High level information for the minimum value
23	WHITE_TILT	0 ~ 255	200	
24	White Gain Max	0 ~ 1023	358	
25	GAIN 1X	0 ~ 127	16	Gain of horizontal high frequency region
26	GAIN 1Y	0 ~ 63	12	Gain of vertical high frequency region
27	GAIN 2X	0 ~ 63	8	Gain of horizontal middle frequency region
28	GAIN 2Y	0 ~ 63	4	Gain of vertical middle frequency region
29	GAIN 3X	0 ~ 63	1	Gain of horizontal low frequency region
30	NDON	0,1	1	Background Noise Detection ON/OFF Switch
31	CORING_ON	0 ~ 7	1	Coring On/Off
32	SCALE_R	0 ~ 7	110	Log Mapping Gain
33	CORING_TH1	0 ~ 3	1	
34	CORING_TH2	0 ~ 255	1	
35	CORING_TH3	0 ~ 15	1	
36	M_CCT_FAC	0 ~ 255	80	

No	Item	Range	Default	Remark
37	MATR_CBR	0 ~ 2047	0	YCBCR2RGB Color Matrix Conversion Coefficient Value
38	MATR_CRR	0 ~ 2047	718	YCBCR2RGB Color Matrix Conversion Coefficient Value
39	MATR_CBG	0 ~ 2047	1872	YCBCR2RGB Color Matrix Conversion Coefficient Value
40	MATR_CRG	0 ~ 2047	1682	YCBCR2RGB Color Matrix Conversion Coefficient Value
41	MATR_CBB	0 ~ 2047	908	YCBCR2RGB Color Matrix Conversion Coefficient Value
42	MATR_CRB	0 ~ 2047	0	YCBCR2RGB Color Matrix Conversion Coefficient Value
43	SCALE_ALPHA	0 ~ 255	140	Gain Value of CTE
44	RED_C_COEFF	0 ~ 255	128	Gain adjustment of the contrast for the Red Signal
45	GRN_C_COEFF	0 ~ 255	128	Gain adjustment of the contrast for the Green Signal
46	BLU_C_COEFF	0 ~ 255	128	Gain adjustment of the contrast for the Blue Signal
47	RED_B_COEFF	0 ~ 255	128	Gain adjustment of the brightness for the Red Signal
48	GRN_B_COEFF	0 ~ 255	127	Gain adjustment of the brightness for the Green Signal
49	BLU_B_COEFF	0 ~ 255	128	Gain adjustment of the brightness for the Blue Signal
50	Gamma On		0	Gamma On/Off
51	Dither Mode		0	1bit/2bit/bypass Mode
52	Sub_Contrast	0 ~ 150	120	Brightness adjustment for the height-light parts of the screen
53	Sub_Brightness	0 ~ 500	250	Brightness adjustment for the low-light parts of the screen

4) FLI2310

No	Item	Range	Default	Remark
1	Low Freq	0 ~ 255	30	Set motion threshold for low frequency signals. Defines the lower limit of low frequency motion, below which motion is not detected
2	Contrast	0 ~ 255	128	Contrast adjustment
3	Brightness	0 ~ 255	95	Brightness adjustment
4	Saturation	0 ~ 255	128	Saturation adjustment
5	Y_Offset		1015	
6	Cb_Offset		1023	
7	Cr_Offset		1021	
8	NR On/Off		Off	

5) CXA2171

No	Item	Range	Default	Remark
1	FIX_SYNC	0 ~ 3	0	SYNC selection
2	GAIN_SEL	0,1	1	GAIN selection
3	CBGAIN	0 ~ 15	7	CBGAIN adjustment
4	CRGAIN	0 ~ 15	7	CRGAIN adjustment
5	YGAIN	0 ~ 15	7	YGAIN adjustment

6) Vsp9437

No	Item	Range	Default	Remark
1	Tint_M	0 ~ 255	130	Main Tint Value Setting
2	TInt_S	0 ~ 255	130	Sub Tint Value Setting
3	Brightness_C	0 ~ 255	128	Brightness_C adjustment
4	Contrast_C	0 ~ 63	34	Contrast_C adjustment
5	V-Saturation_C	0 ~ 63	32	V-Saturation_C adjustment
6	U_Saturation_C	0 ~ 63	32	U-Saturation_C adjustment
7	Tint_C	0 ~ 67	64	Tint_C adjustment
8	Brightness	0 ~ 63	48	Brightness adjustment
9	Contrast	0 ~ 63	32	Contrast adjustment
10	V-Saturation	0 ~ 63	35	V-Saturation adjustment
11	U-Saturation	0 ~ 63	35	U-Saturation adjustment
12	PLLTCM	-	Very Fast	Very Fast / Fast / Slow / Very Slow Selection
13	PLLTCS	-	Fast	Very Fast / Fast / Slow / Very Slow Selection
14	ADC ADJ_M	0 ~ 63	40	
15	SLLTHD		0	
16	SLLTHDV		6	
17	THRSEL		1	
18	APK1BPM		1	
19	APK2BPM		1	
20	ATH1BPM		0	
21	ATH1HPM		1	
22	APK1HPM		1	
23	APK2HPM		1	

7) Upd64083

No	Item	Range	Default	Remark
1	DYCOR	0 ~ 15	2	DYCOR adjustment
2	DYGAIN	0 ~ 15	9	DYGAIN adjustment
3	DCCOR	0 ~ 15	3	DCCOR adjustment
4	DCGAIN	0 ~ 15	6	DCGAIN adjustment
5	YHCOR	0 ~ 12	1	YHCOR adjustment
6	VAPGAIN	0 ~ 7	4	VAPGAIN adjustment
7	VAPINV	0 ~ 31	3	VAPINV adjustment
8	YPFT	0 ~ 3	3	
9	YPFG	0 ~ 15	8	
10	CDELAY	0 ~ 7	2	YPFT adjustment

8) CCA

No	Item	Range	Default	Remark
1	CCA	On/Off	On	CCA On/Off Selection
2	Red-x	0 ~ 999	640	Red-x adjustment
3	Red-y	0 ~ 999	330	Red-y adjustment
4	Red-Y	0 ~ 999	86	Red-Y adjustment
5	Green-x	0 ~ 999	300	Green-x adjustment
6	Green-y	0 ~ 999	620	Green-y adjustment
7	Green-Y	0 ~ 999	300	Green-Y adjustment
8	Blue-x	0 ~ 999	150	Blue-x adjustment
9	Blue-y	0 ~ 999	60	Blue-y adjustment
10	Blue-Y	0 ~ 999	53	Blue-Y adjustment
11	White-x	0 ~ 999	291	White-x adjustment
12	White-y	0 ~ 999	300	White-y adjustment
13	White-Y	0 ~ 999	439	White-Y adjustment
14	WB Spread			
15	DVI source Move			
16	TV~480i			
17	D-Red-X	100 ~ 400	640	D-Red-X adjustment
18	D-Red-Y	100 ~ 400	330	D-Red-Y adjustment
19	D-Green-X	100 ~ 400	300	D-Green-X adjustment
20	D-Green-Y	100 ~ 400	620	D-Green-Y adjustment
21	D-Blue-X	100 ~ 400	150	D-Blue-X adjustment
22	D-Blue-Y	100 ~ 400	60	D-Blue-Y adjustment
23	D-Cyau-X	100 ~ 400	205	D-Cyau-X adjustment
24	D-Cyau-Y	100 ~ 400	270	D-Cyau-Y adjustment
25	D-Mageuta-X	100 ~ 400	290	D-Mageuta-X adjustment
26	D-Mageuta-Y	100 ~ 400	140	D-Mageuta-Y adjustment
27	D-Yellow-X	100 ~ 400	425	D-Yellow-X adjustment
28	D-Yellow-Y	100 ~ 400	515	D-Yellow-Y adjustment
29	D-White-X	100 ~ 400	291	D-White-X adjustment
30	D-White-Y	100 ~ 400	300	D-White-Y adjustment

9) SP Actuator

No	Item	Range	Default	Remark
1	Actuator Gain		113	
2	Segment Length		80	
3	Frame Delay(Hex)		0000 0A35	
4	Segment Number		100	
5	DC Offset		0	
6	Fixed Output Level		60	
7	Actuator On/Off		On	Actuator On/Off Selection

10) OPTION

No	Item	Range	Default	Remark
1	Lamp Clear			The lamp time and to "0". Used when shipping the set or replacing the lamp
2	User Reset			The last item that should be reset during the set shipment process
3	DNIe Demo		On	Operational state of the DNIe function
4	Check Sum		0000	
5	EER Reset			Clears the EEP-ROM
6	WB Reset		On	Clears the White Balance value
7	Gm Color			Clears the White Balance value
8	Auto Power		On	The Default is Off. When turned On, the set turns on automatically when the power cord is plugged in
9	Mute Time		45 * 10ms	Time which the screen will be black while switching channels
10	DebugSel		G-Probe	
11	Aging Pattern			White, Red, Blue, Green
12	DDC Protection		Off	
13	Sound Delay		Delay 1	
14	LNA_Default		On	
15	3D_COMB Output		1V	
16	Chroma Gain		0dB	
17	Lamp Out Control		Dynamic	
18	ColorWheel		CW2	
19	Speaker Select		Samsung	
20	Anynet		On	
21	V Chip Select		VSA only	
22	Lamp Life		0	Time for which the lamp has been used

