DLP TV

Chassis : L67B(N)_Orchid
Model : HLT5676SX/XAA

SERVICE Manual

DLP TV

HL-T5676S

FEATURES

- HD Built in TV
- NTSC/ATSC Tuner Embedded
- 3D Ready
- PC input
- 3HDMI Interface Adopted
- Digital Audio output (OPTICAL) jack
- Firmware upgrade by USB Port

Refer to the service manual in the GSPN (see the rear cover) for the more information.

GSPN (Global Service Partner Network)

Area	Web Site
North America	service.samsungportal.com
Latin America	latin.samsungportal.com
CIS	cis.samsungportal.com
Europe	europe.samsungportal.com
China	china.samsungportal.com
Asia	asia.samsungportal.com
Mideast & Africa	mea.samsungportal.com

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1. Precaution

To avoid possible damages or electric shocks or exposure to radiation, follow the instructions below with regard to safety, installation, service and ESD.

1-1 Safety Precautions

1. Make sure all protective devices are properly installed including non-metallic handles and compartment covers when installing or re-installing the chassis or chassis assemblies.

2. Make sure that no gaps exist between the cabinets for children to insert their fingers in to prevent children from receiving electric shocks.

   Errors may occur when the resistance is below 1.0 MΩ or over 5.2 MΩ.
   In these cases, make sure that the device is repaired before sending it back to the customer.

3. Check for Electricity Leakage (Figure 1-1)
   Warning: Do not use an insulated transformer for checking the leakage. Use only those current leakage testers or mirroring systems that comply with ANSIC 101.1 and the Underwriter Laboratory's specifications (UL1410, 59.7).

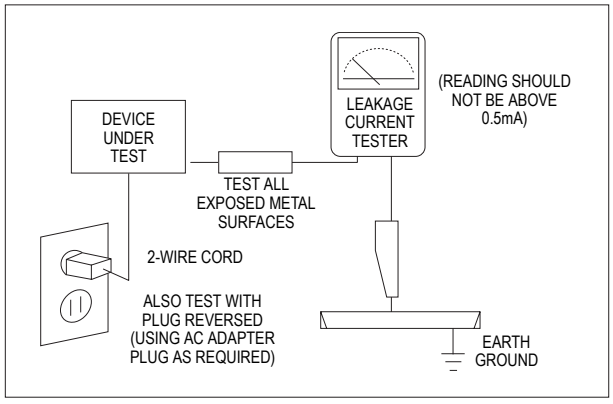


Fig. 1-1 AC Leakage Test

4. A high voltage is maintained within the specified limits using safety parts, calibration and tolerances. When voltage exceeds the specified limits, check each special part.

5. Warning for Engineering Changes:
   Never make any changes or additions to the circuit design or the internal part for this product.
   Ex: Do not add any audio or video accessory connectors. This might cause physical damage. Furthermore, any changes or additions to the original design/engineering will invalidate the warranty.

6. Warning - Hot Chassis:
   Some TV chassis are directly connected to one end of the AC power cord for electrical reasons.
   Without insulated transformers, the product can only be repaired safely when the chassis is connected to the earthed end of the AC power source.

   To make sure the AC power cord is properly connected, follow the instructions below. Use the voltmeter to measure the voltage between the chassis and the earthed ground. If the measurement is over 1.0V, unplug the AC power cord and change the polarity before re-inserting it. Measure the voltage between the chassis and the ground again.

7. Some TV chassis are shipped with an additional secondary grounding system. The secondary system is adjacent to the AC power line. These two grounding systems are separated in the circuit using an unbreakable/unchangeable insulation material.

8. When any parts, material or wiring appear overheated or damaged, replace them with new regular ones immediately. When any damage or overheating is detected, correct this immediately and make a regular check of possible errors.

9. Check for the original shape of the lead, especially that of the antenna wiring, any sharp edges, the AC power and the high voltage power. Carefully check if the wiring is too tight, incorrectly placed or loose. Never change the space between the part and the printed circuit board. Check the AC power cord for possible damages. Keep the part or the lead away from any heat-emitting materials.

10. Safety Indication:
    Some electrical circuits or device related materials require special attention to their safety features, which cannot be viewed by the naked eye. If an original part is replaced with another irregular one, the safety or protective features will be lost even if the new one has a higher voltage or more watts.

    Critical safety parts should be bracketed with (⚠ ⚠). Use only regular parts for replacements (in particular, flame resistance and dielectric strength specifications). Irregular parts or materials may cause electric shock or fire.

11. Pay additional attention to the current leakage as the voltage between the power board and the ballast is 220 to 440v, i.e. very high.
    And also beware of possible electric shock from the primary power source.

1-2 Servicing Precautions

Warning 1: First carefully read the "Safety Instruction" in this service manual.
When there is a conflict between the service and the safety instructions, follow the safety instruction at all times.

Warning 2: Any electrolytic capacitor with the wrong polarity will explode.

1. The service instructions are printed on the cabinet, and should be followed by any service personnel.

2. Make sure to unplug the AC power cord from the power source before starting any repairs.
   (a) Remove or re-install parts or assemblies.
   (b) Disconnect the electric plug or connector, if any.
   (c) Connect the test part in parallel with the electrolytic capacitor.

3. Some parts are placed at a higher position than the printed board. Insulated tubes or tapes are used for this purpose. The internal wiring is clamped using buckles to avoid contact with heat emitting parts. These parts are installed back to their original position.

4. After the repair, make sure to check if the screws, parts or cables are properly installed. Make sure no damage is caused to the repaired part and its surroundings.

5. Check for insulation between the blade of the AC plug and that of any conductive materials (i.e. the metal panel, input terminal, earphone jack, etc).

6. Insulation Check Process: Unplug the power cord from the AC source and turn the switch on. Connect the insulating resistance meter (500v) to the AC plug blade.

   The insulating resistance between the blade of the AC plug and that of the conductive material should be more than 1 MΩ.

7. Any B+ interlock should not be damaged.
   If the metal heat sink is not properly installed, no connection to the AC power should be made.

8. Make sure the grounding lead of the tester is connected to the chassis ground before connecting to the positive lead. The ground lead of the tester should be removed last.

9. Beware of risks of any current leakage coming into contact with the high-capacity capacitor.

10. The sharp edges of the metal material may cause physical damage, so ensure wearing protective gloves during the repair.

1-3 Static Electricity Precautions

1. Some semi-conductive ("solid state") devices are vulnerable to static electricity. These devices are known as ESD. ESD includes the integrated circuit and the field effect transistor. To avoid any materials damage from electrostatic shock, follow the instructions described below.

2. Remove any static electricity from your body by connecting the earth ground before handling any semi-conductive parts or ass'ys. Alternatively, wear a dischargeable wrist-belt.
   (Make sure to remove any static electricity before connecting the power source - this is a safety instruction for avoiding electric shock)

3. Remove the ESD ass'y and place it on a conductive surface such as aluminum foil to prevent accumulating static electricity.

4. Do not use any Freon-based chemicals.
   Such chemicals will generate static electricity that causes damage to the ESD.

5. Use only grounded-tip irons for soldering purposes.

6. Use only anti-static solder removal devices.
   Most solder removal devices do not support an anti-static feature. A solder removal device without an anti-static feature can store enough static electricity to cause damage to the ESD.

7. Do not remove the ESD from the protective box until the replacement is ready. Most ESD replacements are covered with lead, which will cause a short to the entire unit due to the conductive foam, aluminum foil or other conductive materials.

8. Remove the protective material from the ESD replacement lead immediately after connecting it to the chassis or circuit ass'y.

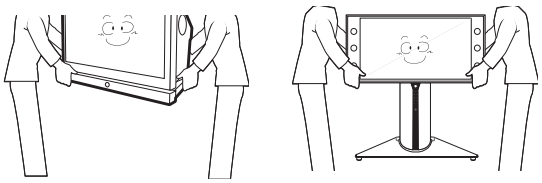
9. Take extreme caution in handling any uncovered ESD replacements. Actions such as brushing clothes or lifting your leg from the carpet floor can generate enough static electricity to damage the ESD.

CAUTION

These servicing instructions are for use by qualified service personnel only.
To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

1-4 Installation Precautions

1. For safety reasons, more than two people are required for carrying the product.



2. Keep the power cord away from any heat emitting devices, as a melted covering may cause fire or electric shock.

3. When installing the product, make sure to keep it away from the wall (more than 10cm/4 inches spacing should be around the Top,Back, and both sides of the unit) for ventilation purposes.
   Poor ventilation may cause an increase in the internal temperature of the product, resulting in a shortened component life and degraded performance.

4. Bend the external antenna cable when connecting it to the product. This is a measure to protect it from being exposed to moisture. Otherwise, it may cause a fire or electric shock.

5. Make sure to turn the power off and unplug the power cord from the outlet before repositioning the product. Also check the antenna cable or the external connectors if they are fully unplugged. Damage to the cord may cause fire or electric shock.

6. Keep the antenna far away from any high-voltage cables and install it firmly. Contact with the high-voltage cable or the antenna falling over may cause fire or electric shock.

7. When connecting the RF antenna, check for a DTV receiving system and install a separate DTV reception antenna for areas with no DTV signal.

8. Check the basics of the screen test.
   - Image position/size, Tilt adjustment, Actuator activation

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2. Product Specification

2-1 Product Features

Block	Specfication	Major IC	Remark
DMD	- Panel Resolution : 1920x1080	xHD5 DMD Panel	
RF	- Intergrated HDTV Tuner (NTSC/ATSC TUNER Embedded)	QamLink	
Power	- Input Voltage : AC110V~120V - Stand-By : under 1W	Stand-by (KA1M0565)	
Video	- MPEG2 Decoder/Analog Decoder. - (IPC, Scaler, Video enhancer)	S5H2201, CXD3815 SDP62	
Sound	- speaker : 10W + 10W - Trusurround XT, Dolby Digital	STV8258	
Cabinet	- K7 Design		

■ Chip Description

- S5H2201 : SAMSUNG S5H2201 HD-TV Audio/Video Decoder Processor is designed to provide a cost-effective, low power size and high performance micro-controller solution for HD-TV,SD-TV, STB applications. To reduce total system cost, S5H2201 also provides the following features: separate 4KB Instruction and 4KB Data Cache, an improved audio DSP, a programmable video encoder with a dual output capability of interlaced and progressive scan, Memory controller, 4-channel Timers with PWM, I/O Ports, 2-channel 8-bit ADCs, 5-channel 10-bit DACs, 2-channel UARTs with handshake, IIC-BUS interface, IIS-BUS interface, SIO, Memory-Stick(NOTE) Card Interface and PLL for clock generation.

- SDP62 (B1) : * 4CH Input
  CH1, CH2 : 30Bit (RGB, YCbCr444, 601,10Bit or 8Bit)
  CH3 : 24Bit (RGB,YCbCr444 each 8bit, 601 10bit)
  CH4 : 20Bit (Only 601 8Bit or 10Bit)
  * OSD Input
  * Output
  Digital RGB(10Bit 444) Digital YCbCr(10Bit 444)
  RGB/YCbCr 10bit OUTPUT @CLK_OUT
  RGB/YCbCr 20bitEven/Odd) OUTPUT

- CXD3815 : The CX3815Q is a multi chroma that supports TV systems worldwide. It has a motion adaptive 3-D Y/C separation function for NTSC and PAL signals. In addition, this chip also has analog and digital composite signal and component signal input functions, and functions as a video signal processor IC that outputs the component signals selected from each video signal format input.(Applications: color TV's)

- STV 8258 : The STV82x8 family, based on audio digital signal processors (DSP), performs high quality and advanced dedicated digital audio processing.These devices provide all of the necessary resources for automatic detection and demodulation of analog audio transmissions for NTSC TV broadcasts. Virtual or true, multi-channel capabilities and easy digital links make them ideal for digital audio low cost consumer applications. Starting from enhanced stereo up to independent control of 5 loudspeakers and a subwoofer (5.1 channels), the STV82x8 family offers standard and advanced features plus sound enhancements, spatial and virtual effects to enhance television viewer comfort and entertainment.

■ Important efficiency comparison

Item	S5H2201+SDP51/52(Before)	S5H2201+SDP62(After)
480i Input (Bit Resol.)	- 480i(10)→480p(10)→1080p(10) - De-interlacing No. 1	- 480i(10) →1080p(16) - De-interlacing No.1
1080i Input (Component)	- Input 10bit, Output 10bit - ME/MC IPC :480i, 1080bit	- Input 10bit, Output 10bit - ME/MC IPC :480i, 1080i
Graphic Display	- S5H2201→DNIe(Separate Port→ No P.E) - 1080p graphic muxing to the final output	- S5H2201→SDP62(Separate Port→No P.E) - 1080p Graphic muxing to the final output
NTSC Input	- 3D-comb→Main(TC90103FG) - Super NR→Main/Sub(2xSDP51)	- 3D-Comb → Main(CXD3815) - Super NR → Main/Sub(SDP62)

■ The advantage of SDP62

- Video processor integrating NR, IPC, Scaler and PE
- NR(Noise Reduction)
  * ME/MC NR
  * Adaptive NR using Noise Estimation
- IPC(Interlace to Progressive Conversion)
  * ME/MC IPC
  * Ticker detection
  * Film mode
- Scaler
  * Premium scaler(H=12Tap, V=8Tap 128 polyphase)
  * Dejagging
- PE(Picture Enhancement)
  * Motion Adaptive Detail Enhancement
  * Chrominance Transition Improvement
  * Contrast Adjustment
  * My Color Control & Management

2-2 Key Features

Model	HL-T5076S	HL-T5676S	HL-T6176S
Voltage	AC 110 - 120V~	AC 110 - 120V~	AC 110 - 120V~
Frequency of Operation	60Hz	60Hz	60Hz
Power Consumption	230 watts	230 watts	230 watts
Dimensions (W x D x H)	1156 x 270 x 773 inches 1156 x 270 x 773 mm	1290 x 270 x 847 inches 1290 x 270 x 847 mm	1400 x292 x 910 inches 1400 x292 x 910 mm
Weight	28.3Kg / 79.37 lbs	28.6 Kg / 79.37 lbs	33.6 Kg / 79.37 lbs

■ H/W Configuration
- DMD Panel : 0.65" (1920 x1080p, TI)
- One Panel Optical Chassis (K780)
- LAMP: 132W (50",56",61")
- NTSC/ATSC Tuners : NTSC/DTV Reception
- Support HDMI Interface : Adopts DVI/HDMI systems for digital HDs including STB.
- DNIe4 : High quality image implementation
- USB Interface : Use the USB interface for service purposes (S/W Upgrade),Wise Link
- 3D Ready feature

■ S/W Configuration
- MCU : Albatross CPU
- 4-Layered Architecture : Device Driver/OS/Hardware Abstraction/Application
- OSD : 32Bit True Color Graphics OSD
- Enhanced system stability by separating the DTV control and the application control systems into multi-processes.

■ Picture
- DMD Panel
  * Panel Size : 0.65"
  * Panel Resolution : 1920 x 1080
- Tuner : Integrated HDTV Tuner (NTSC/ATSC Embbeded)
- Display Format : 1920 x 1080

■ Sound
- Sound System : TruSurround XT,Dolby Digital
- Amp/Channel : 2 Channel Digital Amp
- Speaker System & Output(RMS)
  * Sound (RMS) : 10W + 10W

■ In/Out Terminals
- Rear : 2 RF In, 2 CVBS In, 2 S-VHS In, 2 Component In, 3 HDMI In(DVI compatible With Adaptive Jack Only), 1 Optical audio out, 1 Monitor out, 1 PC in, 3D Ready, 1 RS-232C port

■ Feature
- Component Interface (480i/480p/720p/1080i/1080p, Y/Pb/Pr)
- Digital Interface : 3HDMI
- Graphic Interface : PC
- Language : English/French/Spanish
- Picture Size : 4:3/16:9/Zoom1/Zoom2/Wide Fit/Just Scan
- V-CHIP
- Closed Caption
- Sleep Timer : 180 Min.
- Optical sound output
- RS-232C
- Wise Link
- Game Mode
- 3D Game

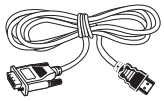
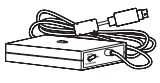
■ Remocon
- TM87C

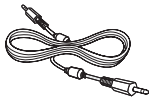
■ Power Supply
- AC 110V~120V

2-3 Specifications Analysis

Model		HL-R5078W	HL-R5668W	HL-T5676S
Design				
Picture	Display Device	DLP	DLP	DLP
	Built-in Tuner	ATSC, NTSC	ATSC, NTSC	ATSC, NTSC
	Display Format	1080p, 1080i, 720p, 480p, 480i	1080p, 1080i, 720p, 480p, 480i	1080p, 1080i, 720p, 480p, 480i
	Screen Size	50 inch	56 inch	56 inch
	Aspect ratio	16:9	16:9	16:9
	Progressive scan	Yes	Yes	Yes
	Digital Comb Filter	3D Comb	3D Comb	3D Comb
	First Surface Mirror	Yes	Yes	Yes
	Brightness	800cd/㎡	600cd/㎡	600cd/㎡
	Contrast	10000:1	10000:1	10000:1
	Color Wheel Size/Bearing	7segment/65 ¢ , Air Bearing	7segment/65 ¢ , Air Bearing	7segment/65 ¢ , Air Bearing
	Anti-glare Sun Screen	No	No	No
	Screen Pitch	0.098mm	0.098mm	0.098mm
	Image enhancer	DNIe4	DNIe4	DNIe4
	DMD	xHD3	xHD3	xHD5
Audio	Base/Tremble/Balance	No	No	No
	Equalizer	5 Band	5 Band	5 Band
	Auto Volume Leveler	Yes	Yes	Yes
	Surround Sound	TruSurround XT Dolby Digital	TruSurround XT Dolby Digital	TruSurround XT Dolby Digital
	Speaker system	2 Way 4 Speaker	2 Way 4 Speaker	2 Way 4 Speaker
	Output Power	15Wx2	15Wx2	10Wx2
Features	2-Tuner Split-Screen PIP	Yes(HD/SD/QAM)	Yes(HD/SD/QAM)	No
	Split-screen Side-by-Side	Yes	Yes	Yes
	MTS with dbx Noise Reduction/SAP	Yes	Yes	Yes
	Still Picture	Yes	Yes	Yes
	Wise Link	No	No	Yes
Connections	Plug & Play	Yes	Yes	Yes
	S-Video In	Rear 2, Side1	Rear 2, Side1	Rear 2
	HDTV Component Video Input (Y, Pb, Pr) 1080p/1080i/480P/480i	Rear 2	Rear 2	Rear 2
	PC	Yes	Yes	Yes
	HDMI	Yes	Yes	Yes
	Digital Sound	Optical 1	Optical 1	Optical 1

2-4 Accessories

Accessories		Item	Item code	Remark
Supplied Accessories		Remocon Batteries	BP59-00125A 4301-000103	Samsung Service center
		Manual	BP68-00630A	
		Cloth-Clean	BN63-01798A	
		Power Cord	3903-000144	
Accessories that can be purchased additionally		HDMI/DVI cable	-	Electronics Store/ Internal shopping mall
		HDMI Cable	-	
		S-VIDEO Cable	-	
		Optical Cable	-	
		Antenna Cable	-	
		Component Cables (RCA)	-	
		1Stereo/2RCA Cable	-	
		3D IR Emitter	-	
		3D Glasses	-	

Accessories		Item	Item code	Remark
Accessories that can be purchased additionally		Replacement Lamp	-	Electronics Store/ Internal shopping mall
		PC Audio Cable	-	
		Audio/Video Cables	-	

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3. Alignment & Adjustment

3-1 Service Instruction

■ Check items listed after changing each

Check Items / Replaced Items	S/W Version	Front LCD	Actuator Gain	V-Position H-Position	Tilt Focus
Main Board	●	●	●	●	
Main Power Board					
Optical Engine		●	●	●	●
DMD Board			●	●	●
LAMP		●			
Front LED Assy		●			
Detect Board		●			

※ The Rear board is irremovable and supplied as a separate part in the field

1. Software version check :
   After Entering the Service mode, Check the list below
   * S/W Notation
   "T-ORCHAUSO_0001" indicates "Orchid basic model USA ver 0001".

T-ORCHAUSO_00XX
T-DLAMAUS5_10XX
RFS...
2007-00-00
DMD XXX
T-LEEUM-0399

2. Front LED check : In this S/M it is page 6-2-1.

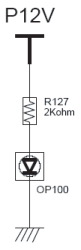
3. DMD 0x00000001 indicates DMD board bit sequence program version.

4. Actuator Gain adjustment : See page 3-4-4.

5. Vertical / Horizontal Position adjustment : See page 3-4-1.

6. CCA : See page 3-16.

7. Board LED check : Check the LED is turned on.
   (In the DMD Board)



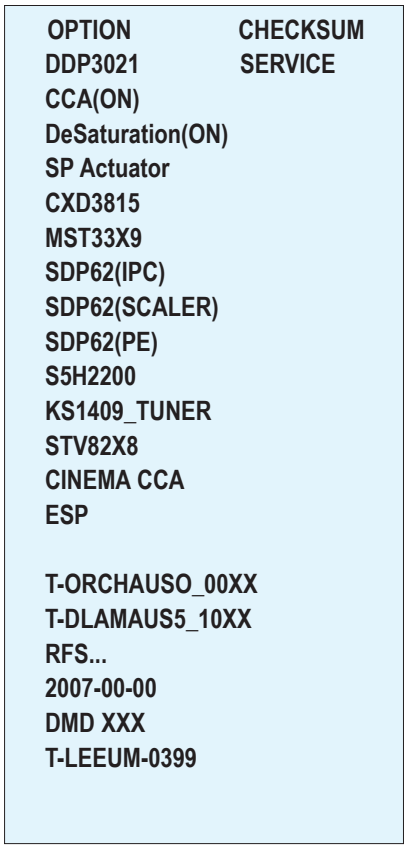
8. Tilt/Focus adjustment : See page 3-20/21/22.

3-2 How to Access Service Mode

1. Turn off the power to put the unit into the 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.

3. Initial DISPLAY State in times of Service Mode Switch overs



4. 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
Enter	Item Selection/execution

3-3 Factory Data

★ The underlined are items applied during the service adjustment. None of the others should be adjusted.