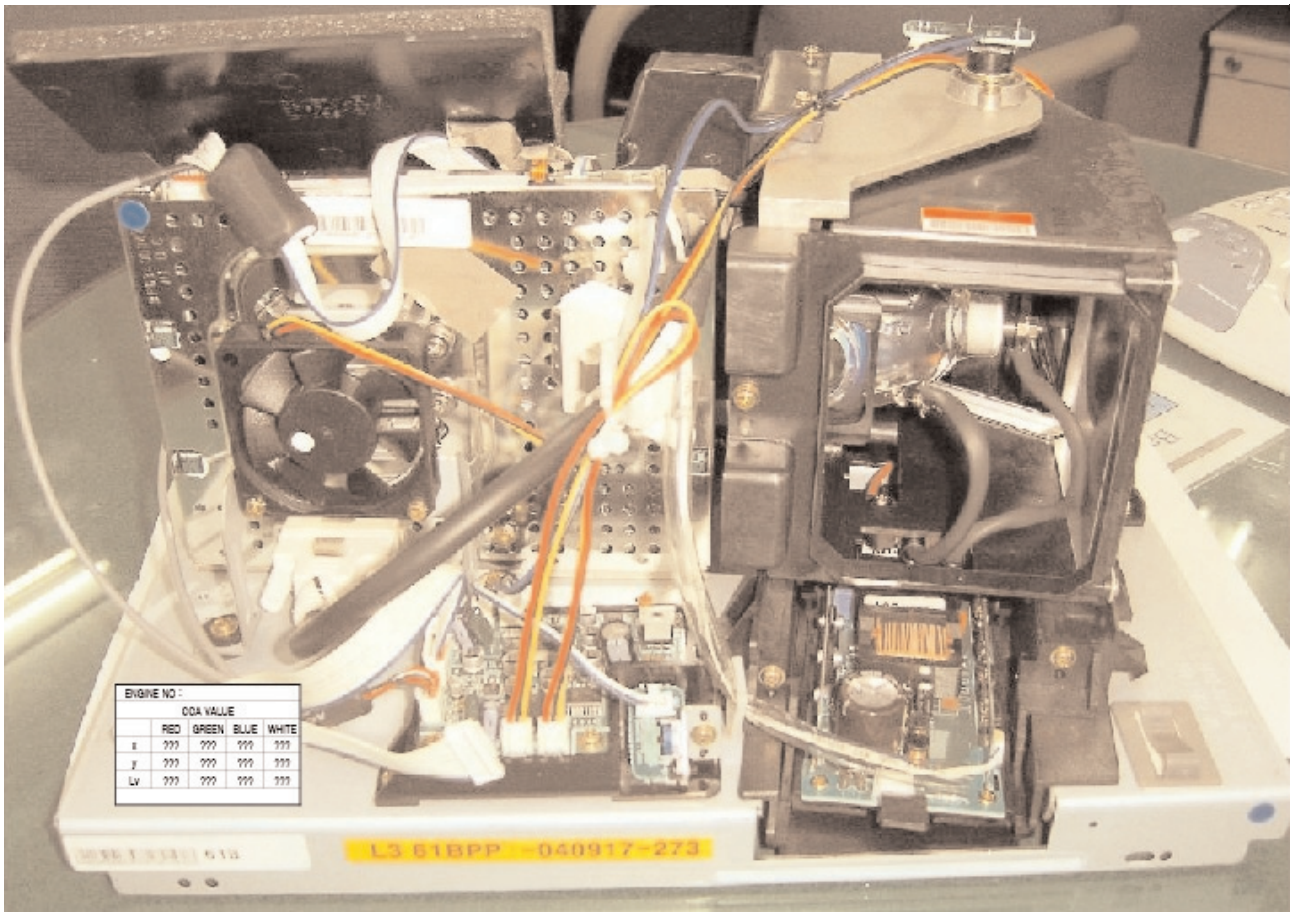
2-2 CCA Adjustment Service Methods

CCA Adjustment is needed after changing a light engine or digital board

2-2-1 CCA

In DLP TV, even the same RGB color may differ depending on the light engine. CCA (Color Coordinate Adjustment) corrects the color to achieve the color accuracy. CCA performs color correction after measuring and inputting the current light engine's data on actual color coordinates for displayed Red, Green, Blue, and White color patterns, using a color coordinate measuring equipment. At this moment, color correction is performed on the basis of previously inputted Desired Color Coordinates and Measured Color Coordinates. Measured Data on Service Engine's color coordinates is presented on the CCA label. Input the label values to perform CCA color correction.

2-2-2 Condition of the CCA Label upon Receipt of the Service Engine



* "CCA LABEL" describes the measured color coordinates on the light engine.

2-2-3 CCAService Procedures

To execute CCA adjustment , perform the following steps:

1. Turn off the power to make the SET STAND-BY mode.
2. In order to enter the Service Mode, Press "Mute" → "1" → "8" → "2" → "POWER" button on the Remote Control.
3. Select FACTORY > SERVICE > CCA mode on the SET.
4. Switch the CCA OFF.
5. Input the CCA basic engine data to the SET.
6. Input the D-White -x, y values in the coordinates per destination. (if necessary)
7. Select WB SPREAD, then press Enter to activate the WB Spread SET ensuring that you adjust until you get the OK sign. After adjusting, exit Factory Mode.
8. When the adjustment is complete, check the picture quality.

CCA Menu in FACTORY Mode

CCA ON/OFF		
Red	- x	: ???
Red	- y	: ???
Red	- Y	: ???
Green	- x	: ???
Green	- y	: ???
Green	- Y	: ???
Blue	- x	: ???
Blue	- y	: ???
Blue	- Y	: ???
White	- x	: ???
White	- y	: ???
White	- Y	: ???
WB SPREAD		
Move HDMI		

* Attention

Performing CCA is independent on current display's resolution and input signal type if you don't measure color coordinates data. Measuring color coordinates data requires specific equipment not possessed by service personnel, what makes performing manual adjustment impossible. Adjusting CCA is applied to all the signal mode. Don't change Desired value because it will be hamful to the color of the SET.

2-3 INDEX DELAY Adjustment

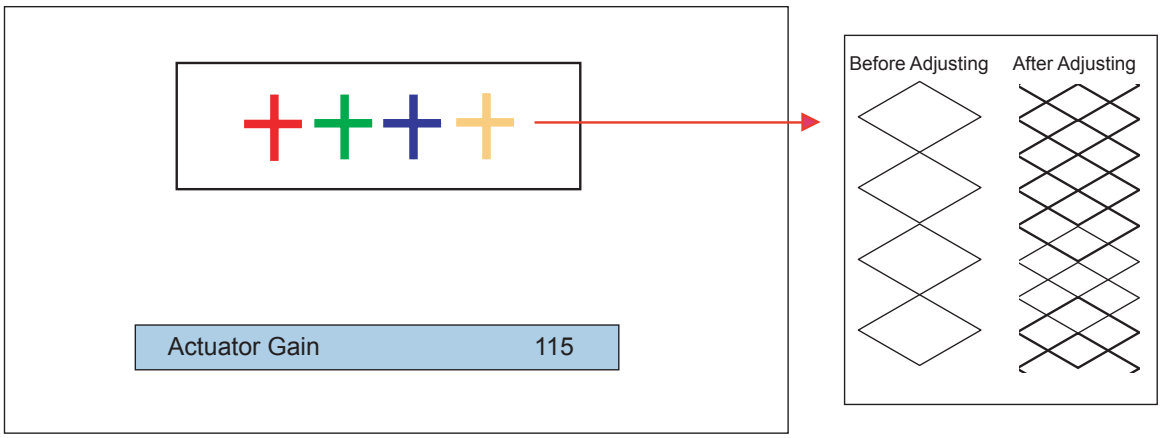
1. Turn off the power to make the SET STAND-BY mode.
2. In order to enter the Service Mode, Press "Mute" → "1" → "8" → "2" → "POWER" button on the Remote Control.
3. Select "Service" on the first display of the Service mode menu.
4. Press the ▲ ▼ (Up or Down) button to move to INDEX DELAY, then press ENTER to select.
5. The INDEX DELAY setup screen (with a red bar at the bottom of the screen) will be displayed.
6. Press the ◀ ▶ (Left of Right) button to check the red color at the bottom of the screen at its minimum and maximum values of changing from red to magenta, then adjust to the mean value.

2-4 Projected Image Adjustment

1. Turn off the power to make the SET STAND-BY mode.
2. In order to enter the Service Mode, Press "Mute" → "1" → "8" → "2" → "POWER" button on the Remote Control.
3. Select "Service" on the first display of the Service mode menu.
4. Select the V-position for vertical positioning and H-position for horizontal positioning by using the ▲ ▼(up, down) buttons.
   ※ Do not set the V-position value to 34 or 35.
   (Setting to these values will cause horizontal lines on the right side of the screen.)

2-5 ACTUATOR GAIN Adjustment

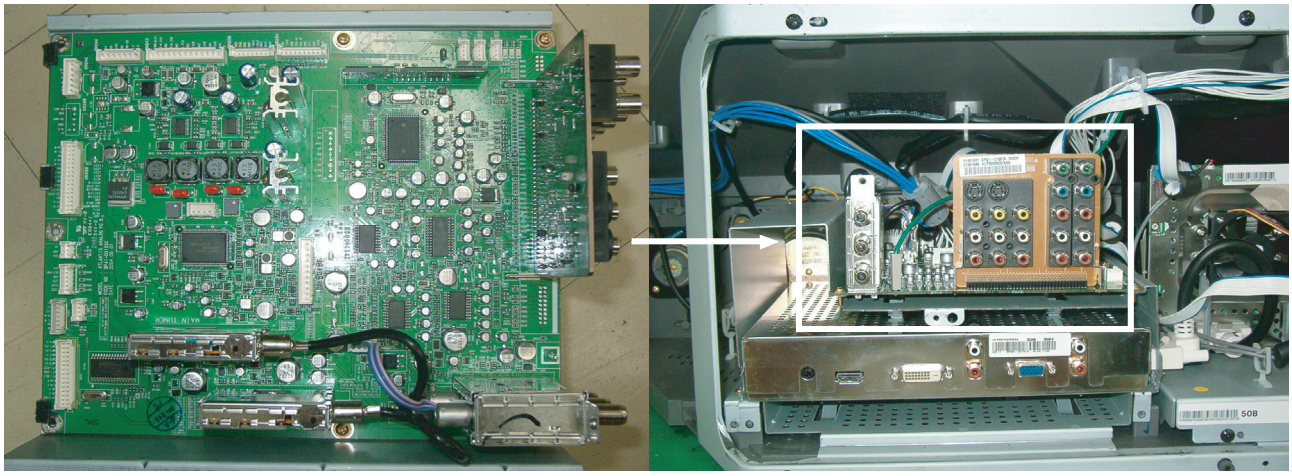
1. Before Adjustment
   1) Turn off the power to make the SET STAND-BY mode.
   2) In order to enter the Service Mode, Press "Mute" → "1" → "8" → "2" → "POWER" button on the Remote Control.
   3) Select "Service" on the first display of the Service mode menu.
   4) Press the ▲ ▼(Up or Down) button to move to ACTUATOR GAIN, then press ENTER to select.



2. Making Adjustments
   1) As shown in the picture above, change the actuator values to eliminate saw tooth shapes.
      - To fine tune, increase the data value ensuring that you get the center between the starting and ending points of the disappearing saw tooth shape.

2-6 ASSY PCB ANALOG Service Manual

2-6-1 Assy Analog Board



* Distributes supply voltage from the Power Board to Digital Board
* Transfers Turn-On Command from Digital Board to Power Board
* Encompasses the majority of the Audio Circuit
* Analog Video Switching / Processing
* Analog AudioSwitching / Processing

2-6-2 Analog Board Connector Pin

CN251

Supplies power to SUB Detector/Actuator

Pin Name	SUB Detector/Actuator	PIN No.		SUB Detector/Actuator	Pin Name
GND	Ground	1	2	Fan-VCC	12VB
GND	Ground	3	4	SCL-Memory	SDA-M
SCL-M	SCL-Memory	5	6	Ground	GND
5VA	5VA	7	8	Ground	GND
70VB	70VB	9	10	Ground	GND

CN223

Receives AV Signals from PCB SIDE-AV

Pin Name	Side AV	PIN No.		Side AV	Pin Name
Side-Y	SVHS Y (Luma)	1	2	SVHS C (Chroma)	Side-C
GND	Ground	3	4	Video (CVBS)	Side-V
GND	Ground	5	6	Side Sound L	Side-L
GND	Ground	7	8	Side Sound R	Side-R
GND	Ground	9	10	SVHS Jack Detect	Side-SDET
Side-VDET	Video Jack Detect	11	-		

CN257

Supplies AV Signals to PCB DIGITAL

Pin Name	I/O	PIN No.		I/O	Pin Name
Comp1-Y	←	1	2		GND
Comp1-Pb	←	3	4		GND
Comp1-Pr	←	5	6		GND
Comp2-Y	←	7	8		GND
Comp2-Pr	←	9	10		GND
Comp2-Pb	←	11	12		GND
N.C.	←	13	14		GND
N.C.	←	15	16		GND
N.C.	←	17	18		GND
Main-Y/V	←	19	20		GND
Main-C	←	21	22		GND
Sub-Y/V	←	23	24		GND
Sub-Y/V	←	25	26		GND
Caption-CVBS	←	27	28		GND
IR	←	29	30		GND

CN258

Connects Control Signals between PCB Analog and PCB Digital

Pin Name	I/O	PIN No.		I/O	Pin Name
LED1	↔	1	2	↔	SDA-Micom
LED2	→	3	4	←	SCL-Micom
LED3		5	6		GND
Key1	←	7	8	↔	SDA-Analog
Key2		9	10	←	SCL-Analog
Reset-D	←	11	12		GND
I2C-STOP	←	13	14	←	SDA-Digital
Power-SW	←	15	16		SCL-Digital
N.C.		17	18	←	GND
N.C.	←	19	20	←	I2S-CLK-HDMI
GND	←	21	22		I2S-EN-HDMI
MCLK_AUDIO	→	23	24		I2S-DATA-HDMI
S-MUTE	→	25	26	←	GND
PC-L	→	27	28	←	DVI-L
PC-R		29	30		DVI-R
GND	←	31	32	←	GND

CN243 / CN244

Receives Power Signals from PCB POWER

Pin Name	PIN No.		Pin Name
Power-Mute	1	2	S14.5VB
S-GND	3	4	S14.5VB
S-GND	5	6	5.7VB
GND	7	8	12VB
GND	9	10	12VB
GND	11	12	70VB
GND	13	-	

Pin Name	PIN No.		Pin Name
5VA	1	2	GND
33VB	3	4	GND
Power-SW	5	6	N.C
N.C.	7	-	

CN208

Supplies Power Signals to PCB DMD

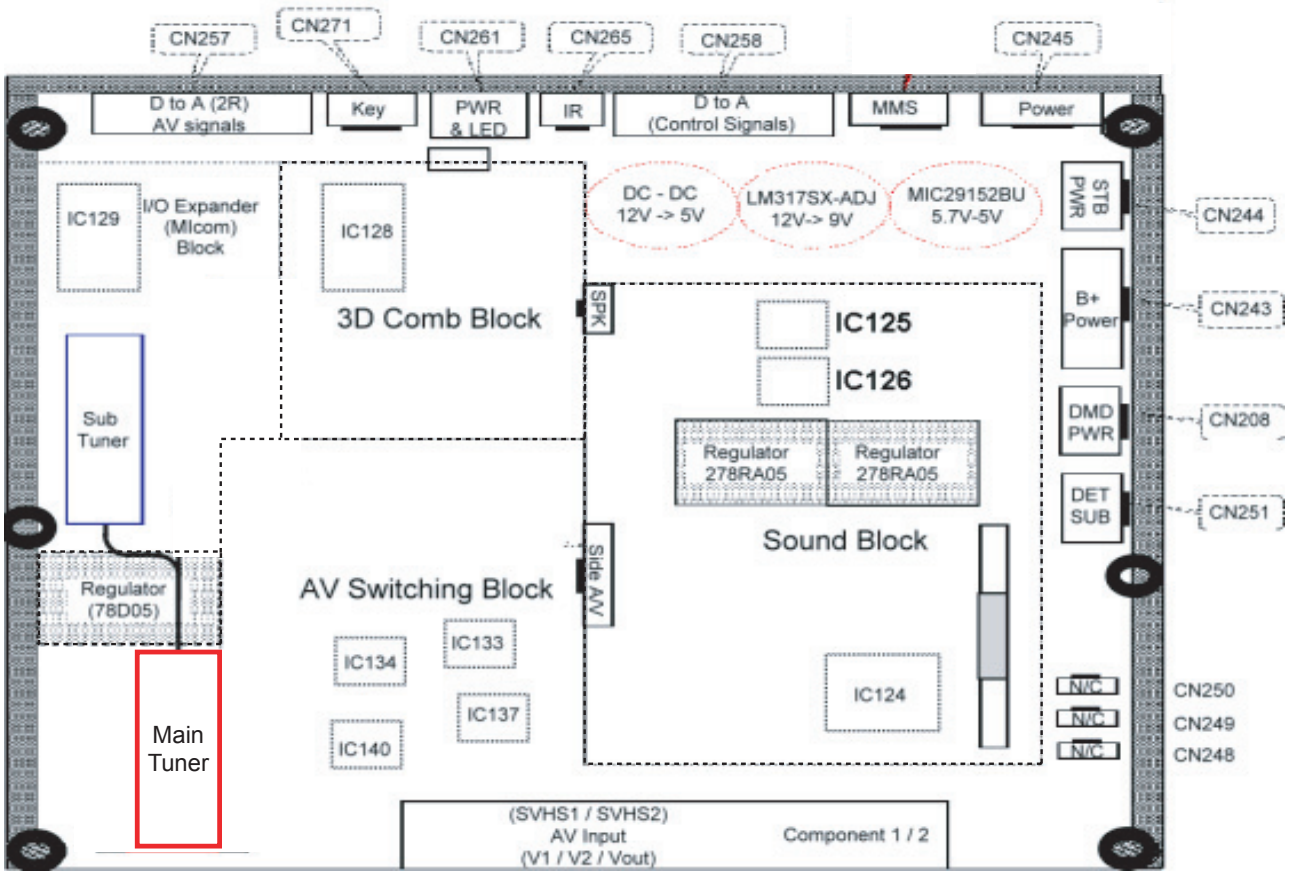
Pin Name	PIN No.		Pin Name
5VB	1	2	5VB
GND	3	4	GND
12VB	5	6	12VB
GND	7	8	GND
GND	9	-	