1. OPTION

No	Item	Range	Default	Remark
1	Factory Reset			
2	Lamp Control	0~1	Always	Dynamic, Always
3	WB Reset	ON/OFF	OFF	Initialize the White Balance value
4	EER Reset	-	-	Clear the EEPROM
5	User Reset			
6	DIGITAL→DMD	-	-	
7	Lamp Clear	-	-	Initialize lamp usage time. Lamp Life is set to zero
8	Lamp Life		h	Lamp on time counter
9	AUTO POWER	ON/OFF	ON	The sets turns on automatically when the power cord is plugged in
10	MUTE TIME(Video)	0~1000	440	Time which the screen will be black while switching
11	DDC Protection	ON/OFF	ON	DDC write ON/OFF selection
12	LNA Default	ON/OFF	Auto	LNA setting OFF/Auto selection
13	PROTECT	ON/OFF	ON	Protection ON/OFF selection
14	WATCH DOG	ON/OFF	ON	Watch Dog ON/OFF selection
15	WD COUNT	0	0	Count for Watch Dog event
16	DBG/RS232 SEL	0~1	RS232	Rs232/Debug
17	BUS STOP	ON/OFF	OFF	
18	FACTORY	ON/OFF	ON	
19	SMART DEBUG	ON/OFF	OFF	All user settings are set to default
20	EER COUNT ON/OFF	ON/OFF	OFF	
21	EER COUNT		0x90d0	
22	LNA+		ON	
23	LNA Check Count		10	
24	DMD→DIGITAL	-	-	To trans the CCA data form DMD to DIGITAL
25	Shop Mode	ON/OFF	OFF	
26	Color Gamut(Wide)			
27	PC Ident		Auto	
28	Hotplug On/Off		ON	
29	Hotplug Off Hold Time		1500ms	
30	HDMI Mute time		Oms	
31	DDP 3D Test			3D ready Function TEST

2. DDP3021

No	Item	Range	Default	Remark
1	H/V-Position	0 ~ 60	H:60/V:30	Horizontal and Vertical image adjustment
2	LAMP SYNC	0~3	2	Pulse(P), Pass(T)
3	INDEX DELAY			
4	SEQ SELECT	0~15	0x05	Sequence Selection
5	V-FLIP	Flip/Nomal	Normal	Vertical Flip Operation
6	H-FLIP	Flip/Nomal	Normal	Horizontal Flip Operation
7	GAMMA	0 ~ 15	[4]OEM	Gamma Table Selection
8	MPC	ON/OFF	OFF	MPC Funcion On/Off
9	Lamp Boost	0 ~ 63	15	Lamp Boost value selection
10	Lamp Sync Delay	0~4095	120	Lamp Sync delay value selection
11	Lamp Select	0~2	Philips	Philips, Osram, Ushio
12	3D GLS_Trans		1800	
13	Test Pattern (DDP)	0~18	0	This displays the built-in pattern of the DDP3021 chip. DDP3021 drives the DMD panel, so displaying this pattern means there is no error in the DDP3021 projection function and the panel itself.

3. CCA

No	Item	Range	Default	Remark
1	CCA	On/Off	ON	CCA On/Off Selection
2	Red-x	0~32768	646	Red-x measurement value using
3	Red-y	0~32768	340	Red-y measurement value
4	Red-Y	0~32768	86	Red-Y measurement value
5	Green-x	0~32768	295	Green-x measurement value
6	Green-y	0~32768	620	Green-y measurement value
7	Green-Y	0~32768	300	Green-Y measurement value
8	Blue-x	0~32768	146	Blue-xmeasurement value
9	Blue-y	0~32768	58	Blue-y measurement value
10	Blue-Y	0~32768	53	Blue-Y measurement value using
11	White-x			
12	White-y			
13	White-Y			
14	Yellow-x			
15	Yellow-y			
16	Yellow-Y			
17	Cyan-x			
18	Cyan-y			
19	Cyan-Y			
20	[COOL2]DWhite_X			
21	[COOL2]DWhite_Y			
22	[COOL1]DWhite_X			
23	[COOL1]DWhite_Y			
24	[NORMAL]DWhite_X			
25	[NORMAL]DWhite_Y			
26	[WARM1]DWhite_X			
27	[WARM1]DWhite_Y			
28	[WARM2]DWhite_X			
29	[WARM2]DWhite_Y			
30	WB Spread			WB adjusted value is spread to other mode

4. DeSaturation(ON)

No	Item	Range	Default	Remark
1	Desaturation Control		ON	
2	[NORMAL]Red-x	0~32768	646	
3	[NORMAL]Red-y	0~32768	340	
4	[NORMAL]Green-x	0~32768	295	
5	[NORMAL]Green-y	0~32768	620	
6	[NORMAL]Blue-x	0~32768	146	
7	[NORMAL]Blue-y	0~32768	58	
8	[NORMAL]Cyan-x	0~32768	274	
9	[NORMAL]Cyan-x	0~32768	285	
10	[NORMAL]Magenta-x	0~32768	439	
11	[NORMAL]Magenta-y	0~32768	424	
12	[NORMAL]Yellow-x	0~32768	571	
13	[NORMAL]Yellow-y	0~32768	446	
14	[sRGB]Red-x	0~32768	646	
15	[sRGB]Red-y	0~32768	340	
16	[sRGB]Green-x	0~32768	295	
17	[sRGB]Green-y	0~32768	620	
18	[sRGB]Blue-x	0~32768	146	
19	[sRGB]Blue-y	0~32768	58	
20	[sRGB]Cyan-x	0~32768	274	
21	[sRGB]Cyan-x	0~32768	285	
22	[sRGB]Magenta-x	0~32768	439	
23	[sRGB]Magenta-y	0~32768	424	
24	[sRGB]Yellow-x			
25	[sRGB]Yellow-y			
26	Desaturation mode		Normal	

5. SP Actuator

No	Item	Range	Default	Remark
1	Actu Gain Control	0~175	70	Actuator Gain adjustment
2	Actu Gain Detail	0~175	70	Actuator Gain adjustment
3	Actu On/Off	0~1	ON	Actuator On/Off selection
4	DB On/Off	0~1	ON	
5	DB Border	On / Off	OFF	
6	DB BP Weight	-	0%	
7	DB Gain	0~3	3	
8	DB Aperture	0~1	open	
9	SB Gain	0~255	0	

6. SDP62

No	Item	Range	Default	Remark
1	(NR)M_NR_ON/OFF		ON	MAIN PICTURE NR ON/OFF
2	(NR)S_NR_ON/OFF		ON	SUB PICTURE NR ON/OFF
3	(NR)NR_Zeromotion_M		18	Gain control for motion compensation
4	(NR)NR_Fullmotion_M		240	
5	(NR)M_MAX_WEIGHT		110	MAIN NR FRAME WEIGHT
6	(NR)S_MAX_WEIGHT		110	SUB NR FRAME WEIGHT
7	(NR)GMV_ON		ON	Global Motion Vector ON/OFF
8	(NR)TH_FULLMD		3	
9	51FLT_ON		3	
10	FLT_SP		ON	
11	FLT_FP		OFF	
12	FLT_STL		0	
13	FLT_MOT		0	
14	Spatial_Analog_TH		0	0: Vertical Interpolation(do not use directional information)
15	Ticker_Mode		All on	All off,Interlace only,Ecxept film,All on
16	Debuger_Mode		0	off,film,Stop,Motion,Moving,Judder,Ticker,Weigh
17	(FILM)3:2_Mode		1	3:2 PULL DWON MODE SELECTION
18	(FILM)2:2_Mode		1	2:2 PULL DWON MODE SELECTION
19	(FILM)FLM_32_22		3	
20	CLK_OSD_PHASE		3	B1 OSD DATA LATCH PAHSE
21	MIX_STL_SLP		2	
22	(M)Test Pattern		0	INPUT TEST PATTERN
23	(S)Test Pattern		0	

7. SDP62(SCALER)

No	Item	Range	Default	Remark
1	Main AUTO_PAGE_SE		ROM	Filter Page Select
2	Main YH_PAGE		2	YH Filter Select
3	Main YV_PAGE		7	YV Filter Select
4	Main CH_PAGE		2	CH Filter Select
5	Main CV_PAGE		2	CV Filter Select
6	(CTI)GAINU		96	CB CTI gain
7	(CTI)GAINV		96	CR CTI gain
8	(CTI)R_CHCNT_ON		OFF	
9	(MADE)SDR_MAX_TH1		6	SDR STillFrame motion weight threshold
10	(MADE)SDR_MAX_TH2		6	SDR STillFrame motion weight threshold
11	(MADE)ANTI_V		ON	MADE IPC Motion V LPF ON/OFF
12	(MADE)ANTI_H		ON	MADE IPC Motion H LPF ON/OFF
13	MG_ON		ON	
14	MM_ON		OFF	
15	(MADE)DE_GAIN_X1		8	MADE Gain of horizontal high frequecy region
16	(MADE)DE_GAIN_X2		16	MADE Gain of horizontal middle frequecy region
17	(MADE)DE_GAIN_Y1		16	MADE Gain of vertical region
18	(MADE)DE_MR		24	LOG SCLAE GAIN
19	(MADE)H_RTH2		8	
20	(MADE)CORING_ON/O		ON	MADE CORING ON/OFF
21	(MADE)H_CORING_F1		6	MADE CORING Threshold
22	(MADE)H_CORING_F2		6	MADE CORING Threshold
23	(MADE)V_CORING_F3		6	MADE CORING Threshold
24	(MADE)NE_ON		OFF	MADE linkage NE ON/OFF
25	(MADE)SUP_LIFT		ON	
26	(MADE)H_FILTER1		1	MAIN H FILER1 SELECT
27	(MADE)H_FILTER2		10	MAIN H FILER2 SELECT
28	(MADE)V_FILTER1		4	MAIN V FILER SELECT
29	DB_DEMO		ON	De-blocking Processing ON/OFF
30	PRE_DEMO		OFF	Pre-DE Processing ON/OFF
31	SP_DEMO		ON	Super Precision Processing ON/OFF
32	CTI_DEMO		OFF	CTI Processing ON/OFF
33	JR_SUB		ON	
34	JR_DEMO		ON	

8. SDP62(PE)

No	Item	Range	Default	Remark
1	Test Pattern		0	OUTPUT TEST PATTERN SELECTION
2	SNI_PROC_CEP		ON	Contrast Enhancement ON/OFF
3	SNI_PROC_DEP		ON	Detail Enhancement Processing ON/OFF
4	SNI_PROC_CEA		ON	Contrast Enhancement ON/OFF
5	SNI_PROC_CCS		ON	Color Compensation Processing ON/OFF
7	SNI_PROC_MCC		ON	MCC Processing ON/OFF
8	SNI_PROC_CA		ON	Contrast Adjustment Processing ON/OFF
9	SNI_PROC_CVD		ON	Color Vision Deficiency Processing ON/OFF
11	SNI_BWS		Adaptive	BWS MODE SELECTION
12	B_RATIO		13000	Low lecel informatino for the minimum value
13	BLACK_TILT		110	Black Stretch Area
14	B_GAIN_MAX		380	Black slope gain limit
15	WHITE_TILT		240	White Stretch Area
16	GAIN_X1		20	Gain of horizontal high frequecy region
17	GAIN_X2		24	Gain of horizontal middle frequecy region
18	GAIN_Y1		16	Gain of vertical high frequecy region
19	GAIN_Y2		24	Gain of vertical middle frequecy region
20	SUP_LIFT_SEL		OFF	
21	BOOL_SUPP_SELX1		ON	Horizontal high frequecy Shoot Shppression ON/OFF
22	BOOL_SUPP_SELX2		OFF	Horizontal middle frequecy Shoot Shppression ON/OFF
23	BOOL_SUPP_SELY1		ON	Vertical high frequecy Shoot Shppression ON/OFF
24	BOOL_SUPP_SELY2		ON	Vertical middle frequecy Shoot Shppression ON/OFF
25	BPPL_ENH_SEL		ON	Amplitude scaling block gain Processing ON/OFF
26	R_MR		150	
27	CORING_ON		ON	Post Coring ON/OFF
28	RTH2		4	Noise Detection Block Threshold2
29	NDON		ON	Noise Detection ON/OFF
30	WB_RED_C_COEFF		1024	
31	WB_GRN_C_COEFF		1024	
32	WB_BLU_C_COEFF		1024	
33	WB_RED_B_COEFF		1024	
34	WB_GRN_B_COEFF		1024	
35	WB_BLU_B_COEFF		1024	
36	R_Coring_TH1		2	Horizontal high frequecy Coring Threshold
37	R_Coring_TH2		2	Horizontal middle frequecy Coring Threshold
38	R_Coring_TH3		3	Vertical high frequecy Coring Threshold
39	R_Coring_TH4		3	Vertical middle frequecy Coring Threshold
40	H_FILTER1		5	DE horizontal high frequecy Filter selection

No	Item	Range	Default	Remark
41	H_FILTER2		5	DE horizontal middle frequecy Filter selection
42	V_FILTER1		1	DE vertical high frequecy Filter selection
43	V_FILTER2		1	DE vertical middle frequecy Filter selection
44	YSUBTRACT		0	Input Y channel Setup level
45	Sub Color		62	Color gain
46	Sub Color_Offset		0	N.C
47	DNIe On/Off		ON	DNIe Processing ON/OFF
48	Sub Contrast		107	Brightness adjustment for the high-light parts of the screen
49	Contrast Offset		5	Standard Contrast offset
50	(M)Contrast Offset		0	N.C
51	Sub Brightness		243	Brightness adjustment for the low-light parts of the screen
52	CRR		910	YCbCr TO RGB MATRIX
53	CBG		1830	YCbCr TO RGB MATRIX
54	CRG		1820	YCbCr TO RGB MATRIX
55	CBB		1023	YCbCr TO RGB MATRIX
56	CRR_MOVIE		750	MOVIE MODE YCbCr TO RGB MATRIX
57	CBG_MOVIE		1830	MOVIE MODE YCbCr TO RGB MATRIX
58	CRG_MOVIE		1700	MOVIE MODE YCbCr TO RGB MATRIX
59	CBB_MOVIE		1023	MOVIE MODE YCbCr TO RGB MATRIX
60	LGAIN		200	Contrast Adjustment dark gain
61	UGAIN		100	Contrast Adjustment bright gain

9. S5H2200

No	Item	Range	Default	Remark
1	Test Pattern(ALBA)	0~255	1	

10. KS1409_Tuner

No	Item	Range	Default	Remark
1	Rf_Agc	-	0x8a	
2	Vsb_CR_Gain	-	0x002e	
3	Vsb_CR_K1_1_Narrow	-	0x0e	
4	Vsb_CR_K1_1_Wide	-	0x0c	
5	Vsb_CR_K1_2_Narrow	-	0x0d	
6	Vsb_CR_K1_2_Wide	-	0x0c	
7	Vsb_CR_K2_1_Narrow	-	0x12	
8	Vsb_CR_K2_1_Wide	-	0x10	
9	Vsb_CR_K2_2_Narrow		0x11	
10	Vsb_CR_K2_2_Wide		0x10	
11	Vsb_Eq_Ctrl1		0x030e	
12	Vsb_Eq_Ctrl2		0x0104	
13	Vsb_Eq_Init_Step		0x3161	
14	Vsb_Eq_Step		0x6111	
15	Vsb_Ptl_Step		0x0522	
16	Vsb_Ptl_Alpha		0x0055	
17	Qam_Agc		0x2a38	
18	Qam_Eq_Step1		0x312f	
19	Qam_Eq_Step2		0xa8b0	
20	Qam_Ptl_K1		0x37	
21	Qam_Ptl_K2		0x2c	

11. STV82X8

No	Item	Range	Default	Remark
1	Stereo Pilot High	0-255	0x8A	
2	Stereo Pilot low	0-255	0x4a	
3	SAP Pilot_High	-	0x1010	
4	SAP Pilot_Low	-	0x01	
5	Melody-ON VOL	0-5	0x50	
6	Melody-Off VOL	0-5	0x030e	
7	Speaker Type		K3	
8	AMP Pwr(W)		10W	
9	Carrier Mute		ON	
10	SQTH		112	
11	CETH		16	
12	Audio Delay		1	
13	[NTP] PWM Mode		0xea	
14	[NTP] AMP Vol		0x17	
15	[NTP] DRC Thresh		0x1f	

12. Cinema CCA

No	Item	Range	Default	Remark
1	[COOL2]DWhiteX	-	267	Target Red X value for CCA
2	[COOL2]DWhiteY	-	269	Target Red Y value for CCA
3	[COOL1]DWhiteX	-	274	Target Green X value for CCA
4	[COOL2]DWhiteY	-	276	Target Green Y value for CCA
5	[NORMAL]DWhiteX	-	282	Target Blue X value for CCA
6	[NORMAL]DWhiteY	-	285	Target Blue Y value for CCA
7	[WARM1]DWhiteX	-	293	Target Cyan X value for CCA
8	[WARM1]DWhiteY	-	300	Target Cyan Y value for CCA
9	[WARM2]DWhiteX	-	310	Target Magenta X value for CCA
10	[WARM2]DWhiteY	-	269	Target Magenta Y value for CCA

13. ESP

No	Item	Range	Default	Remark
1	Dynamic Global On / Off	0~1	OnOff	
2	Dynamic Local On / Off	0~2	OnOff	
3	Dynamic Skin On / Off	0~100	OnOff	
4	Dynamic Strength	0~2	Low	
5	Dynamic Cont Gain	0~100	0	
6	Dynamic Satu	0~1	OFF	
7	Dynamic Satu Gain	0~255	128	
8	Sharp Picture	0~1	ON	
9	VLUT	-	TBD0	
10	Sharp Filter	0~2	UCF	
11	Sharp Picture Gain	0~255	255	

14. SERVICE

No	Item	Range	Default	Remark
1	H/V-Position	0 ~ 60	H:60/V:30	
2	User Reset	-	-	All user settings are set to default
3	INDEX DELAY	0	45	Index delay adjustment
4	LAMP SYNC	0 ~ 3	0	
5	CCA(ON)			
6	DMD→Digital			
7	Digital→DMD			
8	Lamp Life		22h	
9	Lamp Clear			
10	MUTE TIME(VIDEO)	-	4	
11	Lamp Select	-	Philips	
12	Actu Gain Control	0 ~ 175	68	Actuator Gain adjustment
13	Actu Gain Detail	0 ~ 175	68	Actuator Gain adjustment

3-4 Service Adjustment

3-4-1 Vertical / Horizontal Position Adjustment

1. Turn off the power to put the unit into the STAND-BY mode.

2. In order to enter the Service Mode, Press "Mute" → "1" → "8" → "2" → "POWER" buttons on the Remote Control.

3. Select "Service" on the first display of the Service mode menu.

4. Select the H/V-Position for vertical and horizontal positioning by using the ▲ ▼ (Up & Down) buttons.
   Press the ◀ ▶ (Left or Right) buttons to adjust the screen position.

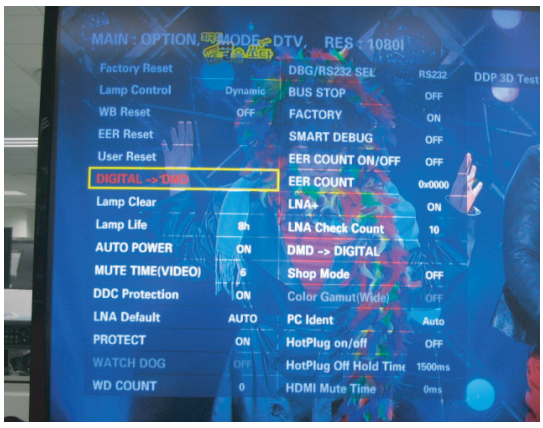
※ Do not set the V-position value to 34 or 35. (Setting to these values will cause horizontal lines on the right side of the screen.)

3-4-2 CCA Adjustment Service Methods : CCA Adjustment is needed after changing a DMD board or Main board

■ 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,Yellow,Cyan and White color patterns, using a color coordinate measuring equipment. At this moment, color correction is performed below.

1) This procedure is needed if the Main Board or DMD Board are changed.
2) Turn off power to put the unit into the STAND-BY mode.
3) In order to enter the Service Mode, press "Mute"→"1"→"8"→"2"→"Power" buttons on the Remote Control.

4) Select "Option" on the display of the Service mode menu
5) If the DMD PCB is changed, Press the ▼ ▲(Up or Down) button to move to Digital→DMD, then press ENTER to select.



6) Then Press ENTER to save CCA information to the DMD board
7) If the Main PCB is changed, Press the ▼ ▲(Up or Down) button to move to DMD→Digital, then press ENTER to select.

8) Then Press ENTER to save CCA information to the Main board

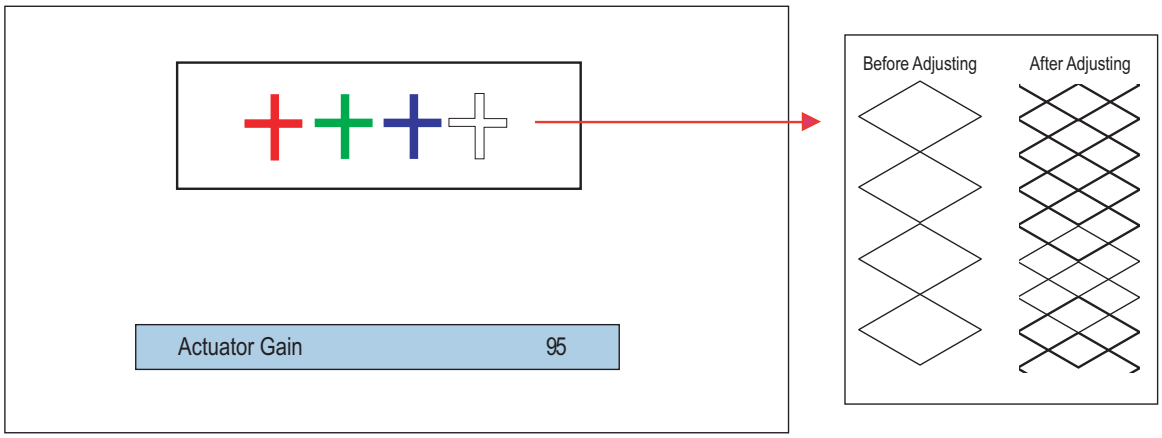
* Attention

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 per
sonnel, that makes performing manual adjustment impossible. Adjusting CCA is applied to all the signal mode.
Don't change desired value because it will be harmful to the color of the SET.