I/O Expander Pin Assignment

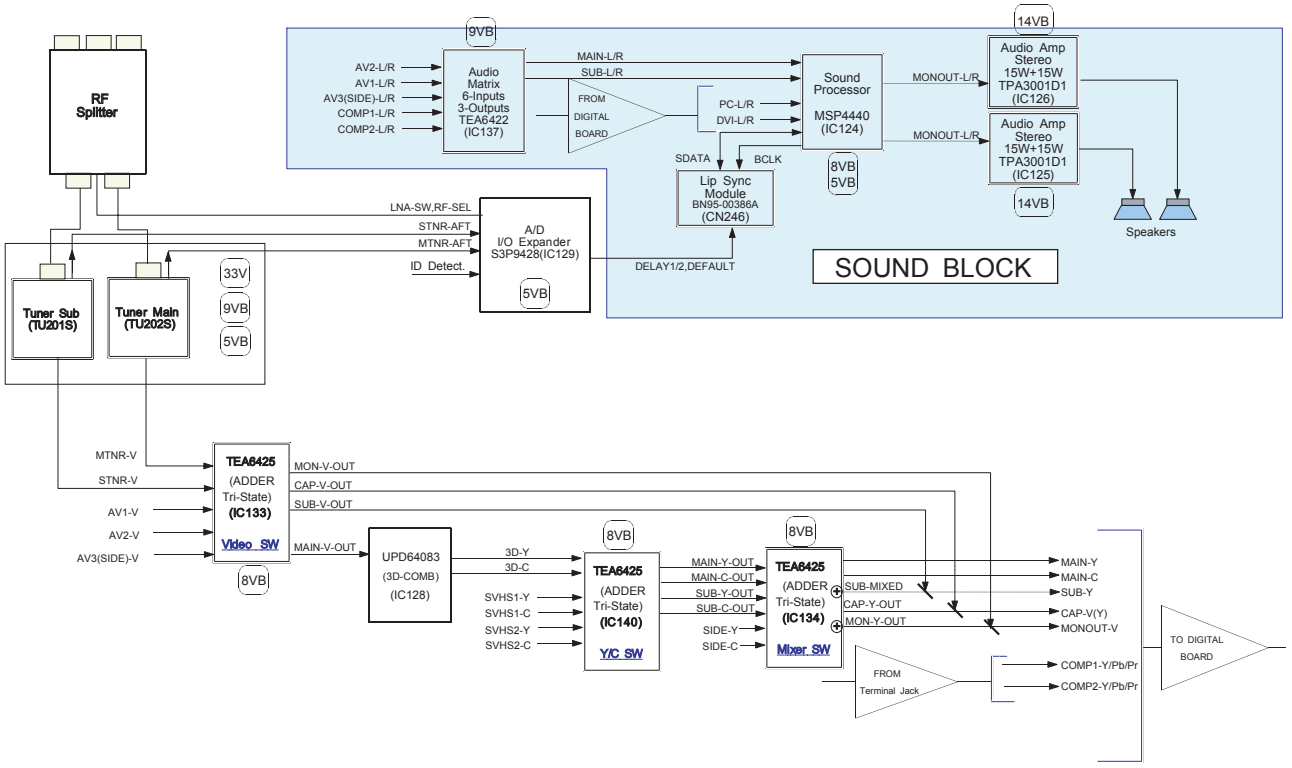
	DES	NAME	PIN		PIN	NAME	DES	
GND		VSS	1		32	VDD		
		XIN	2		31	P0.2	I/O	S1-DET
		XOUT	3		30	P0.3	I/O	S2-DET
GND		TEST	4		29	P0.4	I/O,ADC	Side-SDET
Comp2-DET	I/O	P0.1	5		28	P0.5	I/O,ADC	V1-DET
Comp1-DET	I/O	P0.0	6		27	P0.6	I/O,ADC	V2-DET
RESET-D		RESET	7		26	P0.7	I/O,ADC	Side-VDET
RF-SEL	○	P3.0	8	S3P9428/32 -SOP	25	P3.1	○	SOUND-RESET
LNA-SW	○	P3.2	9		24	P3.3	○	DEFAULT
MTNR-AFT	I/O,ADC	P2.0	10		23	P1.0	I/O	DELAY1
STNR-AFT	I/O,ADC	P2.1	11		22	P1.1	I/O	DELAY2
N.C.	I/O,ADC	P2.2	12		21	P1.2	I/O	GAIN0
N.C.	I/O,ADC	P2.3	13		20	P1.3	I/O	GAIN1
RF-AGC	I/O,ADC	P2.4	14		19	P2.7	SCL	SCL-A
GND	ADDRESS	P2.5	15		18	P2.6	SDA	SDA-A
GND		AVSS	16		17	AVREF		

2-6-3 Block Diagram

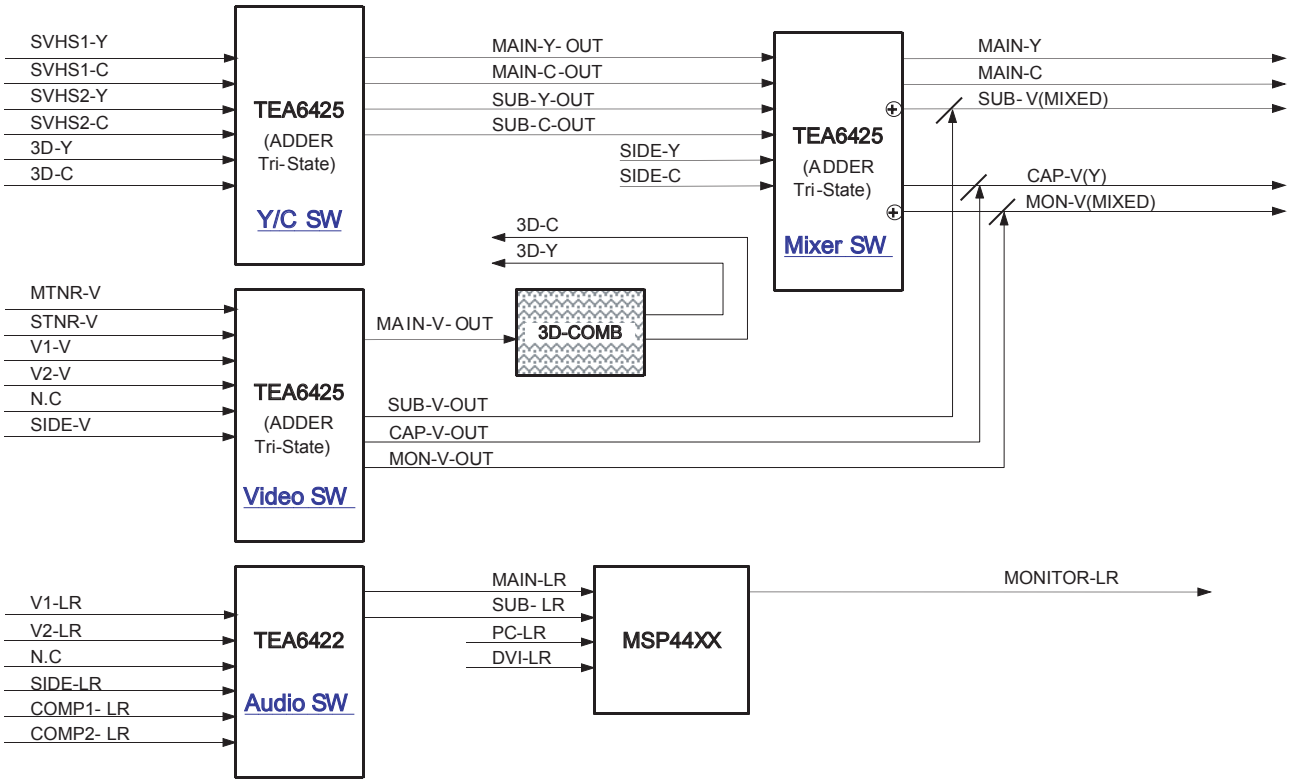
1. Analog PCB Configuration



2. Analog Block Diagram

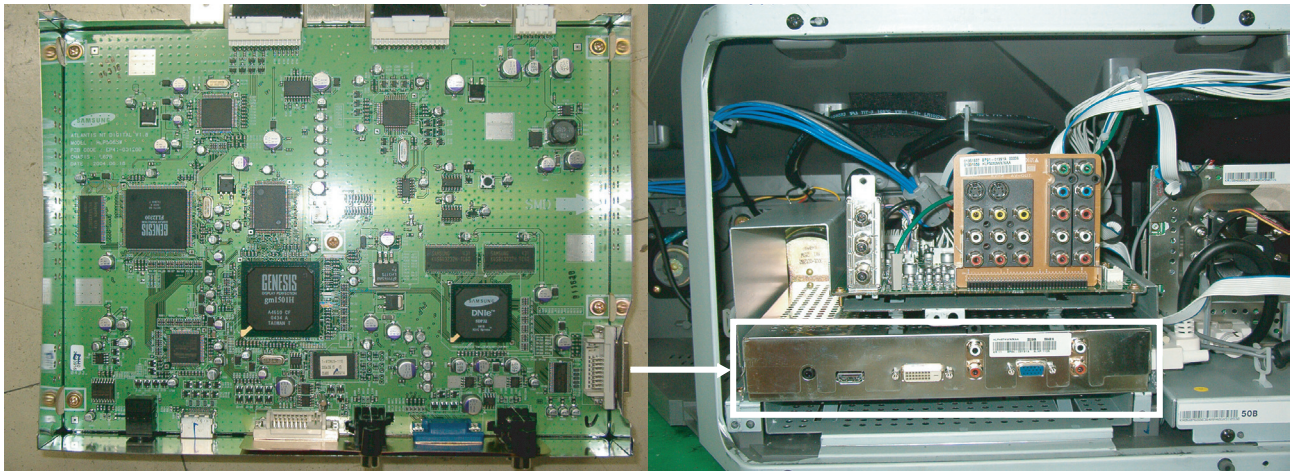


3. AV Switching (TE64XX) Block - NTSC



2-7 ASSY PCB DIGITAL Service Manual

2-7-1 Assy Digital Board



* Microprocessor (Generates turn on signal to power board)
* Monitor LED's
* All Digital Video Processing
* Sensor / Switch Controls
* OSD / Menu

2-7-2 Digital Board Connector Pin

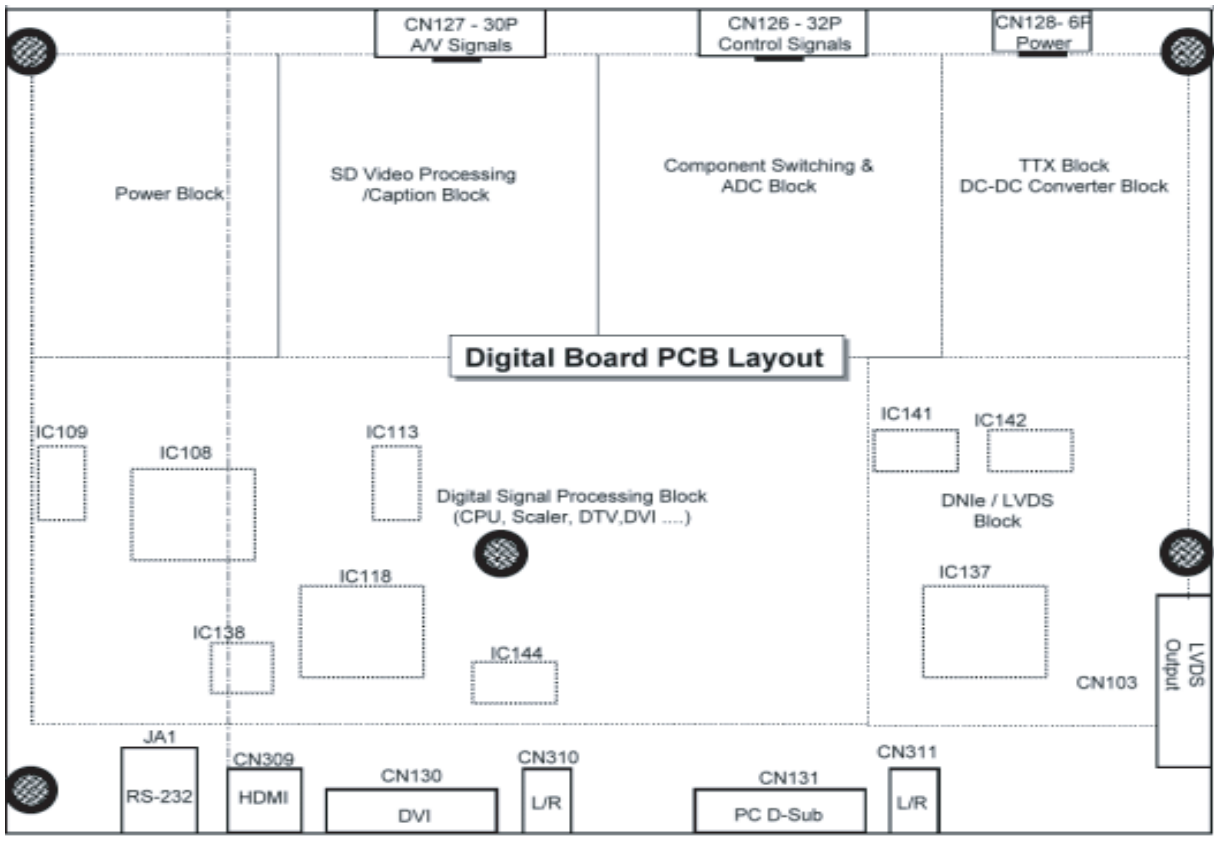
REFERENCE	TERMINAL	SPEC
CN127	1	COMP1-Y
	2	GND
	3	COMP1-PB
	4	GND
	5	COMP1-PR
	6	GND
	7	COMP2-Y
	8	GND
	9	COMP2-PB
	10	GND
	11	COMP2-PR
	12	GND
	13	N.C
	14	GND
	15	N.C
	16	GND
	17	N.C
	18	GND
	19	MAIN-Y
	20	GND
	21	NAIN-C
	22	GND
	23	SUB-Y
	24	GND
	25	SUB-C
	26	GND
	27	CAPTION-CVBS
	28	GND
	29	IR
	30	GND

REFERENCE	TERMINAL	SPEC
CN126	1	LED1
	2	SDA-MICOM
	3	LED2
	4	SCL-MICOM
	5	LED3
	6	GND
	7	KEY1
	8	SDA-ANALOG
	9	KEY2
	10	SCL-ANALOG
	11	RESET-D
	12	GND
	13	I2C-STOP
	14	SDA-DIGITAL
	15	POWER-SW
	16	SCL-DIGITAL
	17	SCART1-FB
	18	GND
	19	SCART3-FB
	20	I2S-CLK-HDMI
	21	GND
	22	I2S-EN-HDMI
	23	MCLK_AUDIO
	24	I2S-DATA-HDMI
	25	S-MUTE
	26	GND
	27	PC-L
	28	DVI-L
	29	PC-R
	30	DVI-R
	31	GND
	32	GND