3-4-3 ACTUATOR GAIN Adjustment

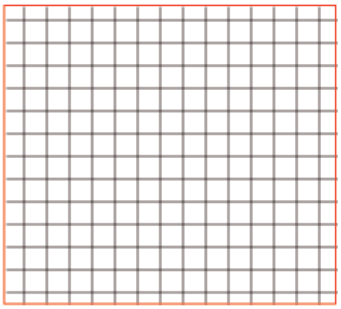
1. Before Adjustment
   1) Turn off the power to put the unit into the STAND-BY mode.
   2) In order to enter the Service Mode, Press "Mute" → "1" → "8" → "2" → "POWER" button on the Remote Control.
   3) Select "Service" on the first display of the Service mode menu.
   4) ACTUATOR GAIN1,2,¦ Actu Gain Control or Actu Gain Detail.
   5) The Actuator gain setup screen will be displayed.
   6) Press the ◀ ▶ (Left of Right) button to adjust. check the smooth picture at it's minimum and maximum values of changing ,then adjust to the mean value.

   - Actu Gain Control : In case of controlling with Cross Pattern.



   - Actu Gain Detail : In case of controlling with Crosshatch Pattern.
     You can see the Crosshatch Pattern when you press the ◀ ▶ (Left of Right) button to adjust

CROSSHATCH PATTERN

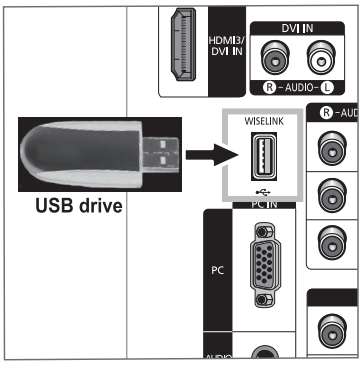


CAUSTION: Actu Gain Detail is just controlled by your eye because control value doesn't appear In picture.

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.

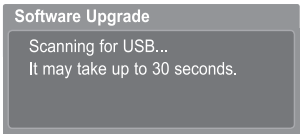
3-5 Software Upgrade

1. Insert a USB drive containing the firmware upgrade into the USB Upgrade Port on the side of the TV.



2. Press the MENU button.
   Press the ◀ or ▶ button to select Setup, then press the ENTER button.
   Press the ▲or ▼ button to select SW Upgrade, then press the ENTER button.
   The message Scanning for USB... It may take up to 30 seconds. is displayed.
   Please be careful to not disconnect the power or remove the USB drive while upgrades are being applied.
   The TV will shut off and turn on automatically after completing the firmware upgrade. Please check the firmware version after the upgrades are complete.

※ The firmware and upgrade process may be different by country and region.



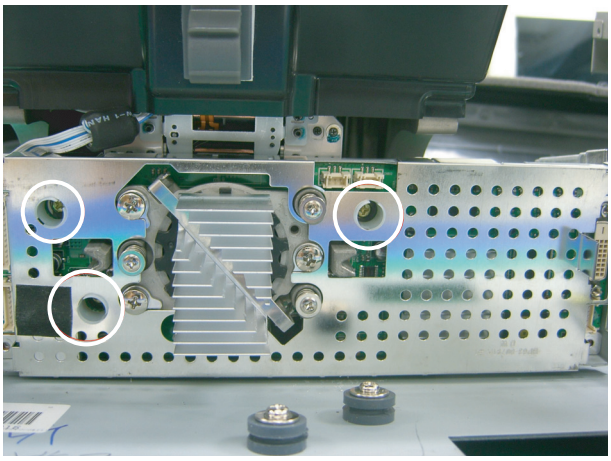
T-ORCHAUSO_00XX
T-DLAMAUS5
DMD 0x00000001
(DMD sequence ver)
DSP 0-0-0
(DMD DSP ver.)
RFS...
2007-01-17
T-LEEUM-0309

3-6 Replacements & Calibration

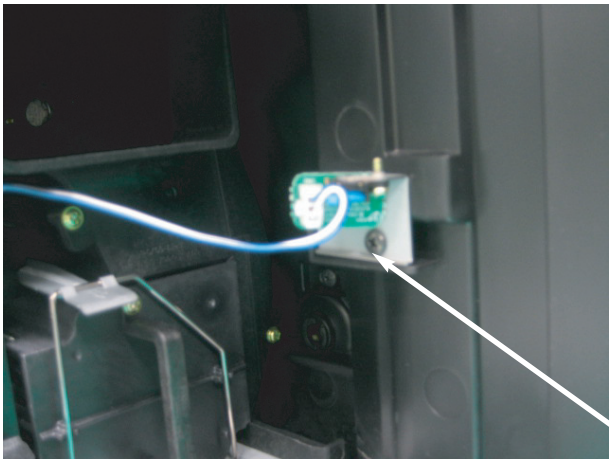
3-6-1 Tilt the Screen

1. Remove the 20 point screws. Remove the Bottom cover.
   : BH,+,S,M4,L10,ZPC(BLK),SWRCH18 (6ea)
   : BH,+,B,M4,L12,ZPC(BLK),SWRCH18 (14ea)

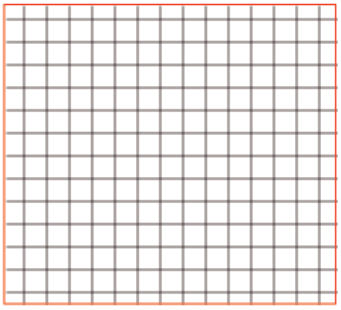
2. Loosen the 3 points screws.
   * Left 2 points screws
     : PWH,S,M3,L8,ZPC(YEL),SWRCH18A
   * Right 1 points screw
     : PWH,S,M3,L7,ZPC(YEL),SWRCH18A



3. Turn off the power to put the unit into the STAND-BY mode.In order to enter the Service Mode, Press "Mute" → "1" → "8" → "2" → "POWER" buttons on the Remote Control.Select "DDP3021(LED)" on the first display of the Service Mode menu. Press the ▲ ▼(Up or Down) buttons, then press ENTER to select. Press the ▶ (Right) button until you see the CROSSHATCH PATTERN.Then, adjust the screen position, by holding both of the upper corners of the DMD board.



CROSSHATCH PATTERN



Fix the safety switch on the right with tape so that the set can be turned on after removing the bottom cover.

※ Even when those screws are loosened, the board does not separate it can be moved within the adjustable range because there are spring screws at the center holding it.

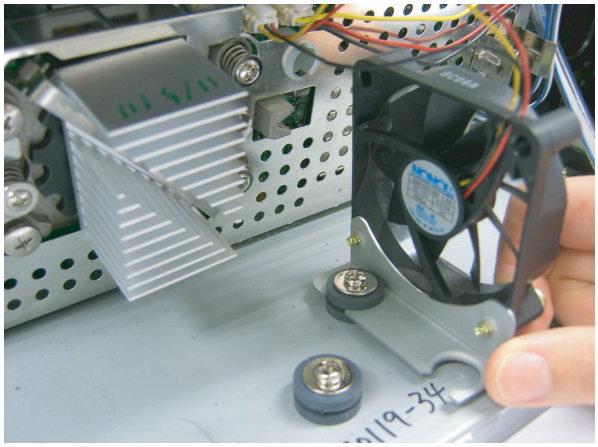
※ When adjusting the screen, it is better for two people to work together.
One person should adjust the picture position while the other person looks at the screen.
If only one person is performing this adjustment, back port should be removed, and image on the screen monitored through there.

※ The movement direction of the board and the picture are different.
- When it is tilted to the left, the screen tilts to the right.
- But, When the board is lifted upward, the screen lifted upward, too.

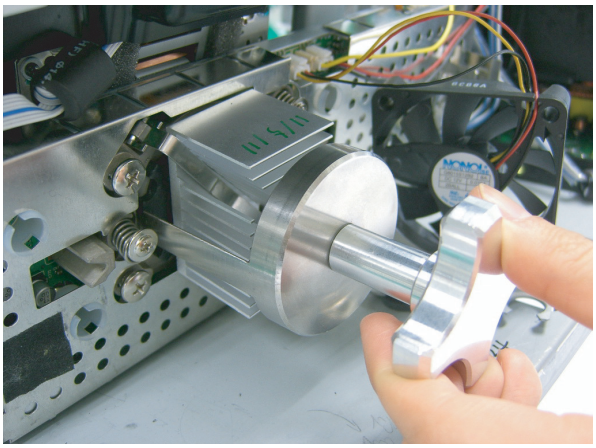
※ When the picture adjustment is completed:
First, tighten the two screws on the left of the DMD board and then slowly tighten the one screw on the bottom right.
Be careful not to touch the board while tightening the screws.
(When using an electric-powered screwdriver, be careful that the torque is not too high.)

3-6-2 Align the Focus

1. Remove the DMD FAN.
   but don't disconnect connector



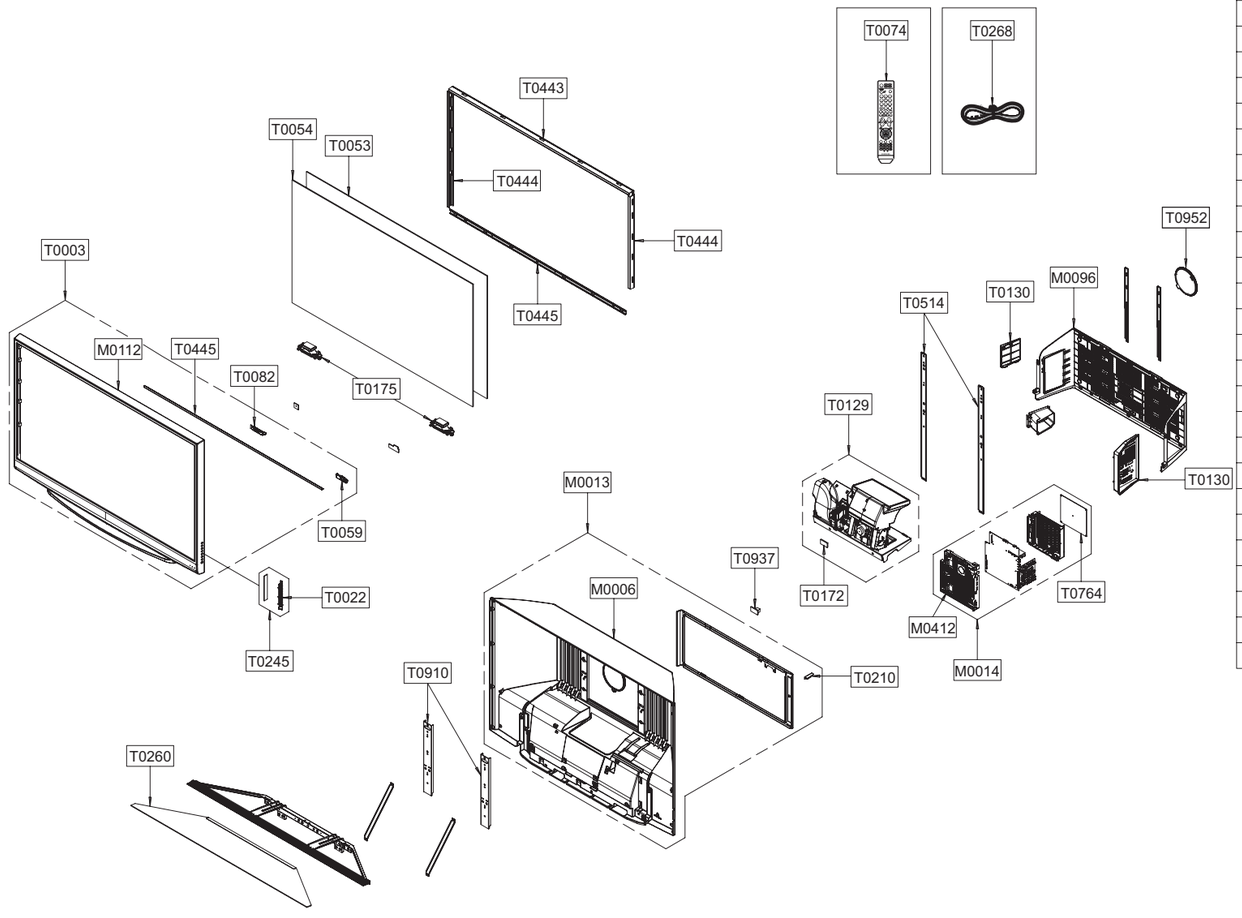
2. Turn the knob to find best focus at the screen
   the knob is black wheel under the heat sink.



MEMO

4. Exploded View & Part List

4-1 HLT5676SX/XAA



Loc.No.	Code No.	Description	Specification	Q'ty	SA/SNA	Remark
M0006	BP63-00953A	COVER-REAR	56K7(ULTRA SLIM),PS,V0,BK500,	1	S.N.A	
M0013	BP96-01779A	ASSY COVER P-REAR	56K7(ULTRA SLIM),PS,V0	1	S.A	
M0014	BP94-02309A	ASSY PCB MAIN	HLT5676SX/XAA,L67B	1	S.A	
M0096	BP96-01790A	ASSY COVER P-REAR BOTTOM	K7(ULTRA SLIM),	1	S.A	
M0112	BP63-00950A	COVER-FRONT	56K7(ULTRA SLIM),ABS+PMMA,HB	1	S.N.A	
M0412	BP96-01923A	ASSY BRACKET P-PCB	56K7(ULTRA SLIM),SECC	1	S.N.A	
T0003	BP96-01772A	ASSY COVER P-FRONT	56K7(ULTRA SLIM),ABS+	1	S.A	
T0022	BP64-00641A	KNOB CONTROL	56K7(ULTRA SLIM),ABS,HB,BLK	1	S.N.A	
T0053	BP67-00298A	SCREEN FRESNEL	Orchid(K780),56W, 1268mm	1	S.A	
T0054	BP67-00297A	SCREEN LENTI	Orchid(K780),56W, 1268mm x	1	S.A	
T0059	BP64-00643A	INDICATOR LED	56K7(ULTRA SLIM),PC,CLEAR	1	S.N.A	
T0074	BP59-00125A	REMOCON	LAUREL,TM87C,Samsung 28p+EEPROM,	1	S.A	
T0082	BP64-00626A	WINDOW LED	56K6(SLIM),PC,MILKY,SMOG	1	S.N.A	
T0129	BP96-01742B	ASSY ENGINE P-DLP	56K7,PHILIPS,132W,E22,	1	S.A	
T0130	BP63-00955A	COVER DUCT	56K7(ULTRA SLIM),ABS,V0,BK500	1	S.N.A	
T0130	BP96-01791A	ASSY COVER P-TERMINAL BOARD	K7,PS,V0,BK5	1	S.N.A	
T0175	BP96-01794B	ASSY SPEAKER P	8ohm,Horn type,10W,1400/7	1	S.A	
T0210	BP61-01533A	BRACKET-EARTH	56K7,SPTE,T0.3,NTR	1	S.N.A	
T0245	BP94-02310A	ASSY PCB MISC-KEY CONTROL	HLT5676SX/XAA,	1	S.N.A	
T0260	BP67-00323A	MIRROR-FRONT	56K7,Glass,1230¡¿620¡¿236¡¿	1	S.A	
T0268	3903-000144	CBF-POWER CORD	DT,US,BP3/Y,U(IEC C13-RA)	1	S.A	
T0443	BP96-01785A	ASSY BRACKET P-SCREEN TOP	56K7(ULTRA SLI	1	S.N.A	
T0444	BP96-01775A	ASSY BRACKET P-SCREEN SIDE	56K7(LEFT),AL	1	S.N.A	
T0444	BP96-01778A	ASSY BRACKET P-SCREEN SIDE	56K7(RIGHT),A	1	S.N.A	
T0445	BP96-01944A	ASSY BRACKET P-SCREEN BOTTOM	56K7(ULTRA	1	S.N.A	
T0445	BP96-01730B	ASSY BRACKET P-SCREEN BOTTOM	56K7,AL6063	1	S.N.A	
T0514	BP61-01506A	BRACKET-SUPPORT	56K7(ULTRA SLIM),SECC-1,	2	S.N.A	
T0764	BP44-01002C	SMPS-DLP TV	SP50K6HDX/XAA,AC/DC,90V-132V	1	S.A	
T0910	BP61-01513B	BRACKET-REAR TOP	56K7,SECC,T1.2,NTR	2	S.N.A	
T0937	BP91-01138A	ASSY MISC-DETECOTR S/W	HLS4676,L64E	1	S.A	
T0952	BP63-00956A	COVER DUST	56K7(ULTRA SLIM),PS,HB,BK500	1	S.N.A	

5. Electrical Part List

5-1 HLT5676SX/XAA Service Item

Loc.No.	Code No.	Description	Specification	Q'ty	SA/SNA
M2893	BP39-00174H	LEAD CONNECTOR	HLT5676SX/XAA,UL1007#22,U	1	S.A
M2893	BP39-00180D	LEAD CONNECTOR	HLS4676SX/XAA,UL1015#18,U	1	S.A
M2893	BP39-00192D	LEAD CONNECTOR	ORCHID,UL2464#26,UL/CSA,1	1	S.A
M2893	BP39-00229C	LEAD CONNECTOR	ORCHID,UL1061#28,UL 1061	1	S.A
M2893	BP39-00231D	LEAD CONNECTOR	ORCHID,UL1571#30,UL 1571	1	S.A
M2893	BP39-00246B	LEAD CONNECTOR	ORCHID,UL1007#26,UL 1007	1	S.A
M0114	BP39-00253A	CBF SIGNAL	ORCHID,24p/24p,UL20276,700mm,	1	S.A
M2893	BP39-00258A	LEAD CONNECTOR	HLT5676SX/XAA,UL1061#28,U	1	S.A
M2893	BP39-00259A	LEAD CONNECTOR	HLT5676SX/XAA,UL1061#28,U	1	S.A
M2893	BP39-00260A	LEAD CONNECTOR	HLT5676SX/XAA,UL2835#28,U	1	S.A
M2893	BP39-00261A	LEAD CONNECTOR	HLT5676SX/XAA,UL2547#26,U	1	S.A
M2893	BP39-00263A	LEAD CONNECTOR	HLT5075S/XAA,UL2835#28,UL	1	S.A
M2893	BP39-00264A	LEAD CONNECTOR	HLT5075S/XAA,UL2835#28,UL	1	S.A
T0764	BP44-01002C	SMPS-DLP TV	SP50K6HDX/XAA,AC/DC,90V-132V	1	S.A
T0049	BP47-00036A	LAMP-BALLAST	EUC 132D P/42,65mm,130mm,70	1	S.A
T0074	BP59-00125A	REMOCON	LAUREL,TM87C,Samsung 28p+EEPROM,	1	S.A
T0054	BP67-00297A	SCREEN LENTI	Orchid(K780),56W, 1268mm x	1	S.A
T0053	BP67-00298A	SCREEN FRESNEL	Orchid(K780),56W, 1268mm	1	S.A
M0014	BP94-02309A	ASSY PCB MAIN	HLT5676SX/XAA,L67B	1	S.A
T0129	BP96-01742B	ASSY ENGINE P-DLP	56K7,PHILIPS,132W,E22,	1	S.A
T0003	BP96-01772A	ASSY COVER P-FRONT	56K7(ULTRA SLIM),ABS+	1	S.A
M0013	BP96-01779A	ASSY COVER P-REAR	56K7(ULTRA SLIM),PS,V0	1	S.A
M0096	BP96-01790A	ASSY COVER P-REAR BOTTOM	K7(ULTRA SLIM),	1	S.A
T0175	BP96-01794B	ASSY SPEAKER P	8ohm,Horn type,10W,1400/7	1	S.A
T0888	BP96-01795A	ASSY LAMP P	K780,PHILIPS 132W,E22,SVC	1	S.A
T0889	BP96-01855A	ASSY COLOR WHEEL P	K780,SVC	1	S.A
T0703	BP96-01856A	ASSY DMD BOARD P	K780,SVC	1	S.A

MEMO

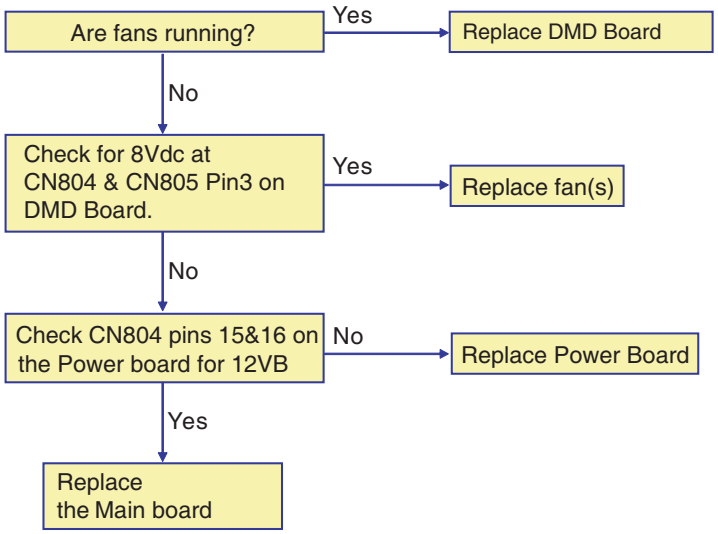
6. Troubleshooting

6-1 Checkpoints by Error Mode

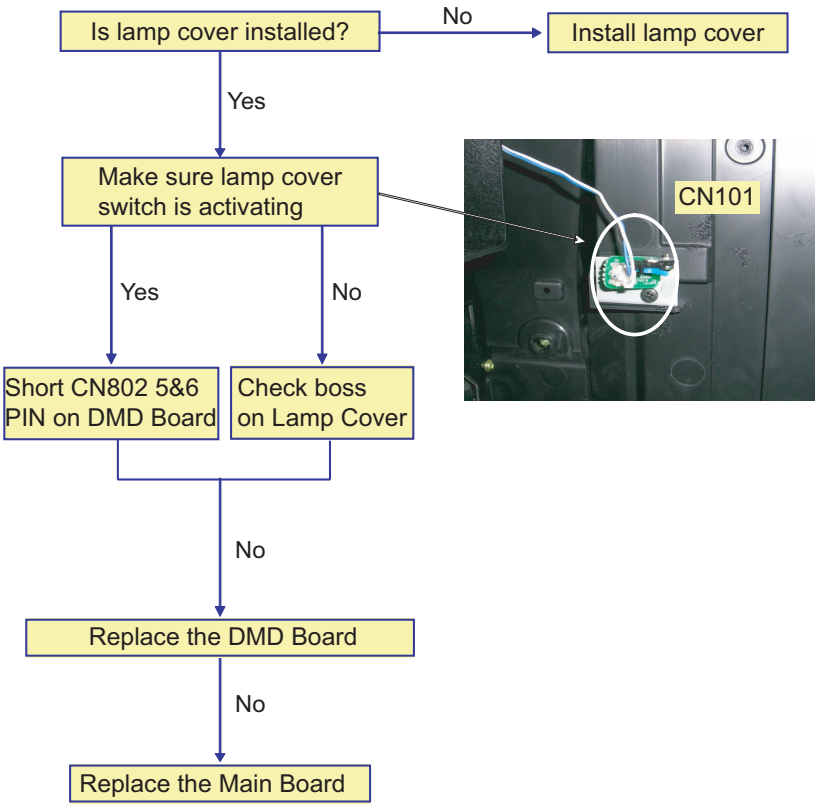
1. Power Light: Check the master switch (ON/OFF) and the fuse to see if they are operating.

2. LED Blinking: See the basic LED checklist in 6-2-1.

< Blinking Temp & Timer LED >



< Blinking Lamp and Temp LEDs >



3. Noise:
Internal noise may be caused by a foreign substance on the fan or driving device.
For a DLP TV, the lamp fan, DMD board fan and color wheel are vulnerable to noise. Sometimes the connector wire around the lamp or DMD fan makes contact with the fan, while the color wheel is protected inside the module and cannot make contact with any nearby wires. However the color wheel sensor or the drive motor may cause noise by making contact with the color wheel.
As the color wheel uses an air bearing system, it has a very slight possibility of creating internal noise.
When irregular noise occurs for no particular reason, check the inside of the TV for any foreign substances.
The DLP projection TV may cause noise as the physical screen is empty inside, causing a resonance to a particular frequency. Thus a low vibration is not a malfunction.
Any 'creaking' noise is mostly from the structure of the device itself. A short, harsh noise may occur from a distortion or malformation due to thermal expansion between the metal joints, screws and loaded parts, respectively. Any intermittent 'creaking' noise can be removed by loosening the screws.

4. A black screen with the lamp on: Replace the DMD board.

5. Line Pattern: Regular line patterns occur vertically or horizontally: Replace the DMD board.

6. Voice Distortion: Replace the main or rear board.

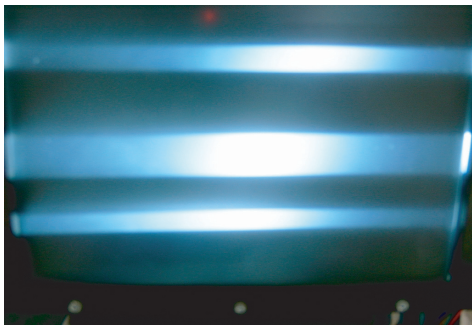
7. Outside Light: This is not a product malfunction, but a possible installation or human error. This occurs when the projected light from the surrounding illumination reflects onto the screen. This disappears as the TV starts operating and the TV lamp gets brighter. However, you can avoid outside light by changing the position of the TV or the installation angle.
Decreasing the illumination or changing the indoor lighting may work.

8. Screen Flip-over:
Enter Factory mode in DDP3021 and perform H-Flip (flip horizontally) and V-Flip (flip vertically).
The screen will flip over horizontally or vertically.

9. Other Screen Errors:

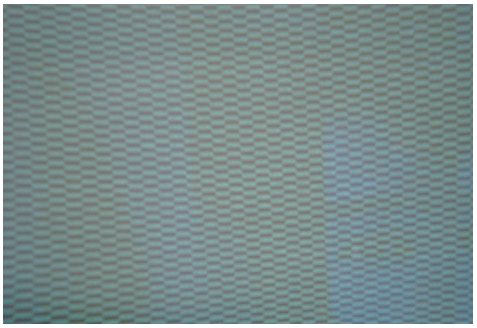
▶ 40 Vertical lines 16 pixels wide:
DDP3021 or BGA, DMD panel interference.
→ Replace the DMD board or DMD Panel

.



▶ Horizontal Bar or No Raster:
Error in DAD2000 or DMD Panel or other DMD board problem.
→ Replace the DMD board or DMD Panel

▶ Dotted Vertical Bar:
Error in Rambus Dram(IC 403) or the soldering
→ Replace the DMD board



▶ Beehive mosaic patterns all over the screen:
Error in the TMDS Receiver (IC100) or the soldering
The H sync signals are not transferred to DDP3021.
→ Check the Digital Board and DVI cable If there was no problem,
Replace the DMD board

6-1-1 Video Circuit Error Checking

■ Basics:
- The DDP3021 on the DMD board has a feature to display internal test patterns.
- SDP62, which is an end port in the digital board, has a feature to display internal test patterns.
- The rear board is the first output and the main board is the second one, followed by DMD, which is the final one.

■ Diagnosis By Module

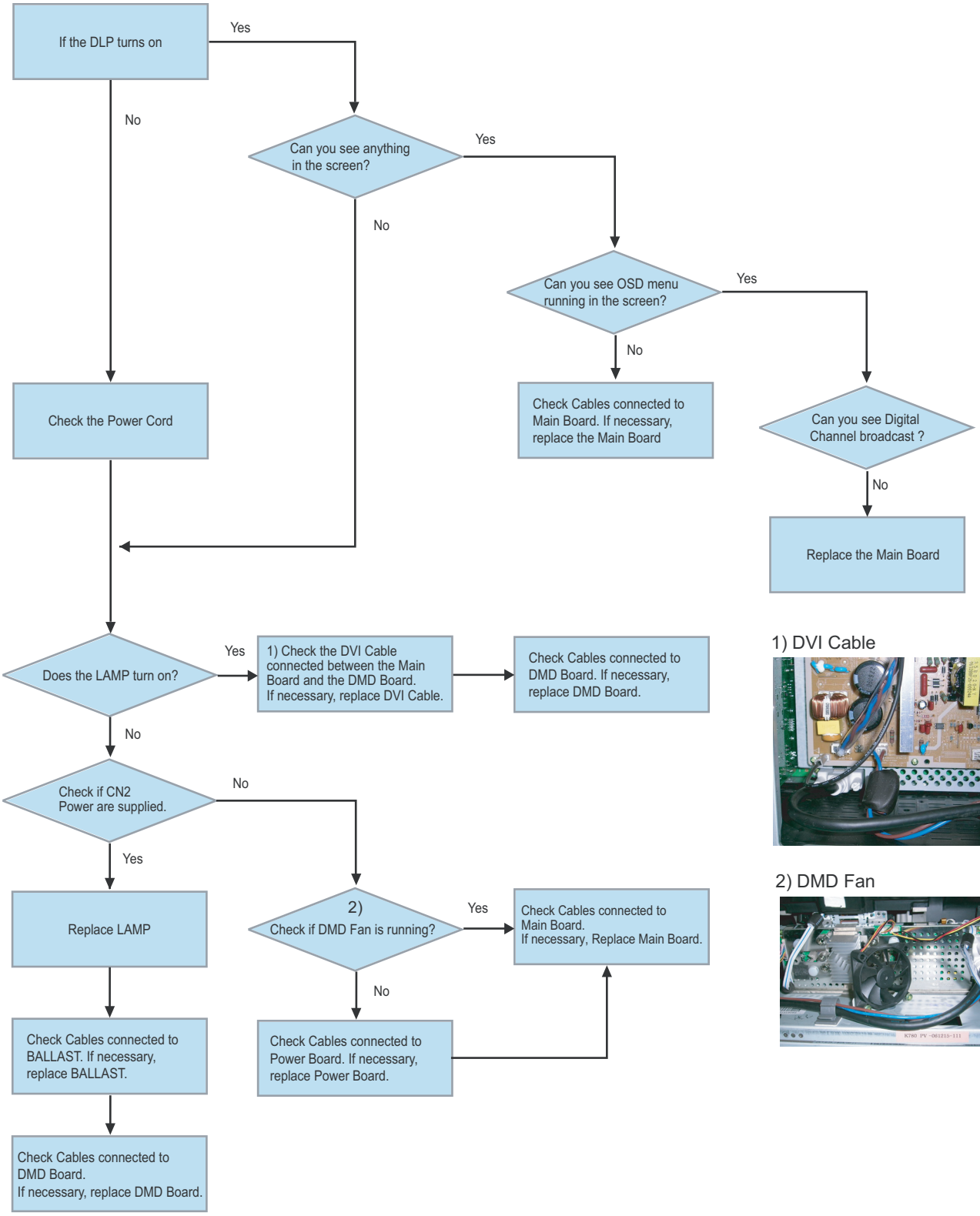
1. Access Service Mode
   (In Standby mode, press "Mute", "1", "8", "2" and "Power" to turn the screen on and enter service mode)

2. Check if there is an error in the DMD board
   DDP3021 → TEST PATTERN → Press the right arrow key:
   Options of FULL WHITE, BLACK, RED, GREEN and BLUE PATTERN are displayed on the screen.
   If "Pattern" does not appear, this is a DMD board error.

3. Check if there is an error in the main board before the DMD.
   When the DMD board has been determined to be error free based on the test patterns:
   FACTORY MODE → SDP62 → TEST PATTERN normal display: no error in the main board.
   If "Pattern" does not appear, you have to check a rear board first, and check a DMD Board second, next check a main Board.

4. Check for a power signal from the SMPS to the main boards. (See the circuit diagram below).

6-1-2 Flow Chart for Malfunction

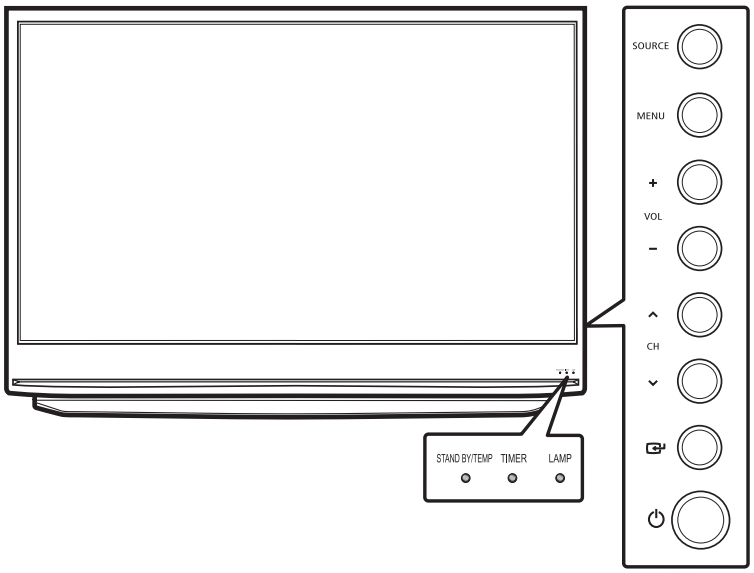


1) DVI Cable

2) DMD Fan

6-2 Troubleshooting Procedures by Error Modes

6-2-1 Installation & Connection



● : Light is On
◑ : Light is Blinking
○ : Light is Off

TIMER	LAMP	STAND BY/TEMP	Indication
○	○	●	Standby state.
○	◑	○	The picture will automatically appear in about 15 seconds.
●	◑	○	Auto Timer ON/OFF has been set and the set will automatically be turned on in about 15 seconds.
◑	○	◑	A cooling fan inside the set is not operating normally.
○	◑	◑	Lamp cover on rear of the set is not properly shut.
○	○	◑	Check if the ventilation hole on the rear of the set is blocked, because if the inner temperature is too high, the power will shut off.
◑	◑	◑	LED Driver or Sub power is defective.

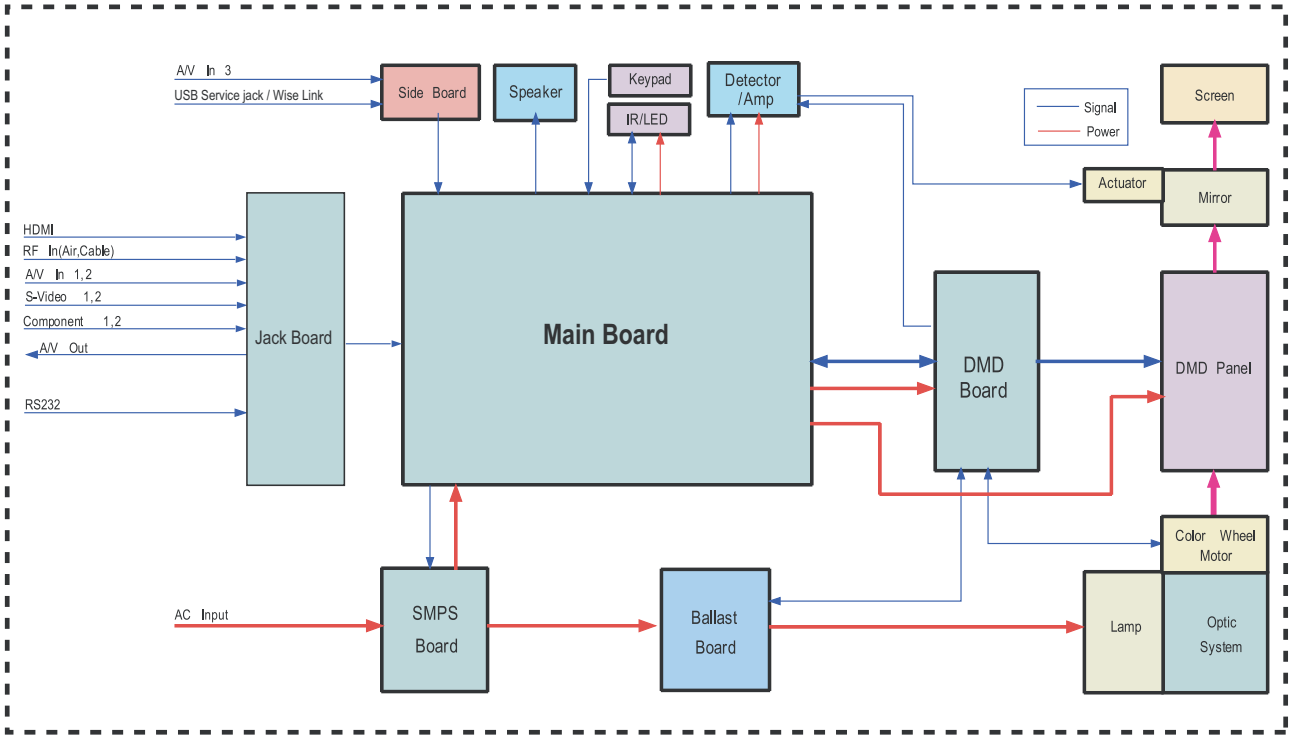
* It takes about 30 seconds for the TV to warm up, so normal brightness may not appear immediately.
* The TV has a fan to keep the inside lamp from overheating. You'll occasionally hear it working.

6-2-2 Protect Status

1. Attempting to turn the LED on fails repeatedly
If turning the lamp on fails, the set automatically tries turning the LED on 3 times. If all attempts fail, all LED's on the front panel will blink. Check the LED,LED Driver and Sub power check the LED,LED Driver and Sub SMPS and replace them if necesscary.

7. Block Diagram

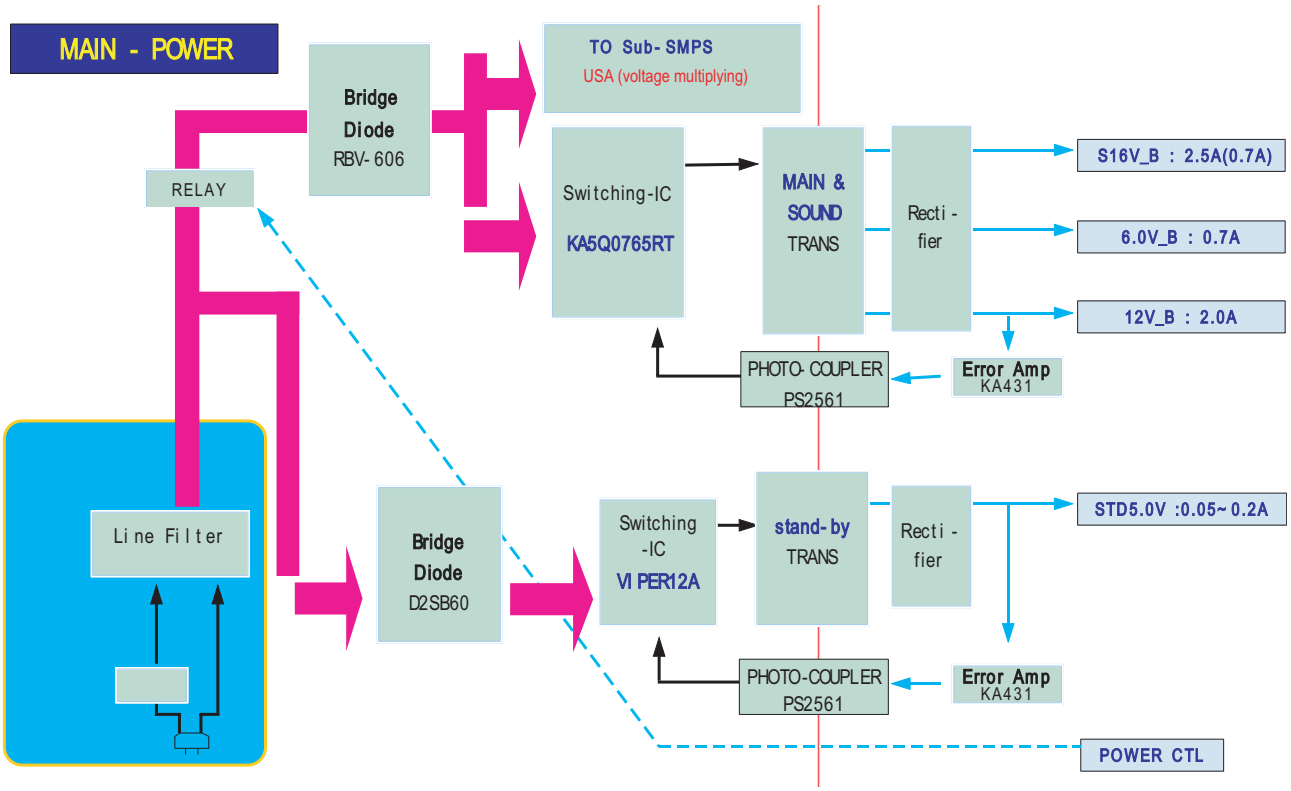
7-1 Overall Block Diagram



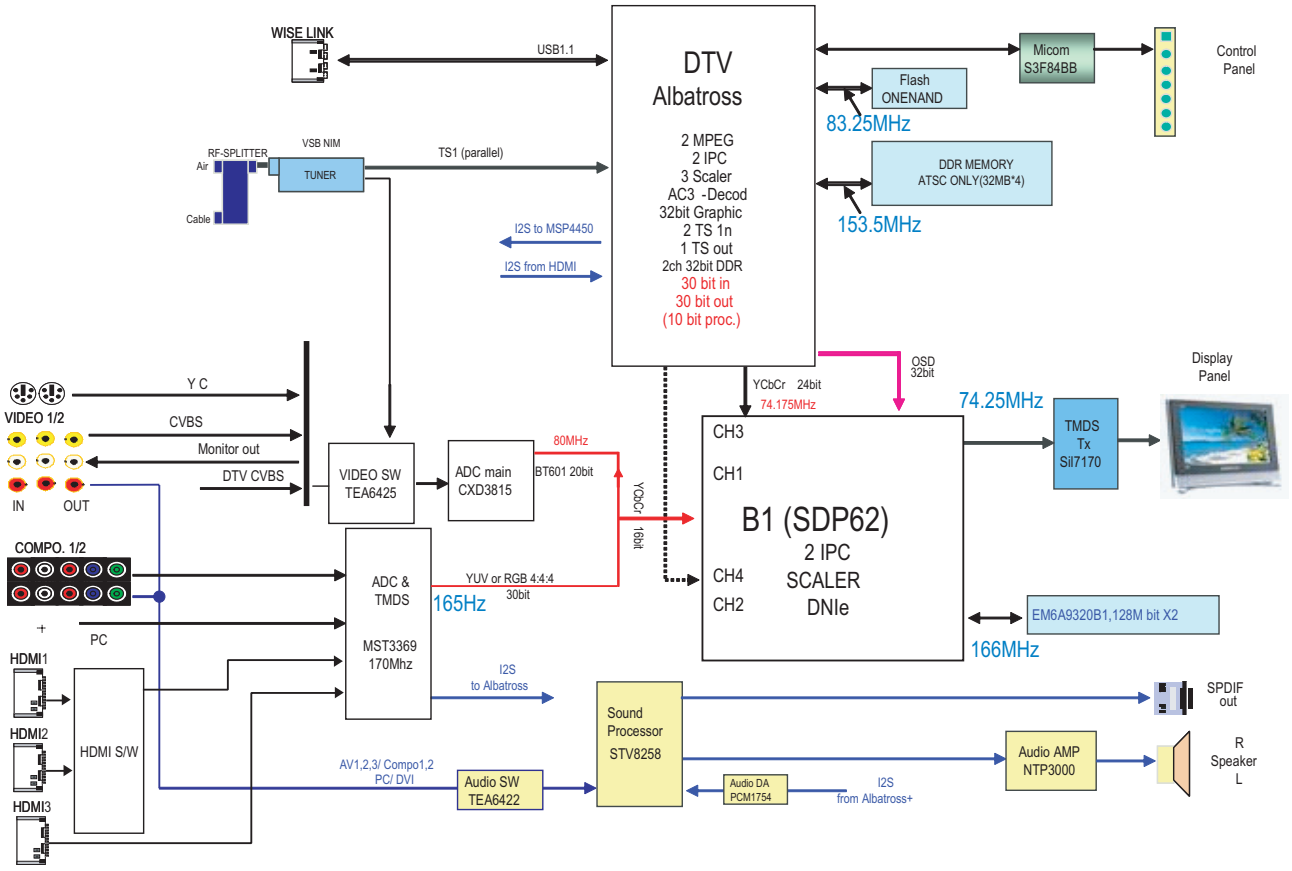
※For the Assy Code, see the service item on page 5-1.