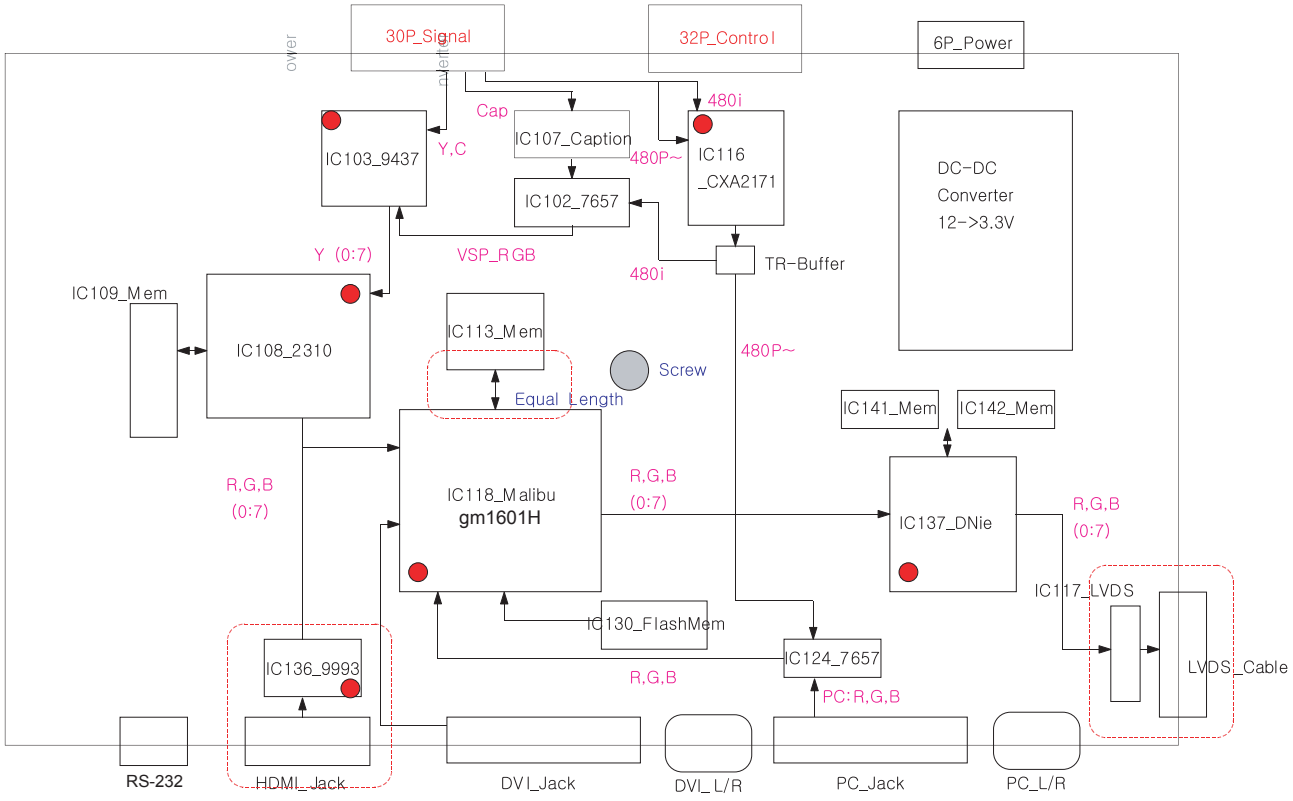
REFERENCE	TERMINAL	SPEC
CN128	1	12V
	2	GND
	3	5.7V
	4	GND
	5	5V
	6	GND

2-7-3 Block Diagram

1. Digital PCB Configuration

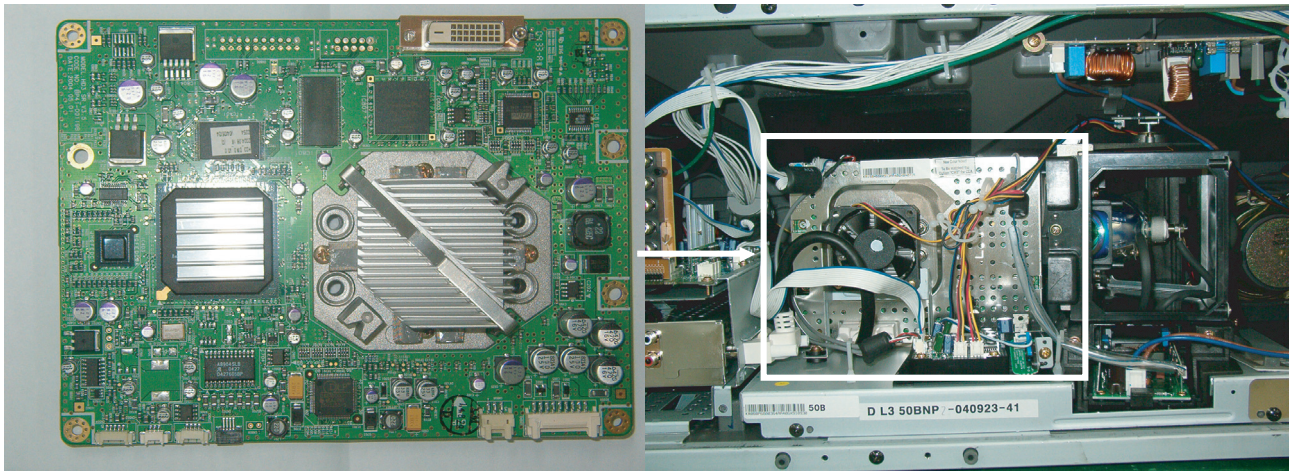


2. Digital Block Diagram



2-8 ASSY PCB DMD Service Manual

2-8-1 Assy DMD Board



* Control Lamp Turn-On
* Powers Color Wheel Motor
* Drives DMD Panel
* Sensor Control
* Attached to optical Engine
* Actuator Control

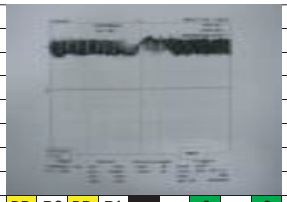
2-8-2 DMD Panel Pin Terminal Characteristics Diagram

※ Remove the heat sink attached to the DMD Board and tighten the screws in four places and then inspect the characteristics of each pin terminal.

	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
A						V		V		DA	N6	DA	N4	V		DA	N2	DA	P0	V		G		G				V		V		G		G				V		N	A
B			V								DA	P6	DA	P4			DA	P2	DA	N0										G					C						B
C								G				DA	P7	DA	P5				DA	N3	DA	N1									G									V	C
D	DA	N8	DA	P8	C		C				DA	N7	DA	N5			DA	P3	DA	P1						G									V					D
E		DA	N10	DA	P10	DA	P9	DA	N9																														V	E
F	V																																	V		V2			F
G		DA	N12	DA	P12	DA	P11	DA	N11																														V2	G
H	V2		V2		DA	P13	DA	N13																														V2		H
J		V																																		V		V2	J
K	DA	P14	DA	N14	DA	P15	DA	N15																														V		K
L		DB	P14	DB	N14	DB	P15	DB	N15																													ME		V	L
M	V																																		14		11		V2		M
N		V2		V2		DB	P13	DB	N13																									10		5		1	V2	N
P	DB	N10	DB	P10	DB	P11	DB	N11																											4		V		V2		P
R		V																																			V		V2	R
T	DB	N10	DB	P10	DB	P9	DB	N9																															V		T
U		DB	N8	DB	P8							DB	N7	DB	N5			DB	P3	DB	P1			6		3		T0		G						0			V	U
V							EV				DB	P7	DB	P5			DB	N3	DB	N1			13		9					G									V	
W		V		C		C				DB	P6	DB	N4			DB	P2	DB	N0			12		8			7		T2		G		C				V		W
Y					V		V		DB	N6	DB	P4	V		DB	N2	DB	P0	V							V		2		T1		G				V			Y
	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

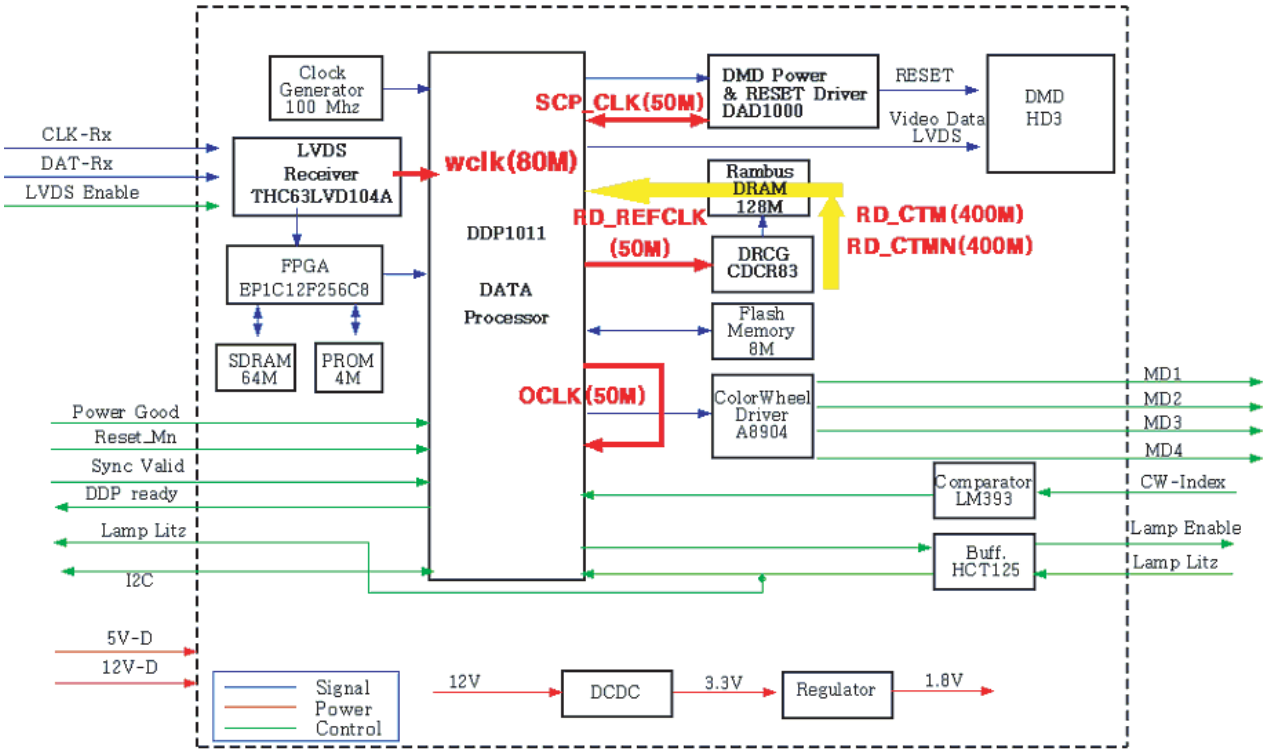
The vertical lines, which may occur due to improper connections between the panel and the PCB, occur with intervals of 50 inches(26mm). If vertical lines occur with intervals of more than 26mms, it indicates a failure of the DDP1011 IC itself. If they occur with intervals of less than 26mm, it means that more than two pins have bad connections.

DA,DB output wave [Screen:WHITE]



Pin Name	Description	Pin Name	Description
V	Voltage : 3.3V	T	Test Point
V2	VCC2 : 8V	ME	Mirror Bias Extra
DA	A Channel Data Bus [When measured, there should be a waveform]	C	Clock
DB	B Channel Data Bus [When measured, there should be a waveform]	P#	A,B Channel Positive
No.	MBRST# (Mirror Bias Rest) 26V	N#	A,B Channel Negative
G	The part from the present position to the GND (The black part is also a GND.)		

2-8-3 Block Diagram



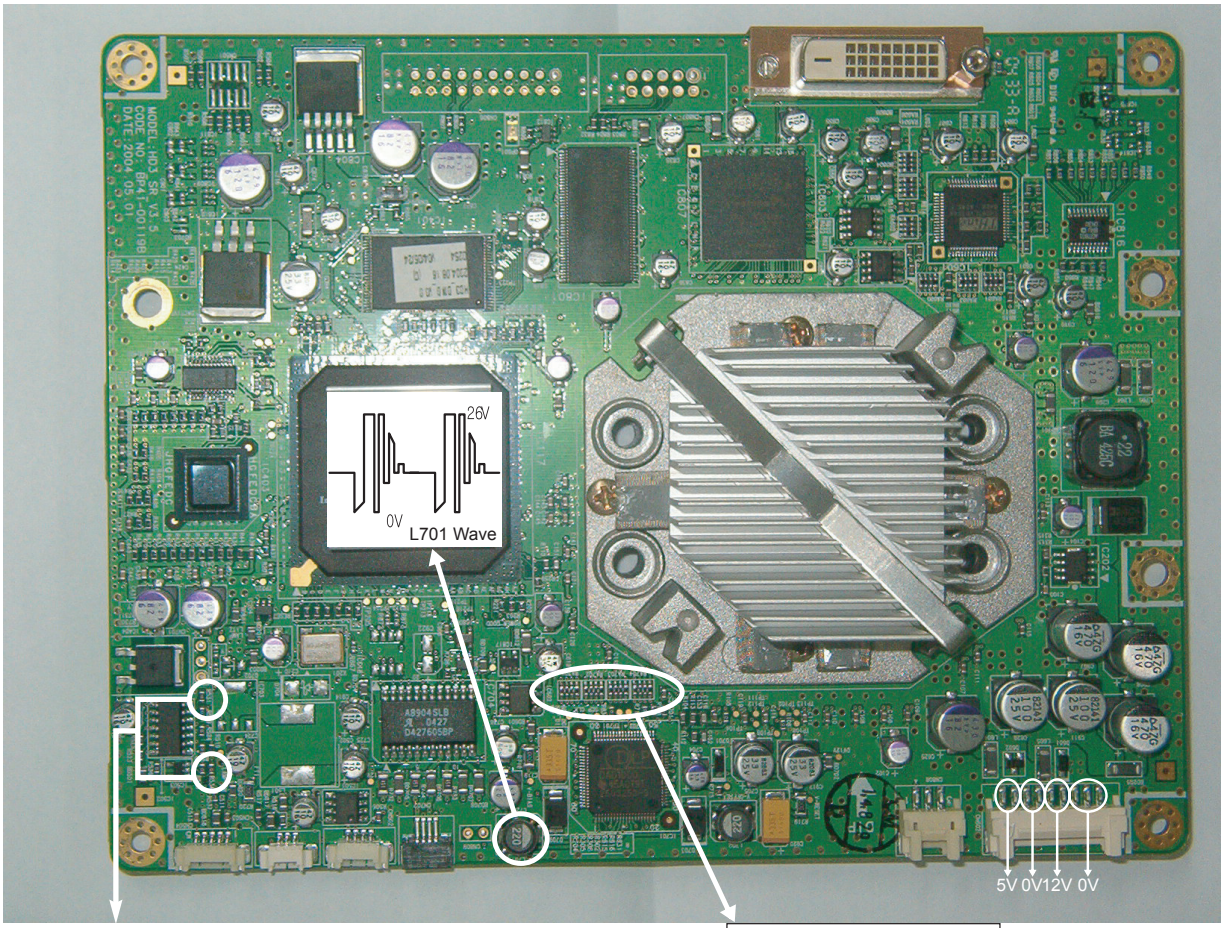
2-8-4 Description of Terminal Characteristics

PIN NAME	DESCRIPTION
SCTRL_BN/P	B channel LVDS serial control
DCLK_BN/P	B channel LVDS CLOCK
SCPDI	SERIAL CONTROL DATA INPUT
SCPDO	SERIAL CONTROL DATA OUTPUT
SCPENB	SERIAL CONTROL ENABLE
SCPCK	SERIAL CONTROL CLOCK
DMD RESETB	DMD LOGIC RESET
MBRST(14:0)	MIRROR BIAS RESET
MBRST_EXTRA	UNUSED MIRROR BIAS RESET
SCR_CLR	TEST CLEAR PINS(NORMAL GND)
READOUTA(1:0)	A-CHANNEL SERIAL DATA OUT DURING SPAM READ TEST OPERATION
READOUTB(1:0)	B-CHANNEL SERIAL DATA OUT DURING SPAM READ TEST OPERATION
TP(2:0)	MANUFACTORING TEST POINT(NO CONNECTED DURING NORMAL CPERATION)
RSV_A(4:0)/RSV_B(4:0)	RESERVED PINS(NORMAL:GND)
EVCC	REFERENCE VOLTAGE DURING SPAM READ TEST OPERATION(NORMAL GND)
VCC2	MIRROR ELECTRODE VOLTAGE(7.3V)
VCC	LOGIC SUPPLY
VSS	LOGIC GROUND

2-8-5 Engine Failure Inspection Flow Chart for the DMD Board

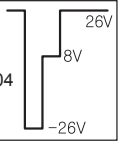
No	Description	Key Point	Remark
1	1) When the power cord is plugged in, 2) DC 380V is automatically supplied to the ballast.	Check whether the DC380V power is supplied to the ballast.	
2	1) When the power key is pressed via the remote control, the micom of the digital board outputs high (5V) PWR signals. 2) The power board operates normally. 5V and 12V are supplied to the DMD CN105 terminal.	Check whether 5V and 12V are supplied to the CN105 terminal.	* 12V must be supplied to operate the motor. (The voltage of the motor driving power is 12V.)
3	1) The MTR Reset signal is supplied to the R161 terminal of the motor IC101 from the micom on the digital board and then the motor starts to drive. 2) If the color wheel rotates for a certain time and then stops, check whether the color wheel sensor is normal. (Check the waveform on the No.2 terminal below CN102.)	After the set is powered on, check whether 5V is detected on pin No.49 of IC101. → After a while, the sound generated by the rotating color wheel is heard.	* If 5V is not detected, the motor will not operate.
4	1) Check whether the signal (SCI: START CONTROL INPUT) that turns on lamp #2 of CN109 on the DMD board is high (5V).	Check whether CN109 #2 signal is 5V.	* When SCI is high (5V), the lamp litz of CN109 is low (0V). * CN109 #2 terminal voltage changes to pulse wave form 14 seconds after (for 50 inch TV) the time that the voltage is 5V.
5	1) Method for checking whether the DDP1010 IC RESET is normal.	If the voltage between R254 and R255 is 3V, it is normal.	* When about 4 seconds have passed after changing to pulse waveform, the screens are displayed on the set.