7-2 Partial Block Diagram

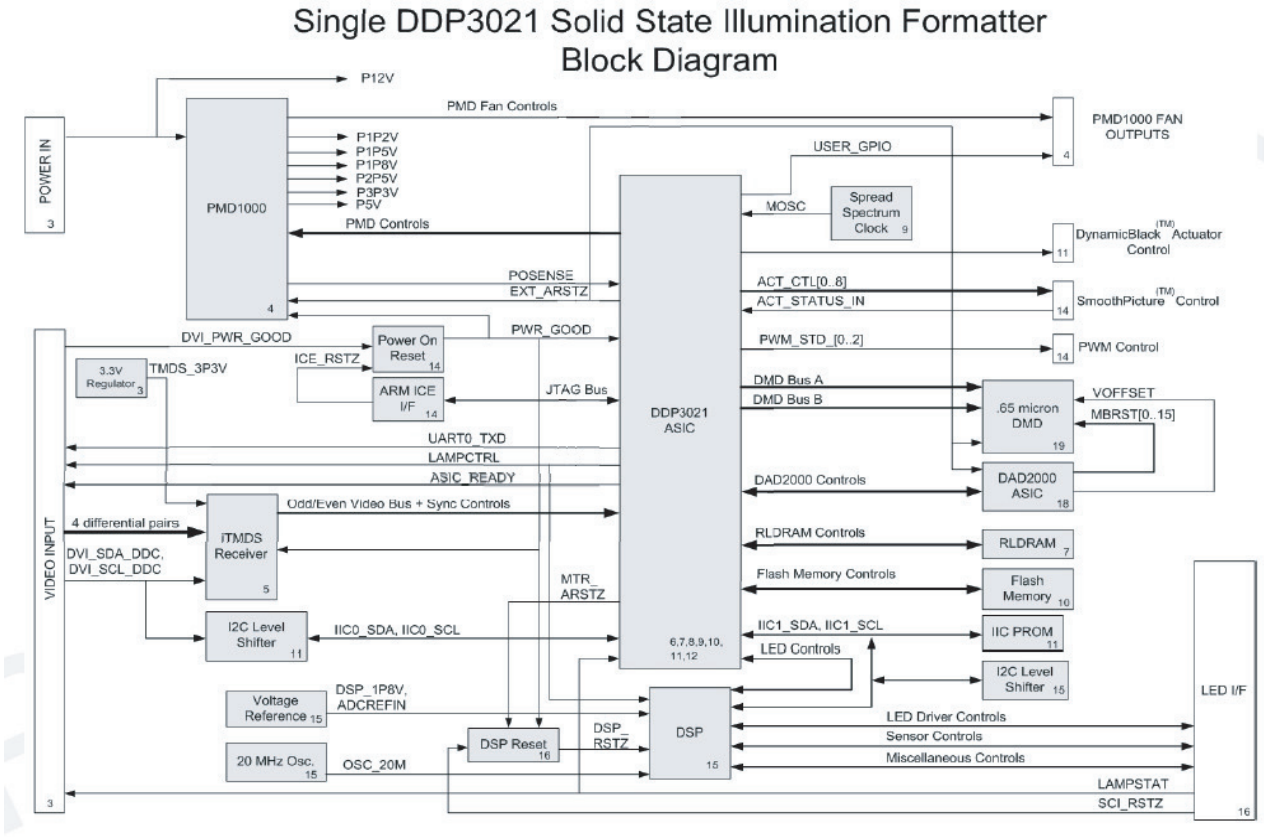
7-2-1 SMPS Block Diagram



7-2-4 Digital board Block Diagram



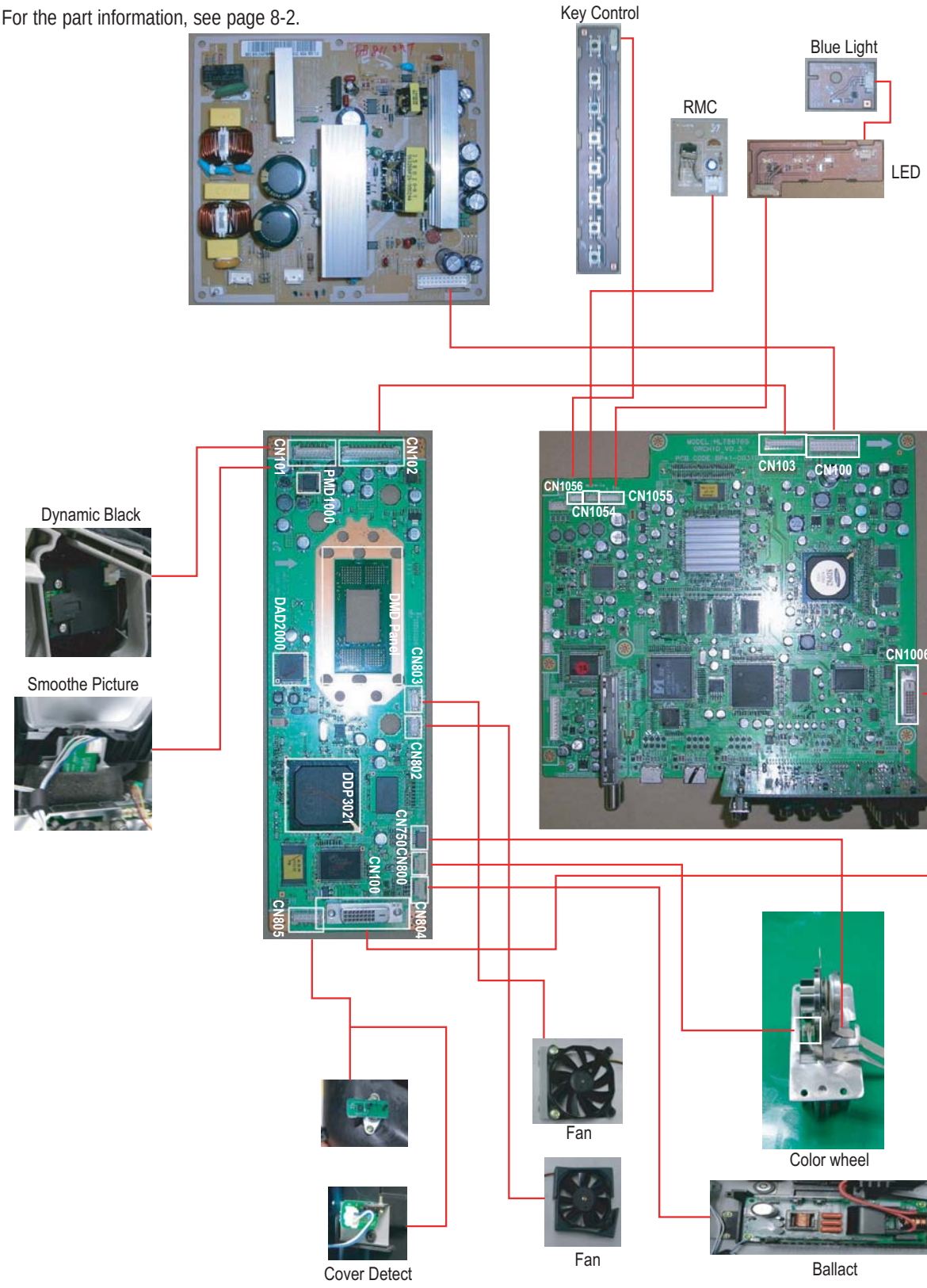
7-2-5 DMD board Block Diagram



8. Wiring Diagram

8-1 Overall Wiring

※For the part information, see page 8-2.



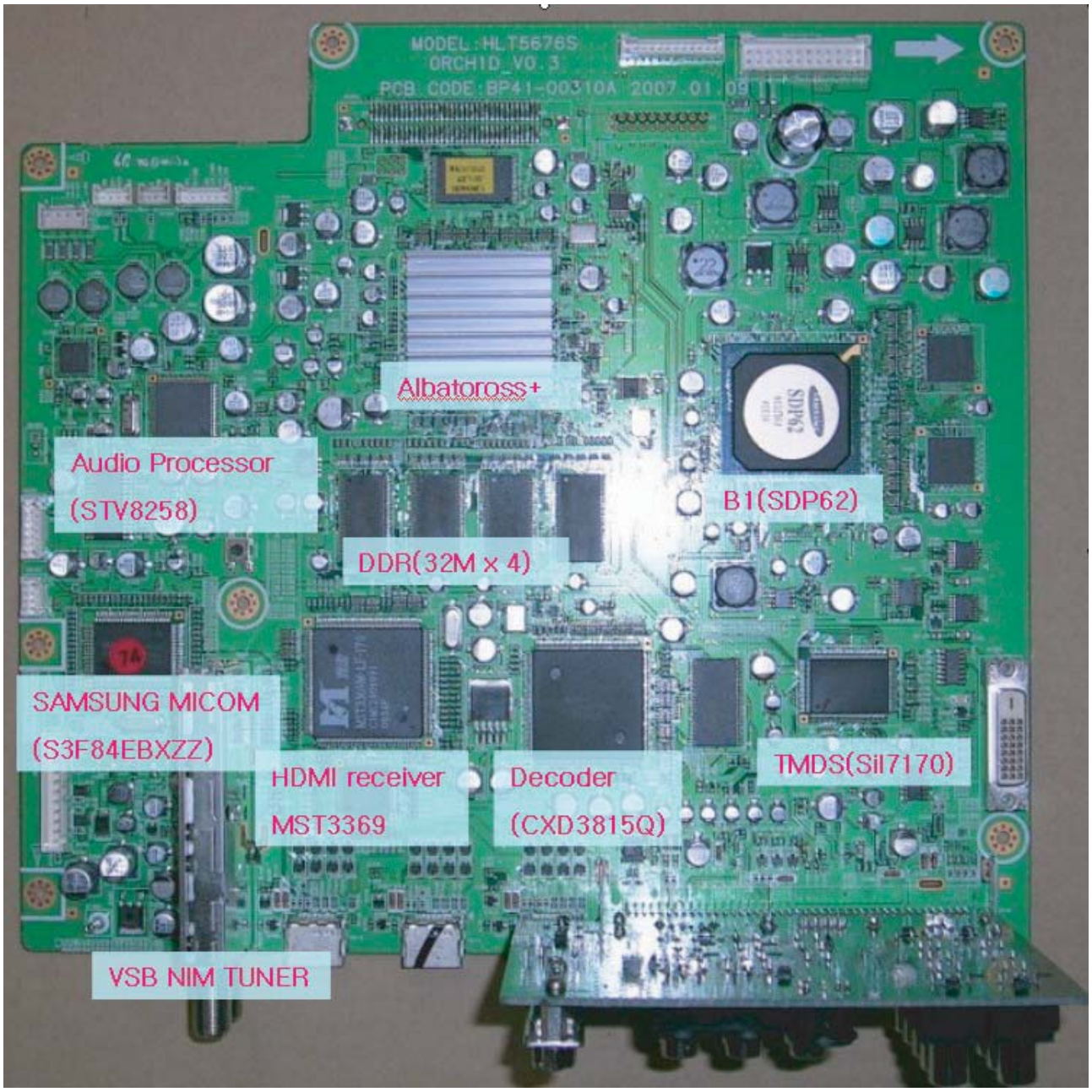
8-1-2 Connect Cables

※The code number of cable(Lead-connector) can be changed, see "5 Chapter. Electrical Part List."

Use	LED_indicator 6p	LED_Blue 3p	RMC 3P
Code	BP39-00258A	BP39-00259A	BP39-00261A
Photo			
Use	Key Control 4P	Ground discharge cable 1p	Power 24p
Code	BP39-00260A	BP39-00180D	BP39-00174H
Photo			
Use	Inlet	Ballast cable	Main to DMD cable
Code	BP96-00972A	BP39-00264A	BP39-00192D
Photo			
Use	DVI cable		
Code	BP39-00253A		
Photo			

8-2 Main Board Layout

※Options are deleted on the ATSC only Model.



8-2-1 Power Board Connector Pin

CN811
Connecting Power to Main Board

Pin Name	PIN No.		Pin Name
STD5V	1	2	N.C
GND	3	4	S16V
STD5V	5	6	GND
GND	7	8	S16V
POWER_SW	9	10	GND
A6.0V	11	12	A6.0V
GND	13	14	GND
D12V	15	16	D12V
GND	17	18	GND
D12V	19	20	D12V
GND	21	22	GND
GND	23	24	D12V

8-2-2 Main Board Connector Pin

CN1001

Pin No.	Pin Name
1	-L_OUT
2	+L_OUT
3	-R_OUT
4	+R_OUT

CN1005

Pin No.	Pin Name
1	GND
2	RXD0
3	TXD0
4	3.3VA

CN103

Pin No.	Pin Name
1	GND
2	GND
3	12VB
4	12VB
5	GND
6	SDA-M1
7	SCL-M1
8	GND
9	S5V
10	GND
11	70VB
12	GND

CN100

Pin Name	PIN No.		Pin Name
STD5V	1	2	N.C
GND	3	4	16VB
STD5V	5	6	S_GND
GND	7	8	S14.5VB
POWER_SW	9	10	S_GND
5.7VB	11	12	5.7VB
GND	13	14	GND
12VB	15	16	12VB
GND	17	18	GND
12VB	19	20	12VB
GND	21	22	GND
GND	23	24	12VB

CN1006

PIN No.	Pin Name	PIN No.	Pin Name	PIN No.	Pin Name
1	TMDS_TX0+	9	TMDS_TX1+	17	TMDS_TX2+
2	TMDS_TX0-	10	TMDS_TX1-	18	TMDS_TX2-
3	GND	11	GND	19	GND
4	TMDS_TXC+	12	NC	20	DLP_SYNCVAL
5	TMDS_TXC-	13	NC	21	MD_nRESET
6	SCL_DDP	14	NC	22	GND
7	NC	15	LAMP_TXn_1	23	DDP_READY
8	NC	16	LAMP_Rx	24	PWRGOOD

CN1051

Pin No.	Pin Name
1	3.3VA
2	SDA0
3	SCL0
4	TEST
5	RESETn
6	GND
7	POWER-SW

CN1054

Pin No.	Pin Name
1	IR
2	GND
3	5VA

CN1055

Pin No.	Pin Name
1	5VA
2	Key-PWR
3	GND
4	LED_TIMER
5	LED_LAMP
6	LED_STB

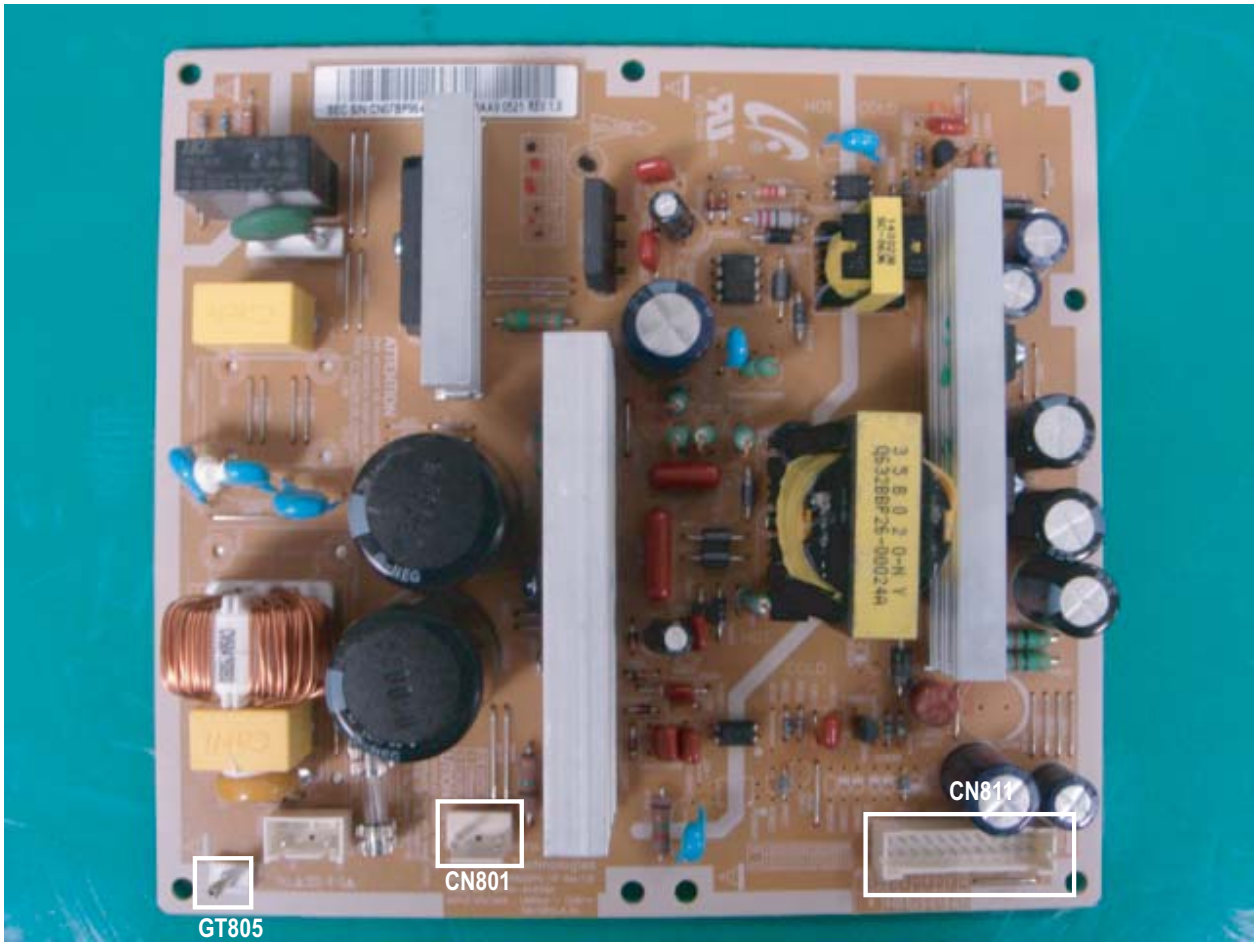
CN1056

Pin No.	Pin Name
1	GND
2	KEY1
3	KEY2

9. PCB Diagram

9-1 Power Board

9-1-1 Assy Power Board



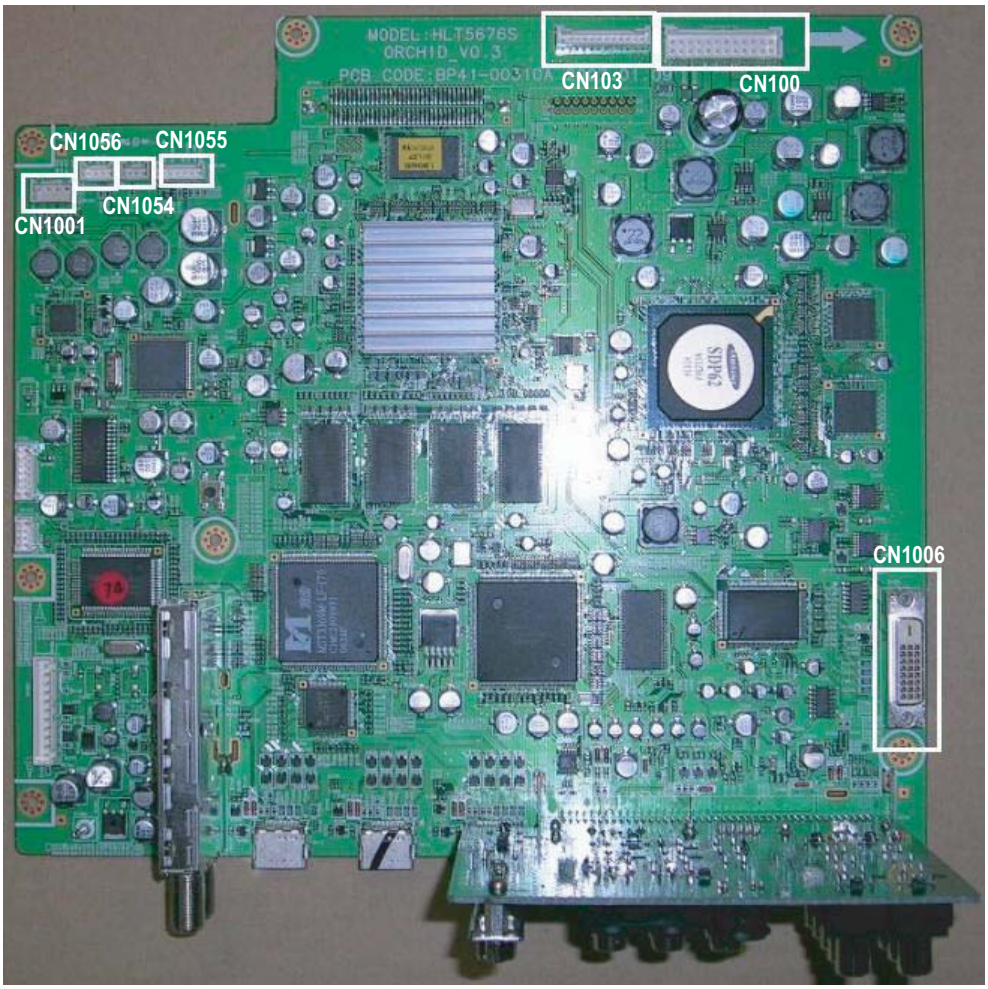
■ DC Power Supply
(Supplies DC power to the main PCB and the sub power board.)

9-1-2 Names & Roles of Key Parts

* CNP801 : Supplies power to the sub power board.
* CN811 : Supplies power to the main board.
* GT805 : Anti-lightning wire connected to the main board. The anti-lightning wire should be installed for safety purposes.

9-2 Main Board

9-2-1 Assy Main Board



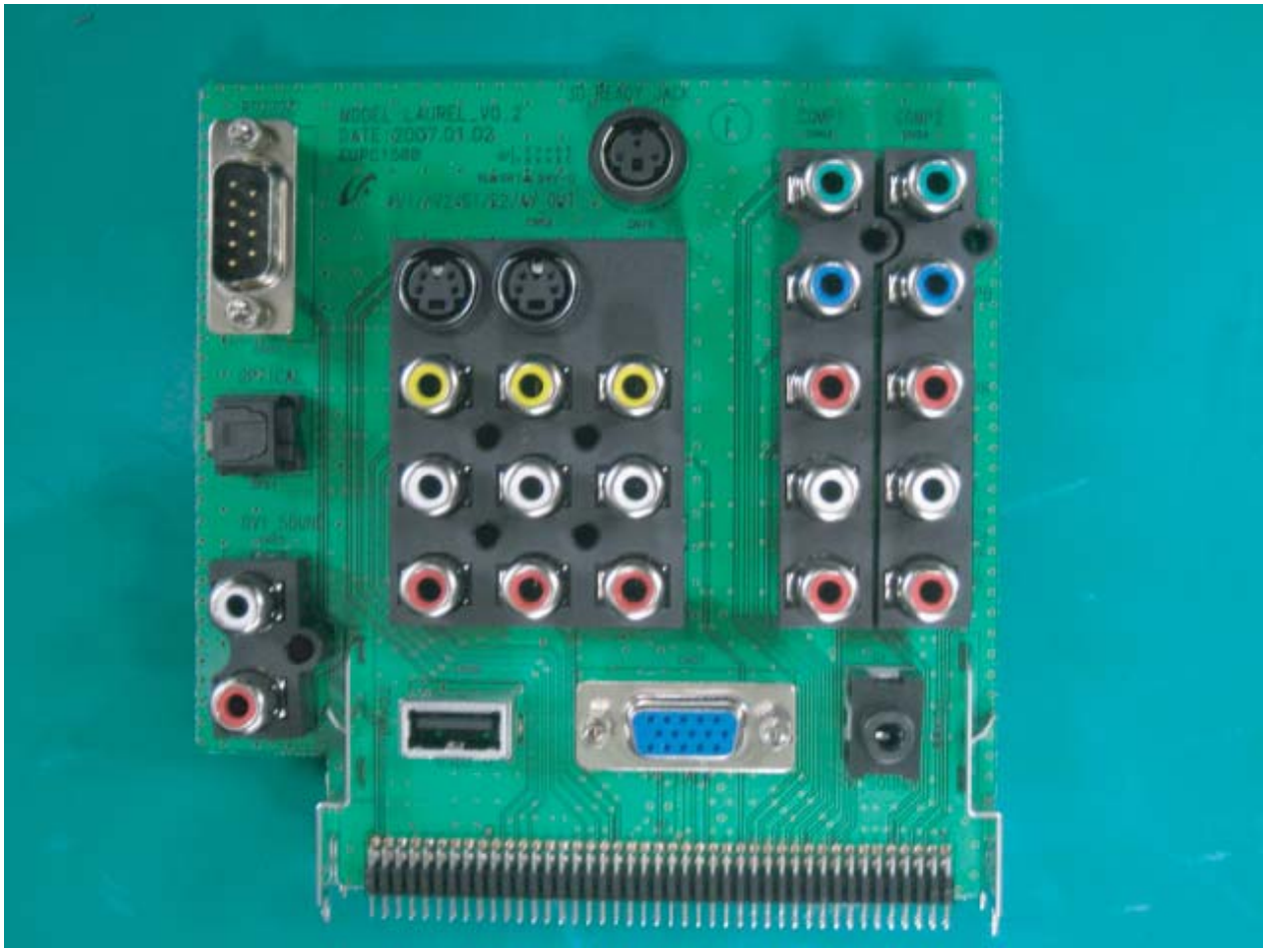
- All Digital Video Processing
- OSD / Menu
- Reset Switch (Reset to the CPU)

9-2-2 Names & Roles of Key Parts

* CN103 : The power(+5V, +12V) supply to the DMD Board.
* CN1006: DMD board control signal and TMDS Signal connection.
* CN1001: Speaker cable connection.
* CN1056 : Key control signal.
* CN1054 : Remote control signal.
* CN1055 : Indicator LED signal.
* CN100: power supply from SMPS.

9-3 Jack Board

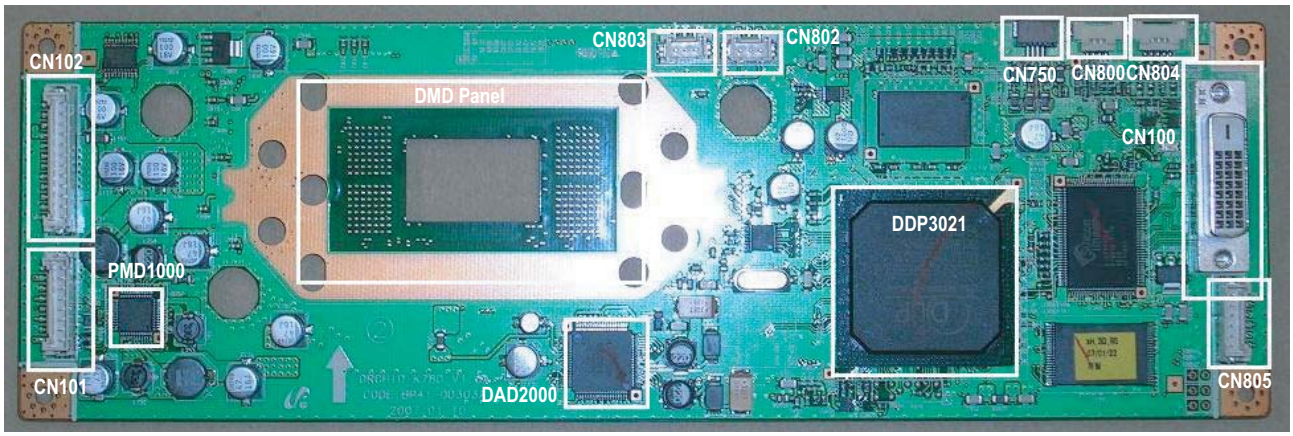
9-3-1 Assy Jack Board



- Analog Video Input
- Analog Audio Input
- 3D Ready Jack

9-4 DMD Board

9-4-1 Assy DMD Board



- Controls the lamp (ON/OFF)
- Drives the color wheel motor
- Drives the panel

9-4-2 Names & Roles of Key Parts

* CN100 : The DVI cable terminal. This receives the image data from the main board.
* CN101 : This sends signals to the Actuator
* CN102 : This receives the power from the main board.
* CN750 : This sends Color Wheel signal.
* CN800 : This receives Color Wheel sensor signal.
* CN802 : This sends FAN power. (8V)
* CN803 : This sends FAN power. (8V)
* CN804 : This sends SCI signal to balast.
* CN805 : This receives temp error signal and cover detect signal.
* DMD PANEL : This is panel (type x)
* DDP3021 : This processes the DMD drive and the signals.
* PMD1000 : This supplies the DMD Board power.
* DAD2000 : This supplies DMD reset signals.

10. Schematic Diagram

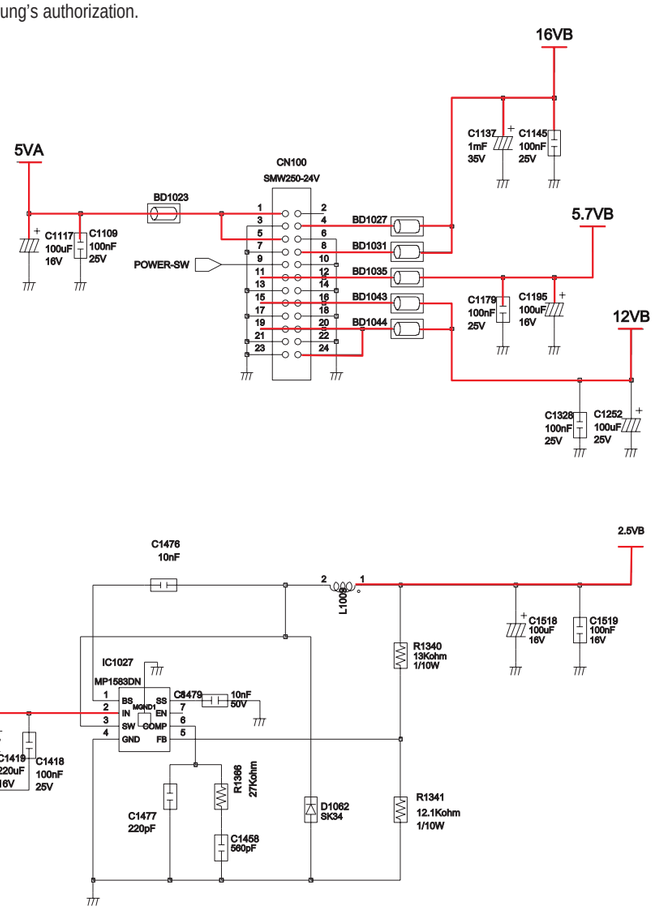
10-1 Main Board

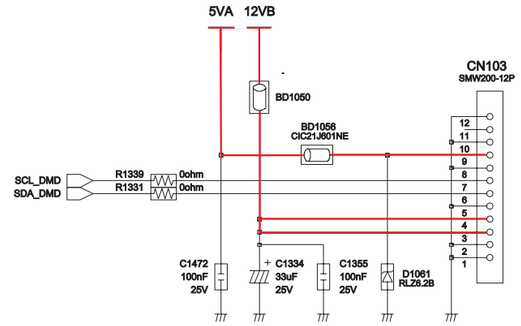
10-1-1 Main Board-1

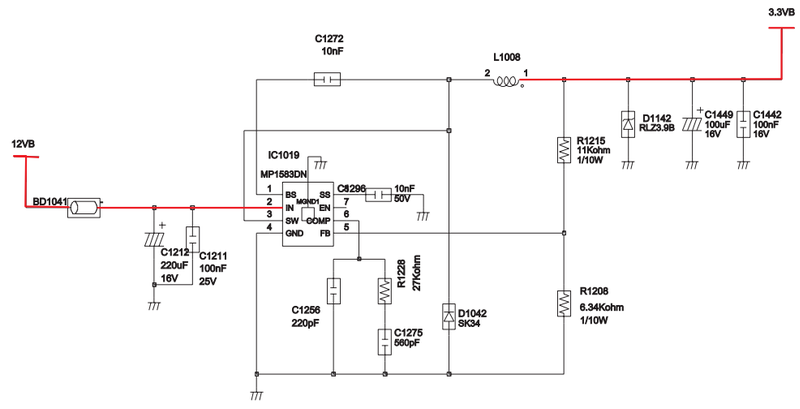
This Document can not be used without Samsung's authorization.