2-8-6 Output Voltage States of the DMD Board Parts



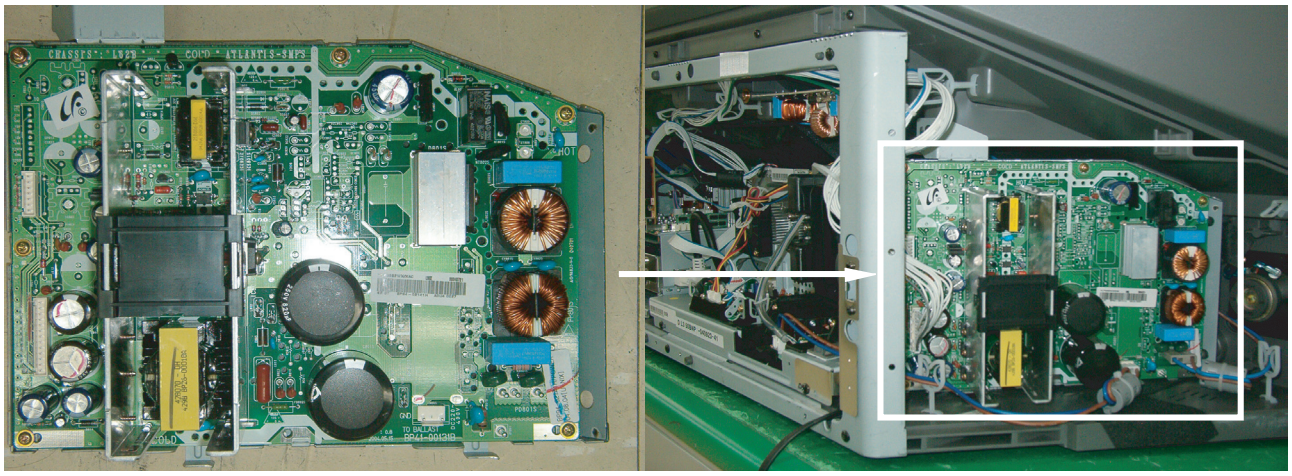
Loc.	Characteristics	
R534	LAMP EN	High from DDP1010
R531	LAMP LITZ	High (5V) before the lamp turns on. Low (0V) when the lamp turns on.

Output terminal Wave form for RA701,702,703,704



2-9 ASSY PCB POWER Service Manual

2-9-1 Assy Power Board



* Supply DC Voltage

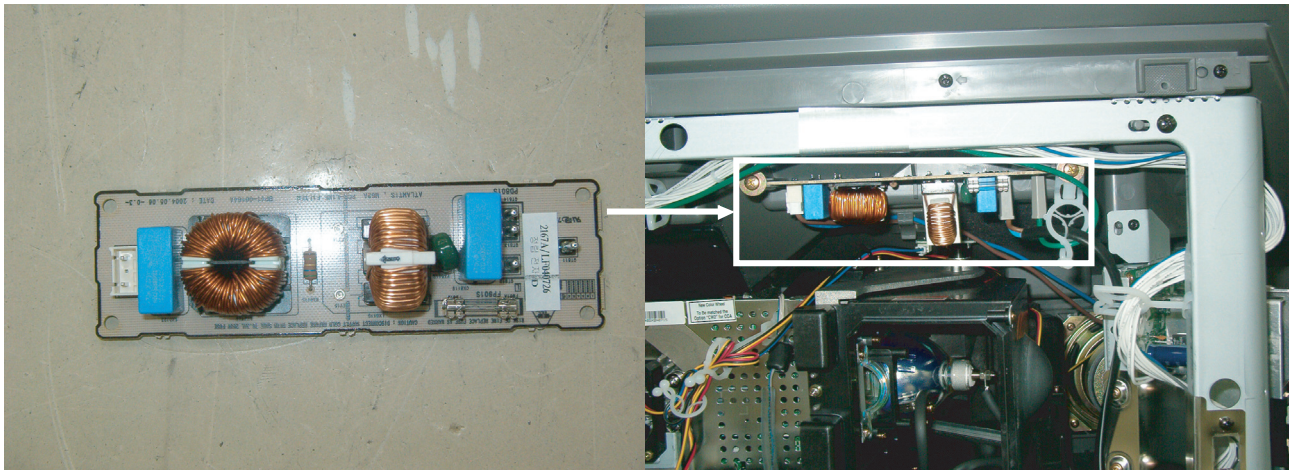
2-9-2 Power Board Connector Pin

CN803							
Pin #	1	2	3	4	5	6	7
Spec	5VA	GND	33VB	GND	Power-S/W	N.C.	N.C.
Used	Supplies DC voltage to the PCB ANALOG						

CN802							
Pin #	1	2	3	4	5	6	7
Spec	Power-Muste	S14.5VB	S-GND	S14.5VB	S-GND	5.7VB	GND
Pin #	8	9	10	11	12	13	
Spec	12VB	GND	12VB	GND	70VB	GND	
Used	Supplies DC voltage to the PCB ANALOG						

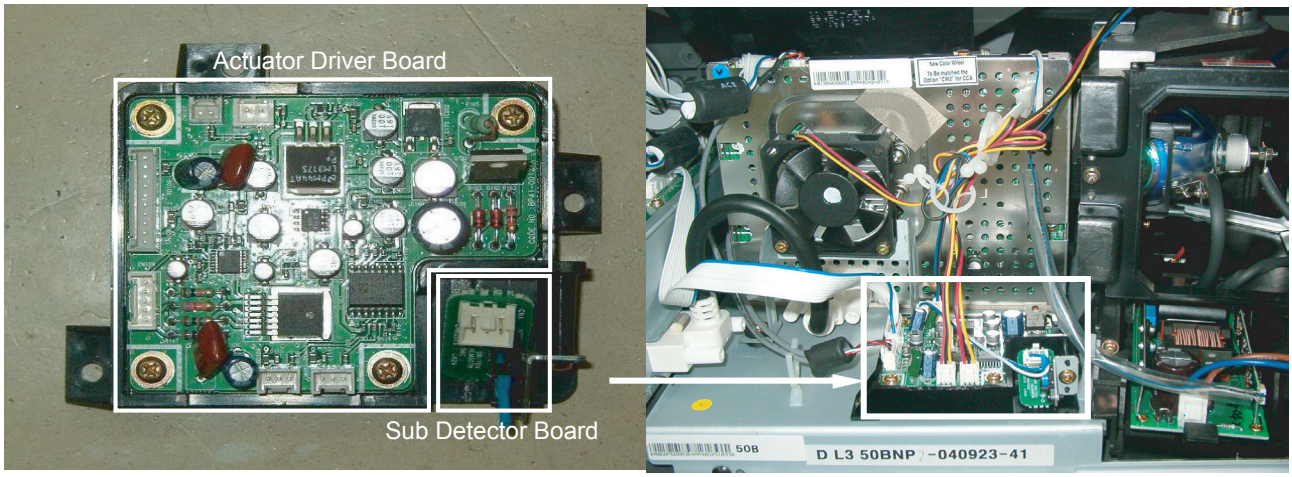
2-10 Line Filter

2-10-1 Assy Line Filter Board



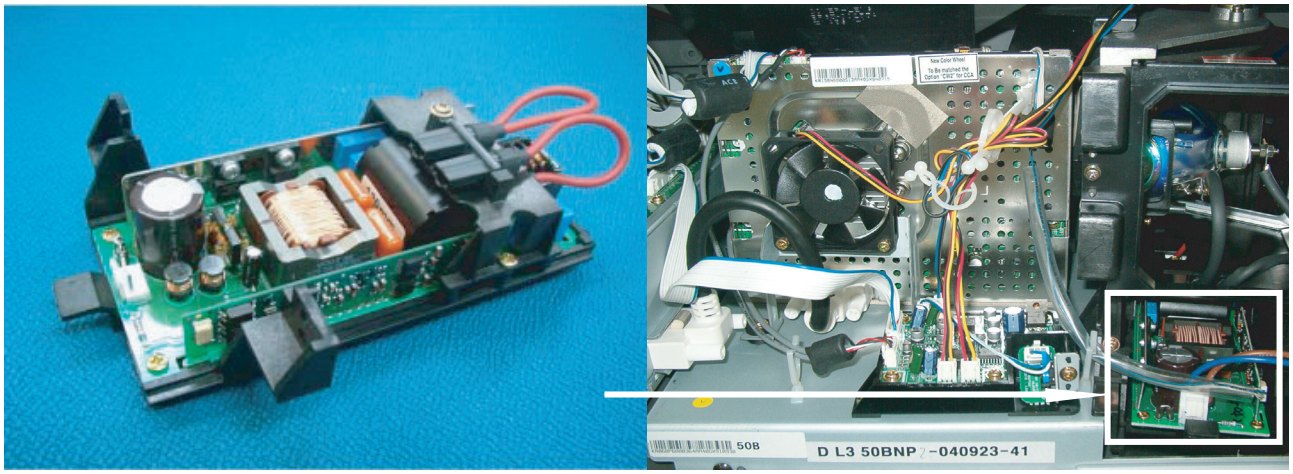
2-11 Actuator Driver & Sub Dector Board

2-11-1 Assy Actuator Driver & Sub Dector Board



2-12 Ballast

2-12-1 Assy Ballast Board



* Supplies Power Signals to LAMP