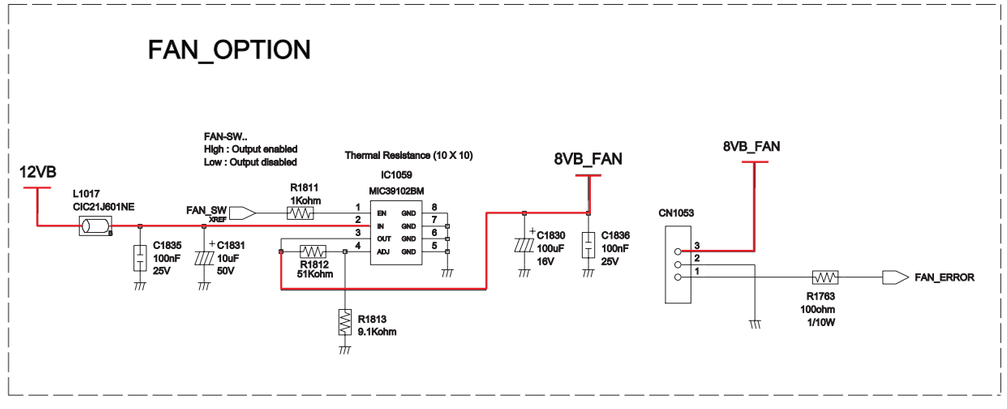
———	Power
———	Signal

POWER



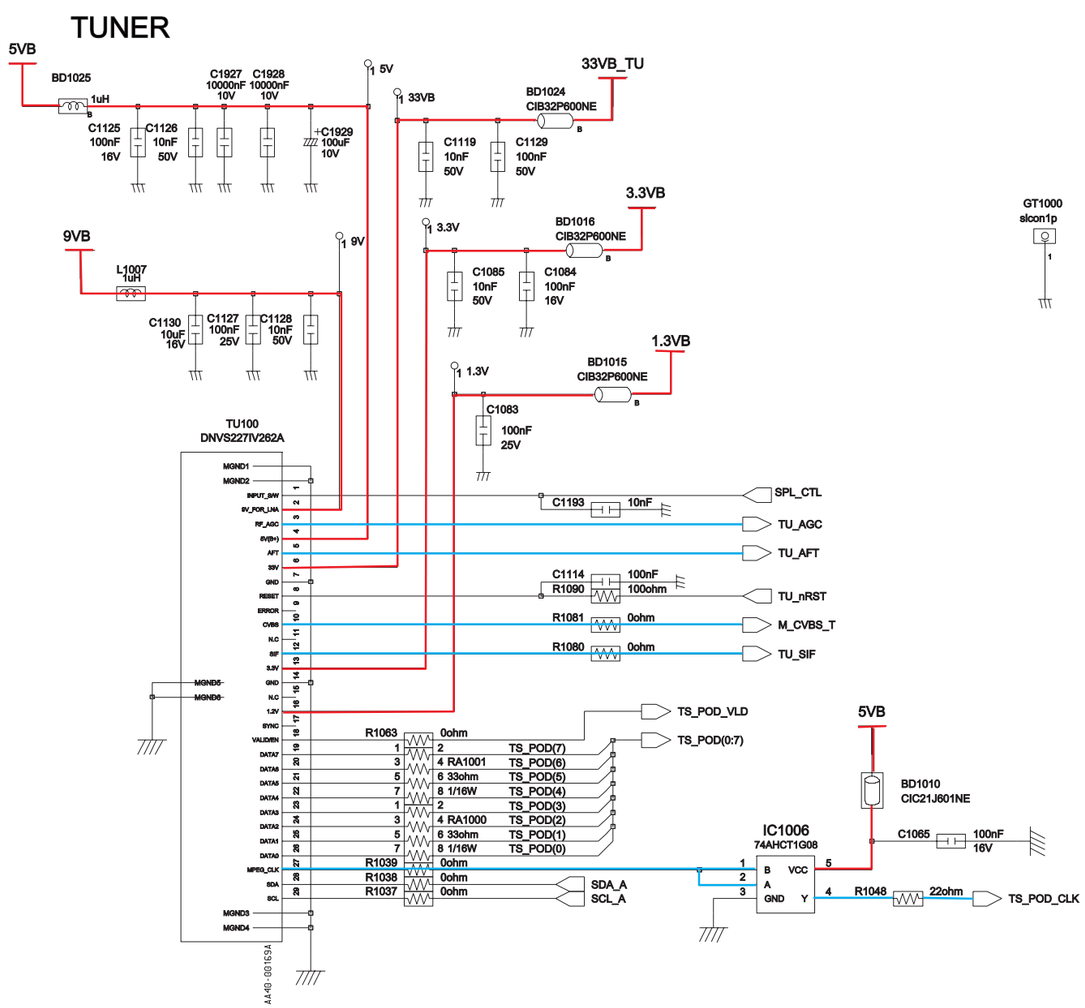






10-1-2 Main Board-2

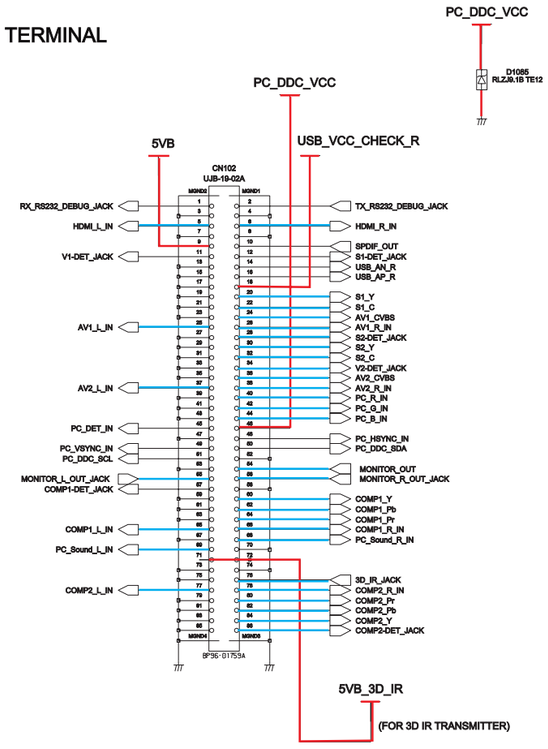
———	Power
———	Signal

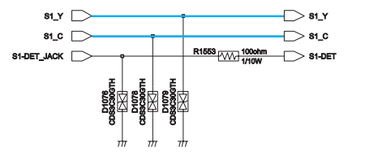


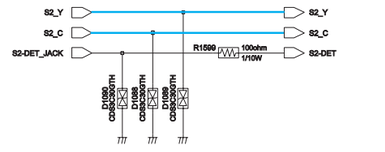
10-1-3 Main Board-3

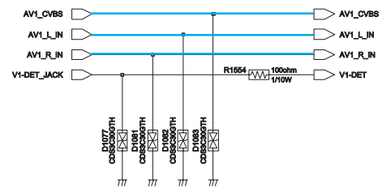
	Power
	Signal

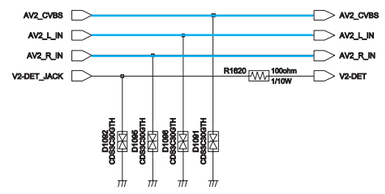
TERMINAL

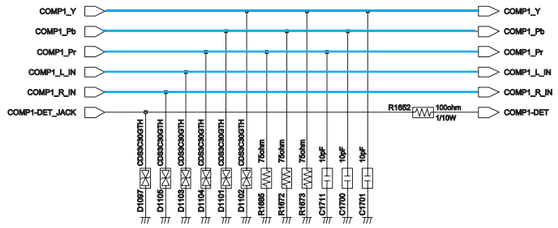


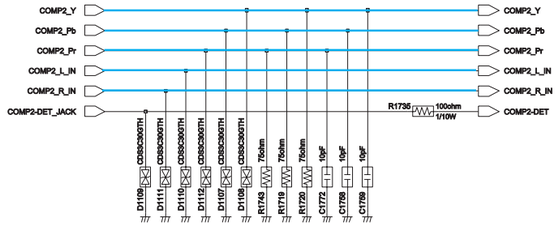


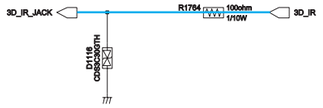


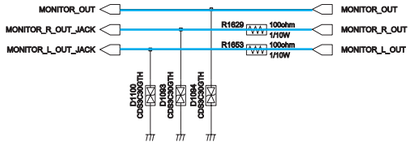


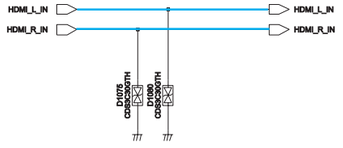


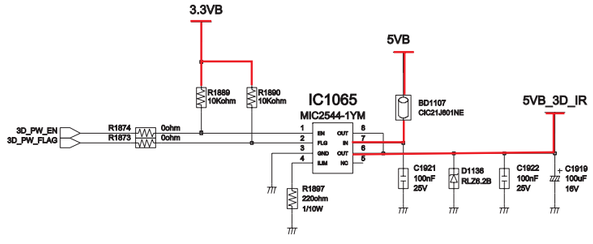


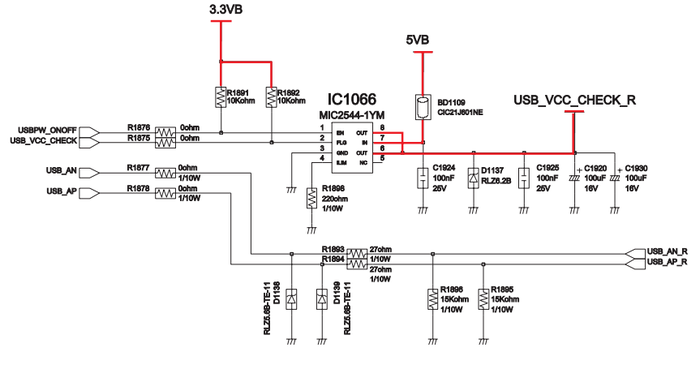


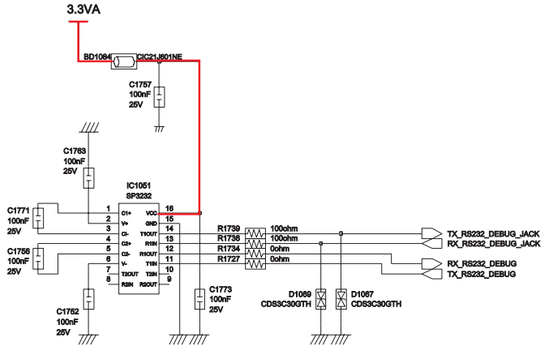


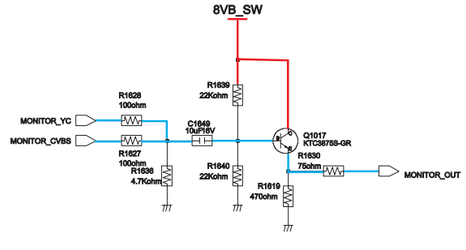




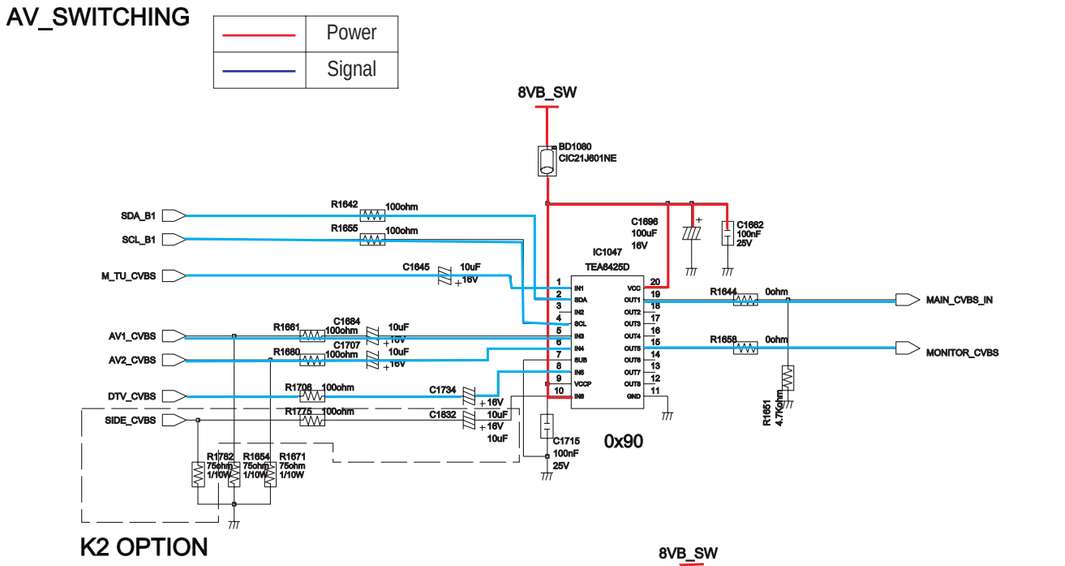




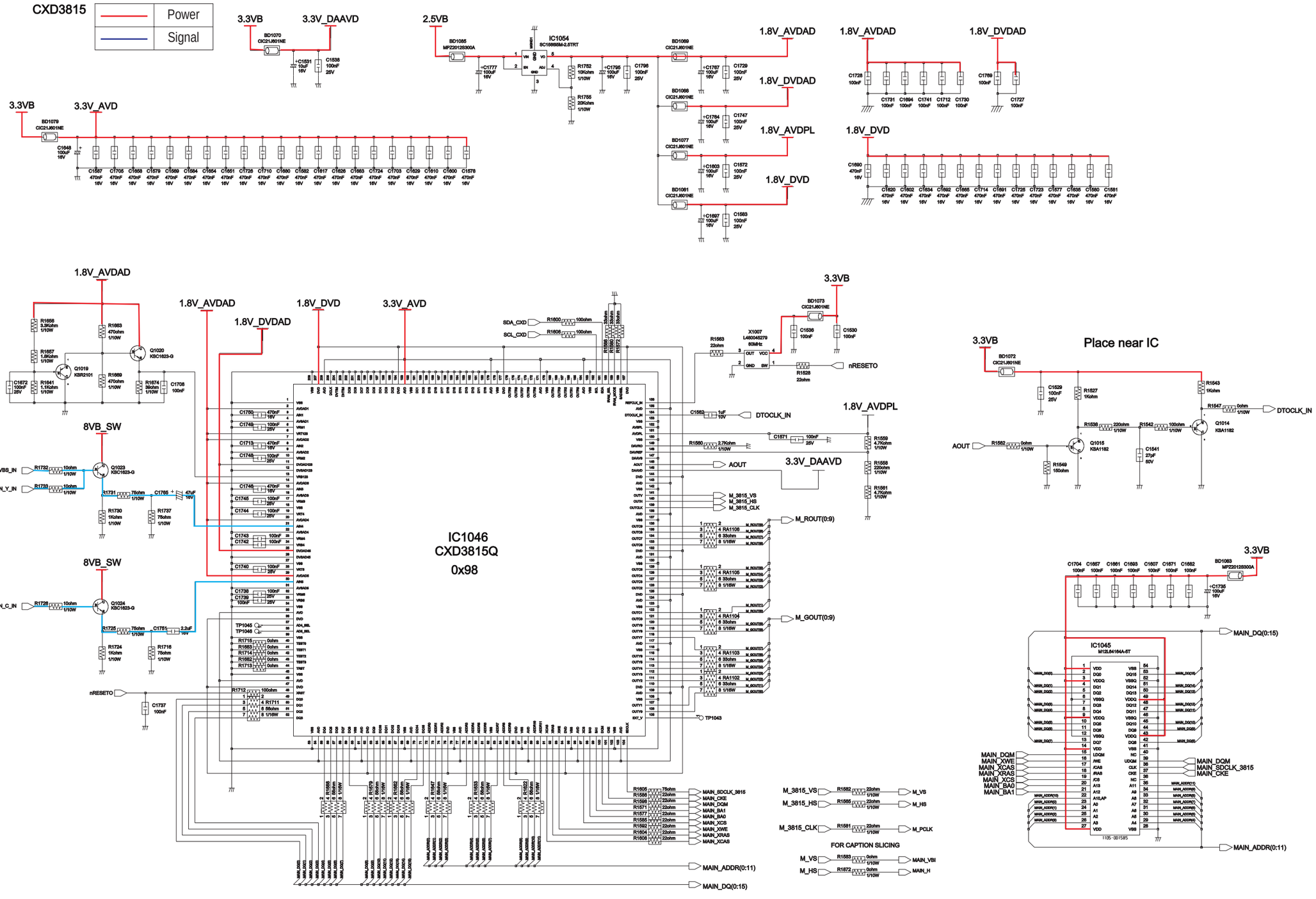




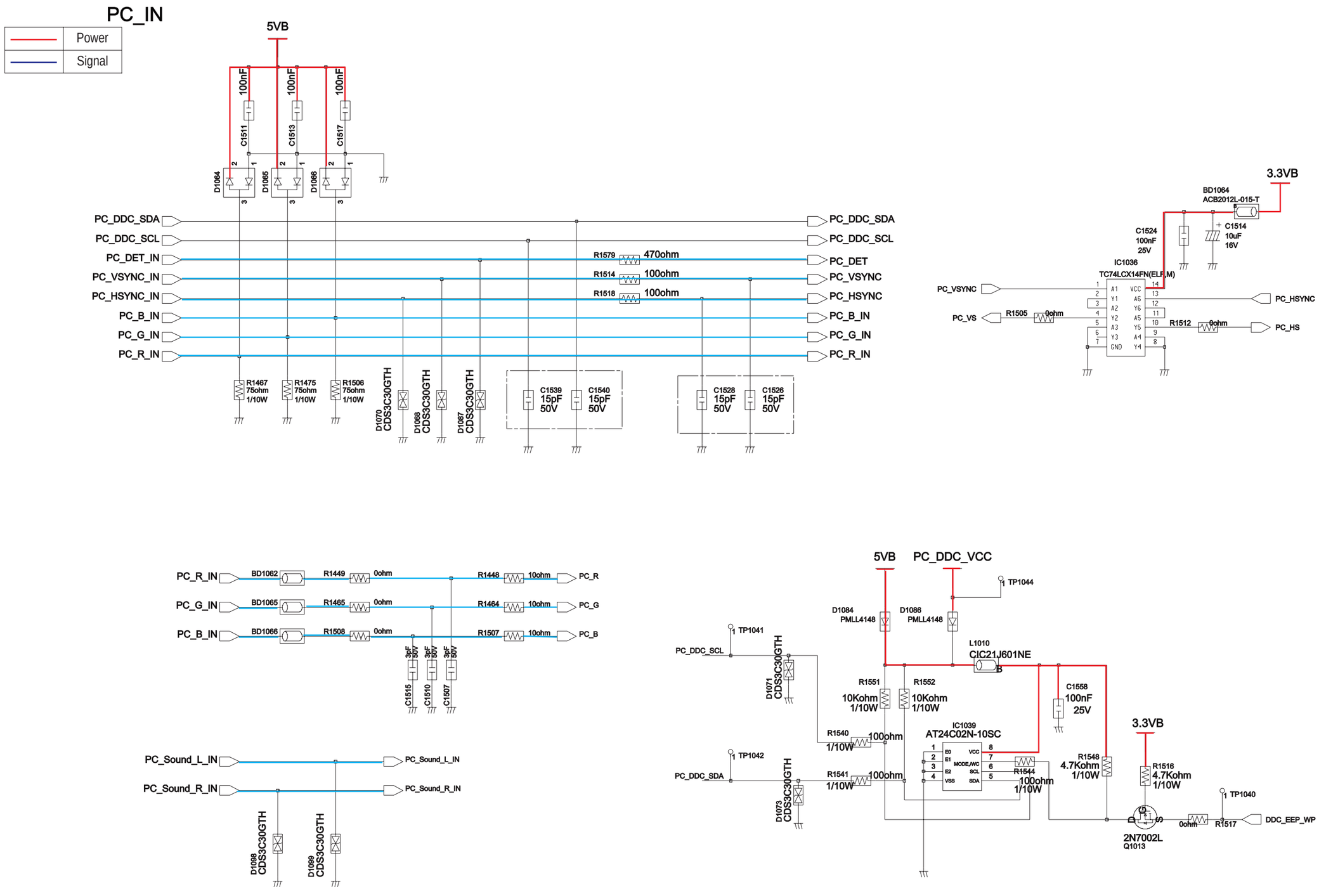
10-1-4 Main Board-4



10-1-5 Main Board-5

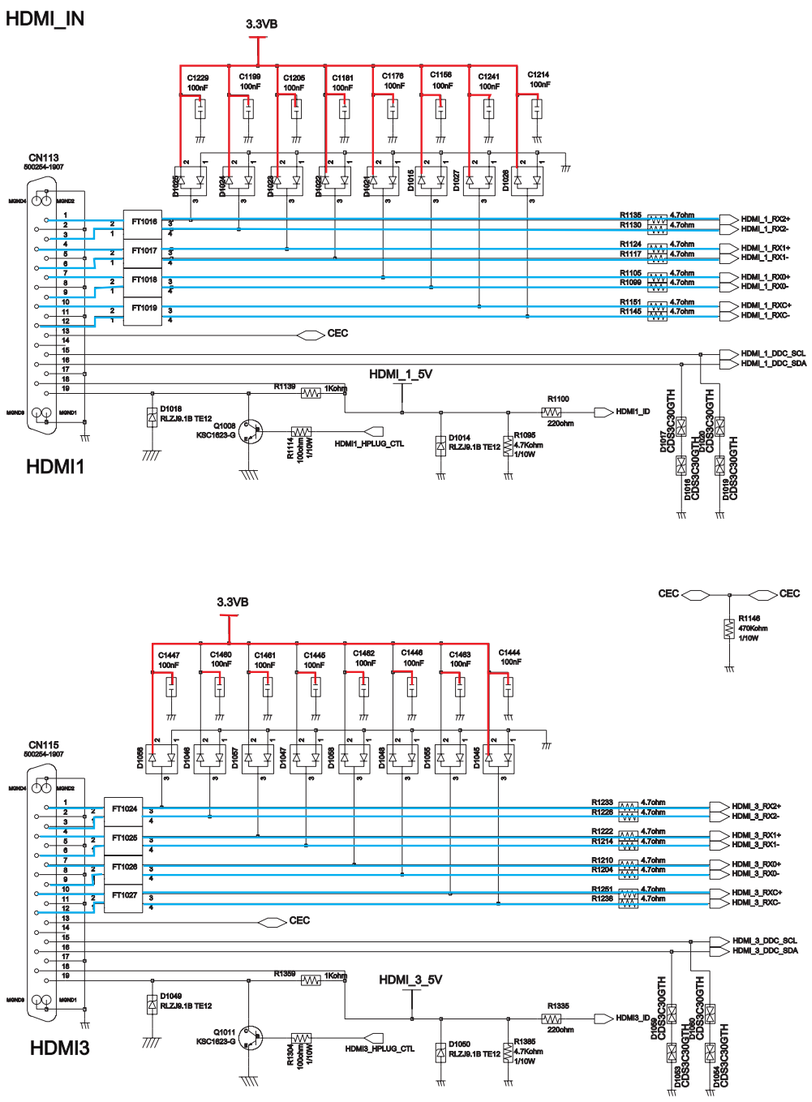


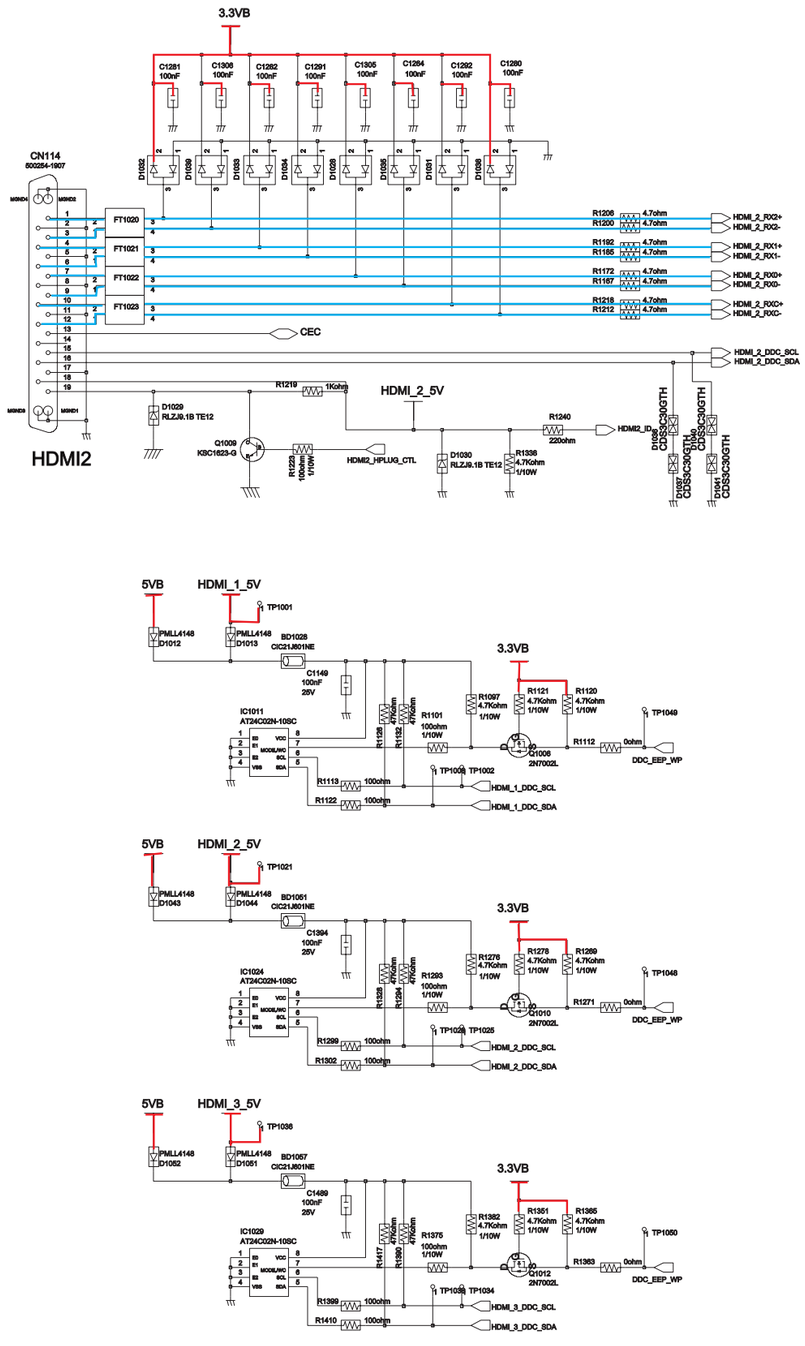
10-1-6 Main Board-6



10-1-7 Main Board-7

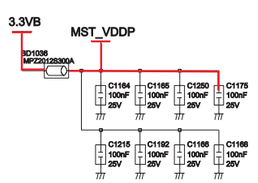
———	Power
———	Signal

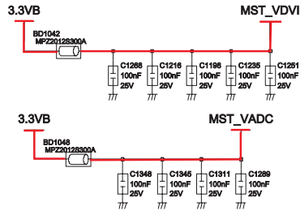


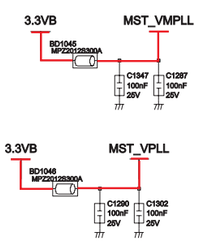


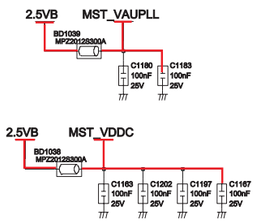
10-1-8 Main Board-8

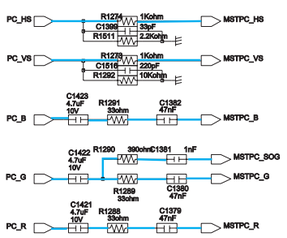
	Power
	Signal

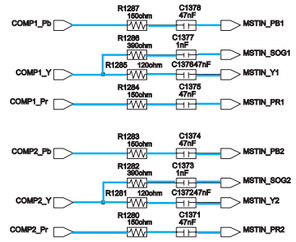


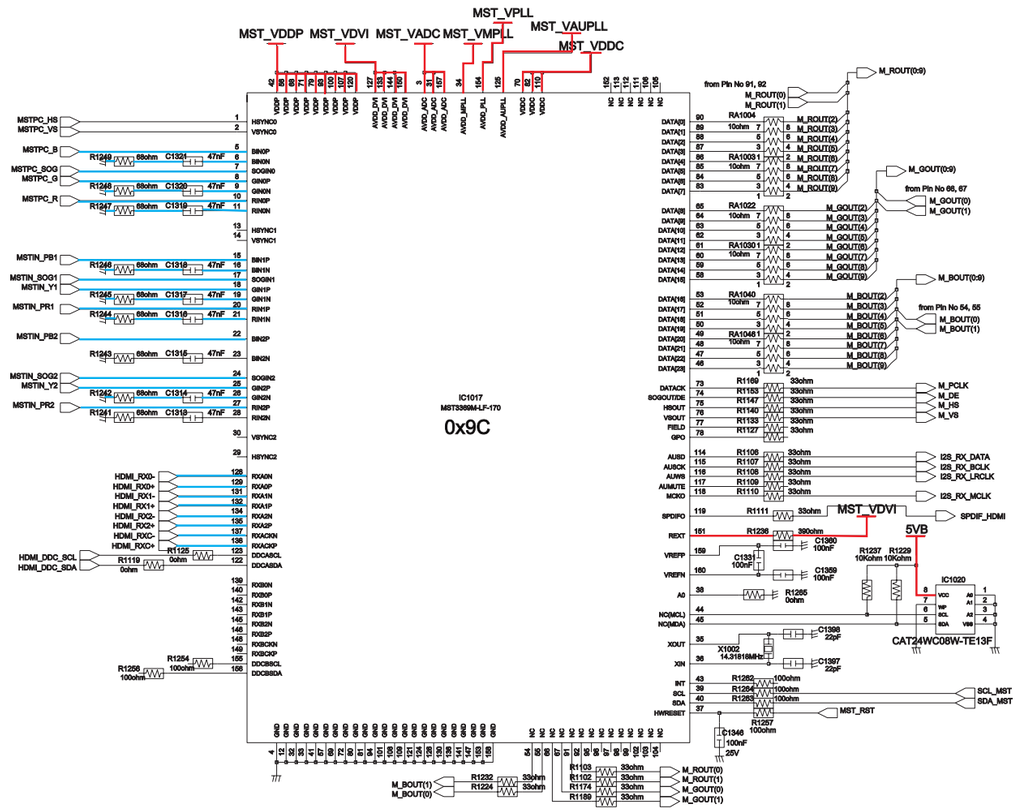


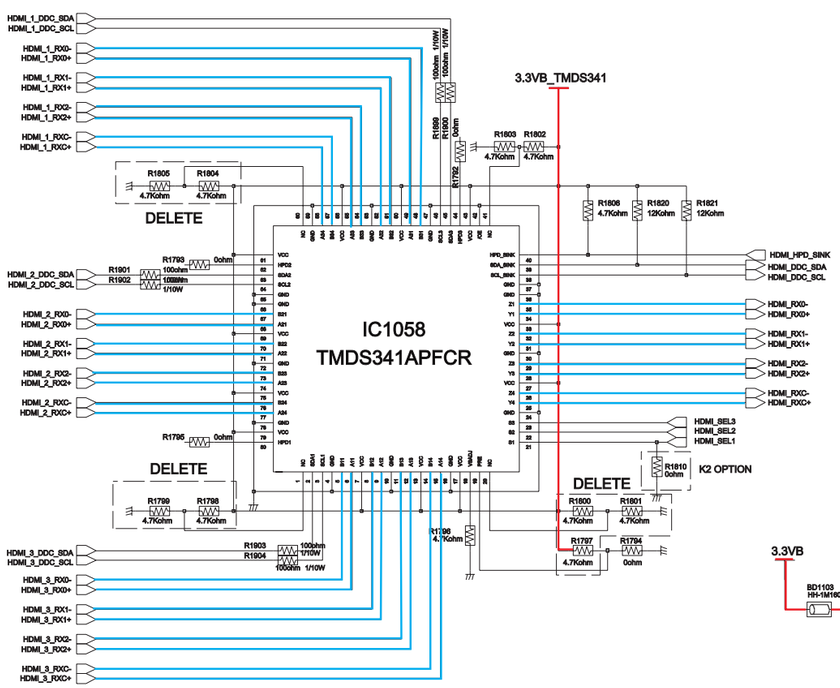


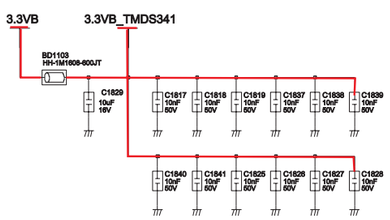








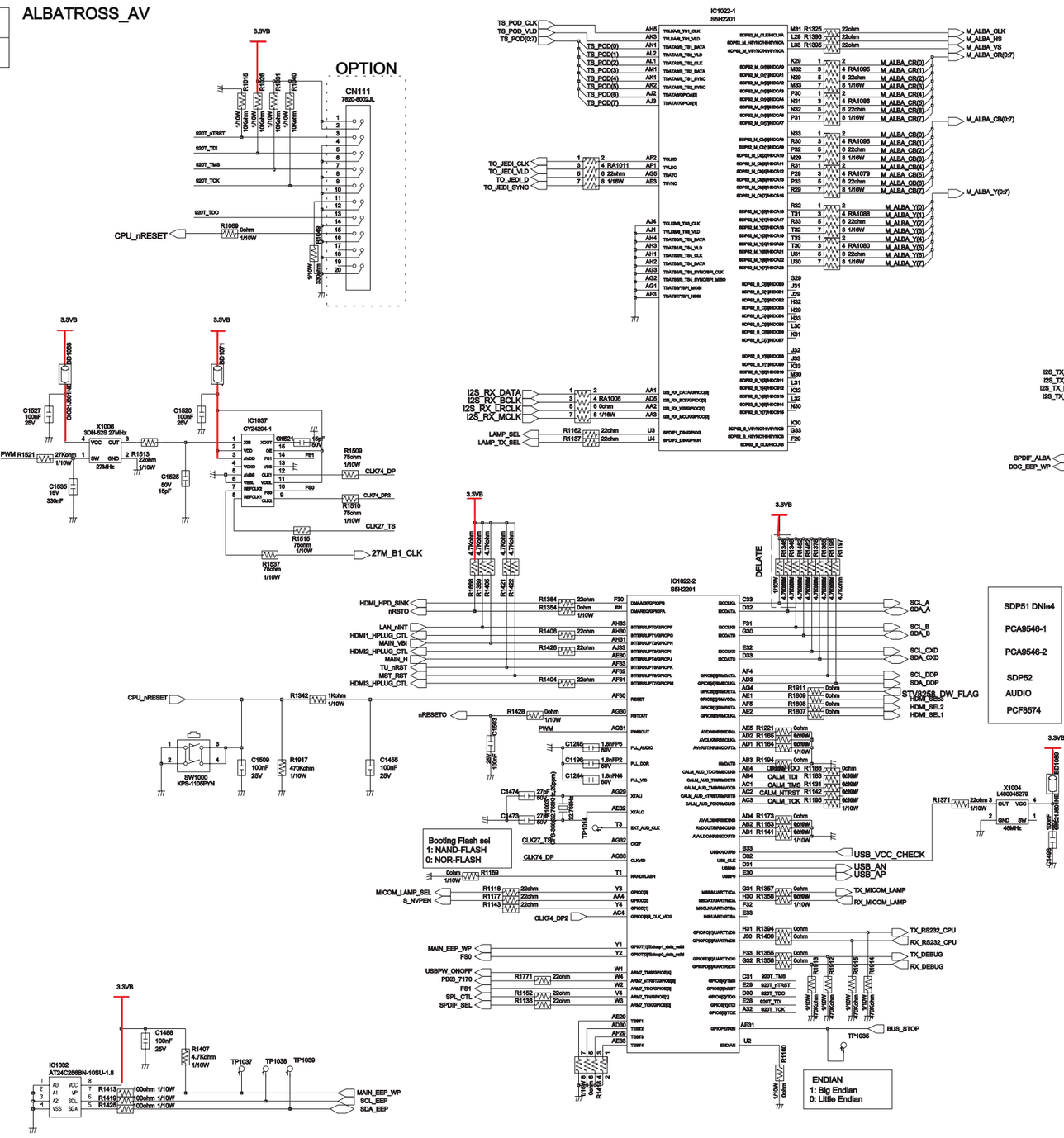




10-1-9 Main Board-9

	Power
	Signal

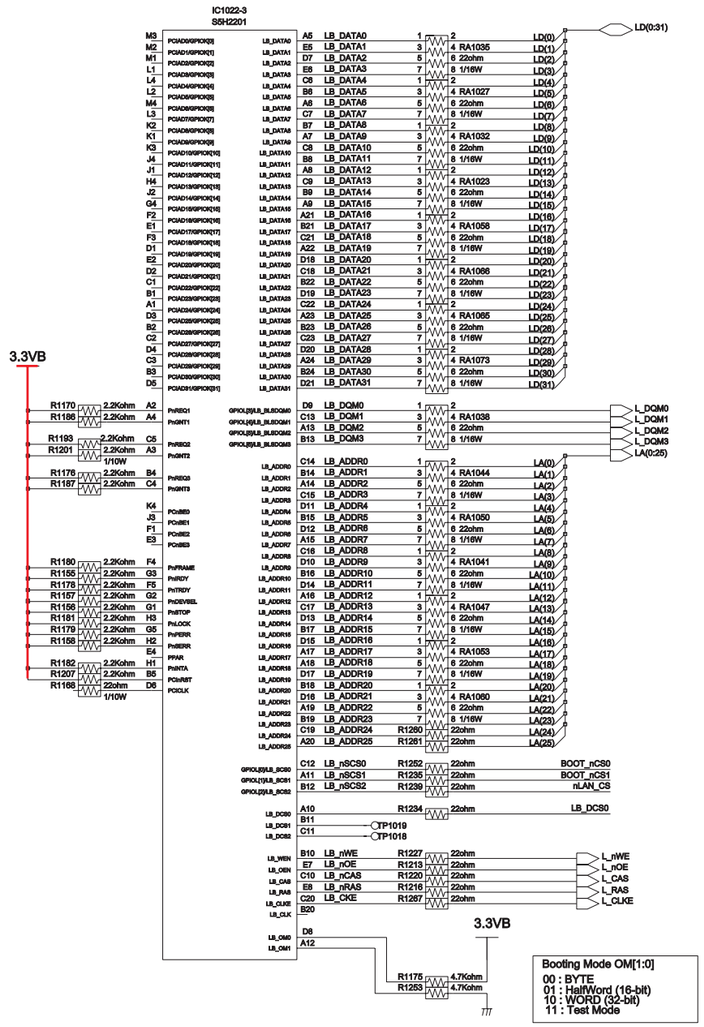
ALBATROSS_AV

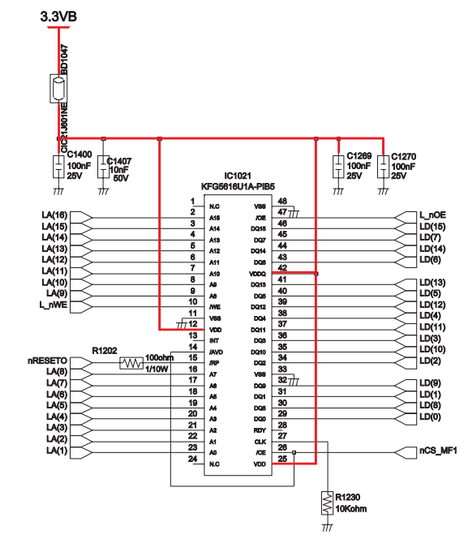


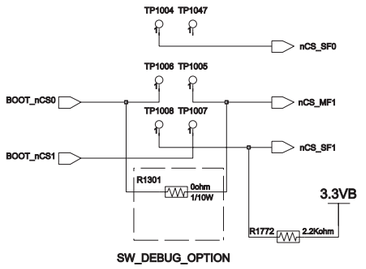
10-1-10 Main Board-10

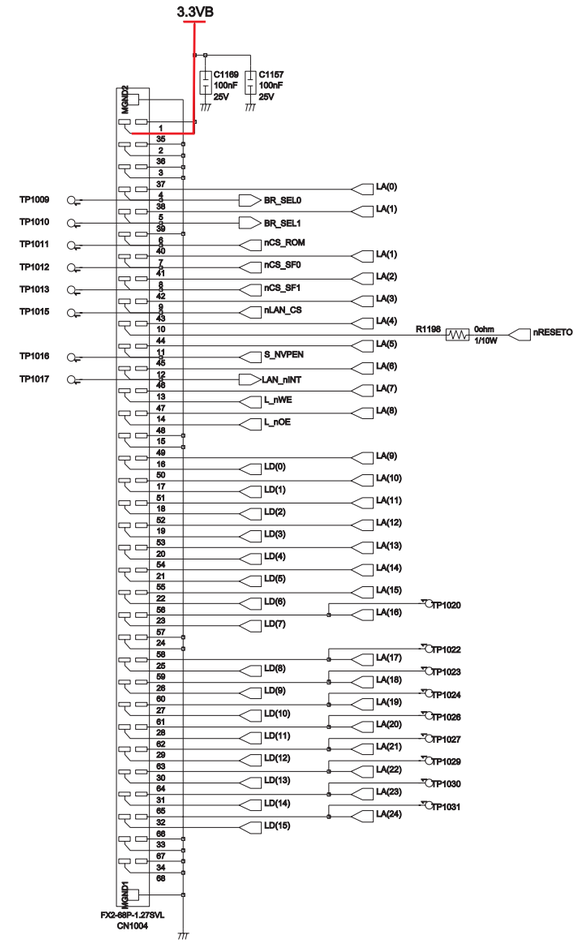
———	Power
———	Signal

ALBATROSS_LOCAL





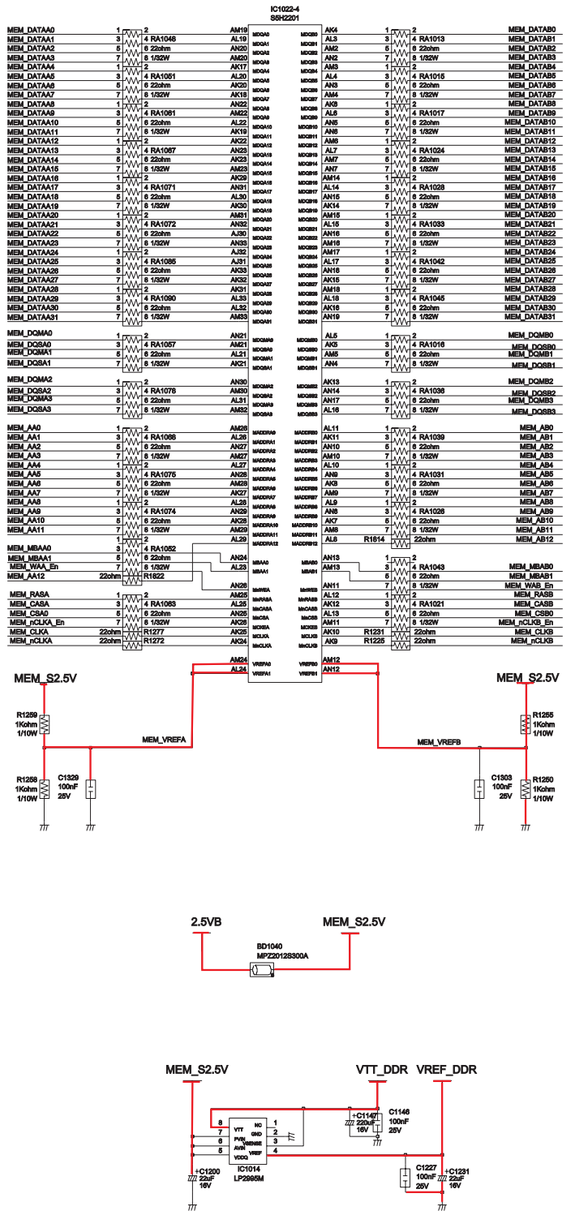


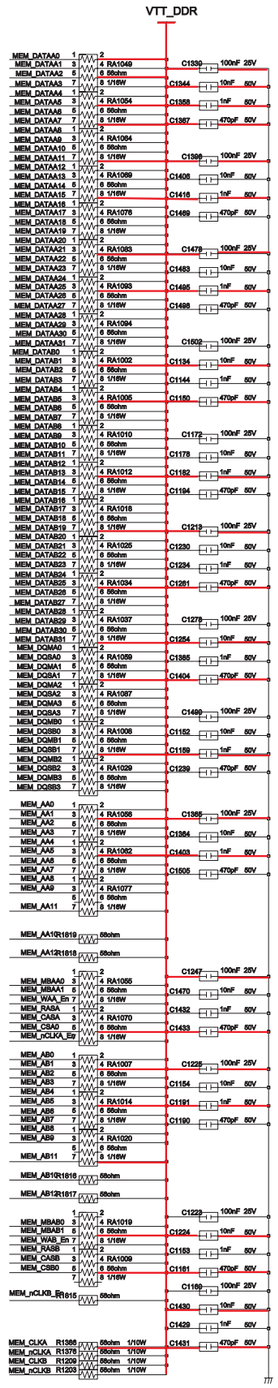


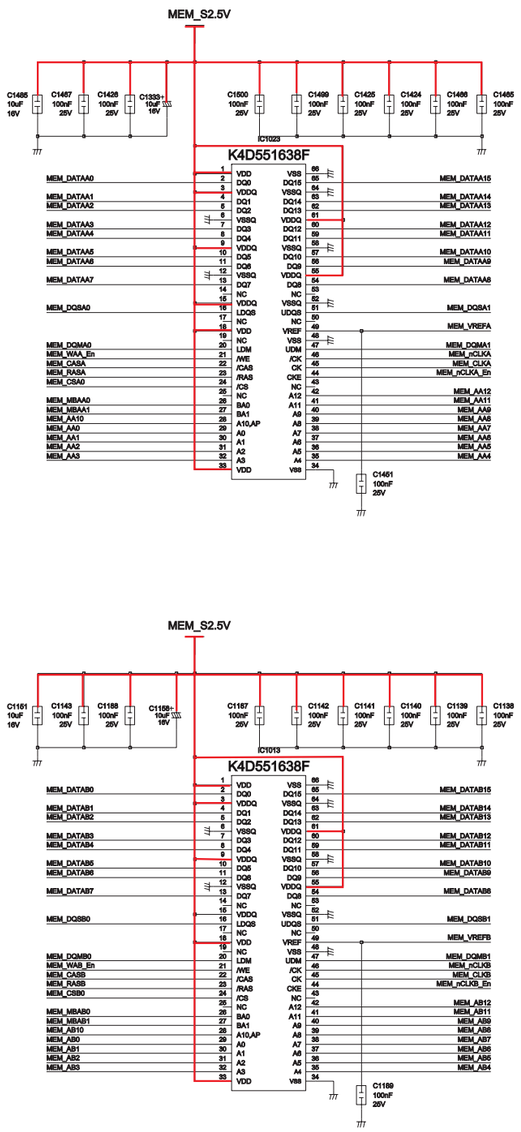
10-1-11 Main Board-11

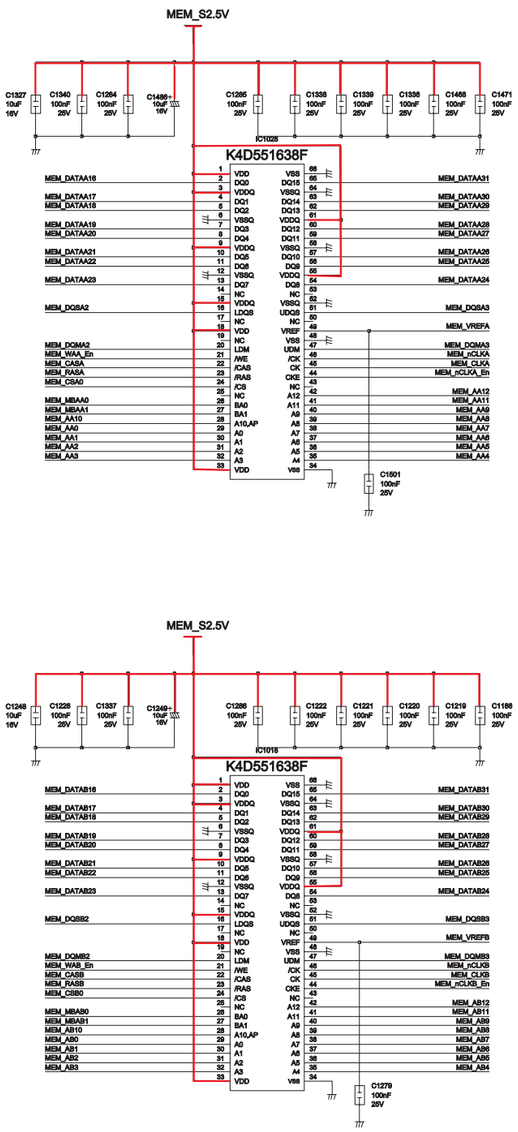
	Power
	Signal

ALBATROSS_DDR





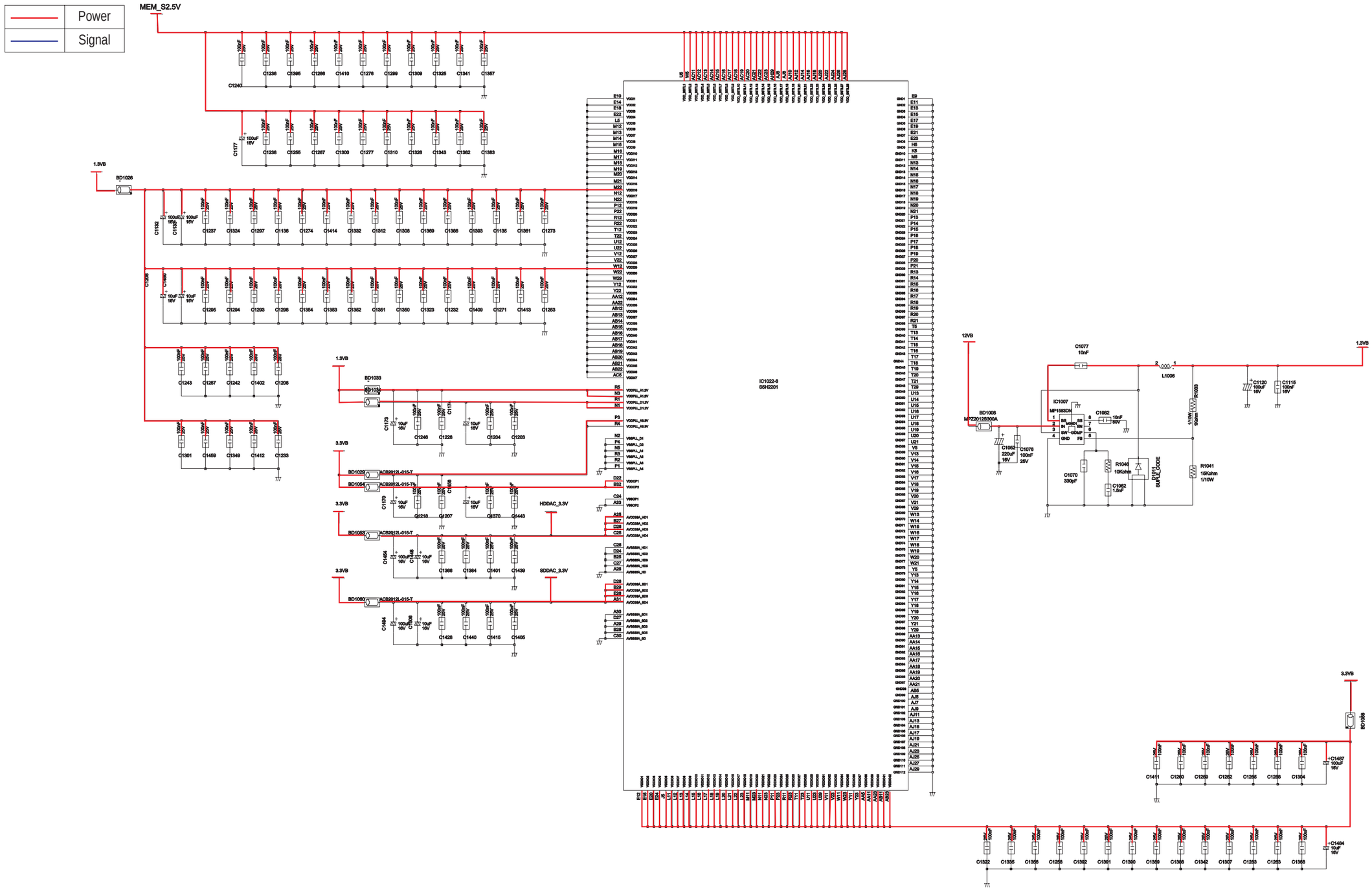




10-1-12 Main Board-12

ALBATROSS_POWER

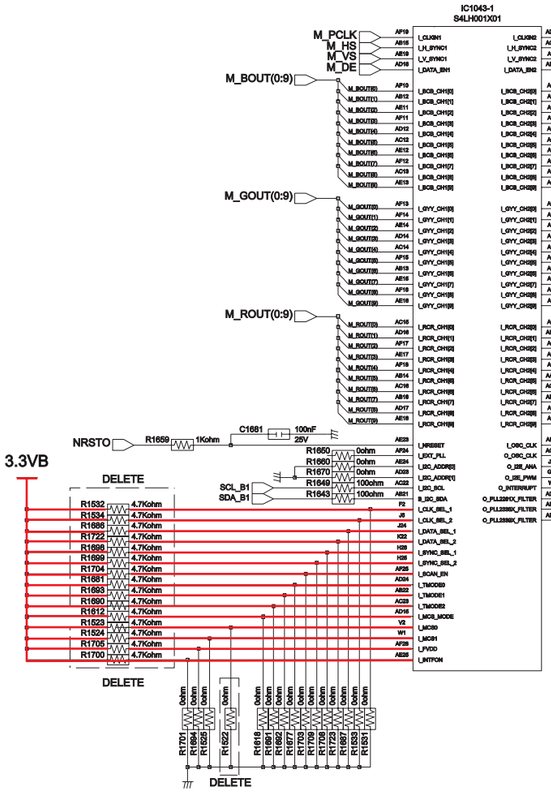
———	Power
———	Signal

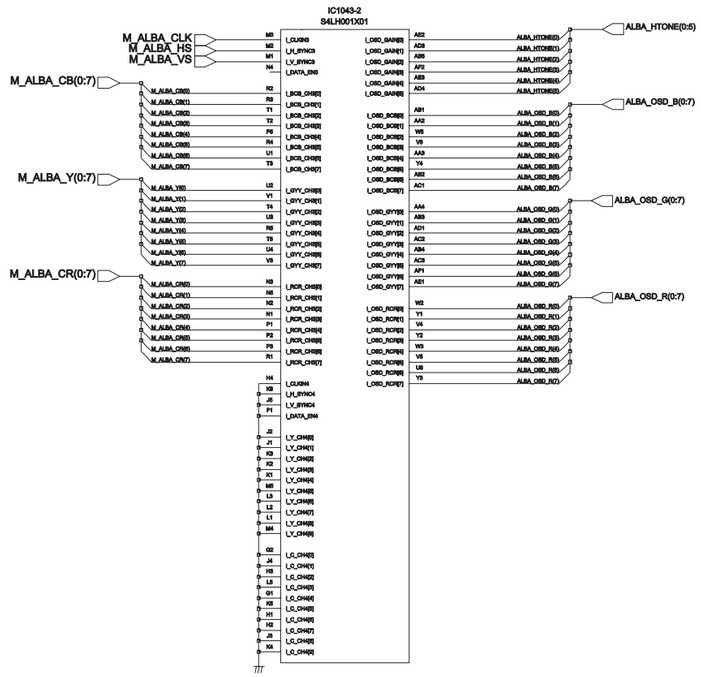


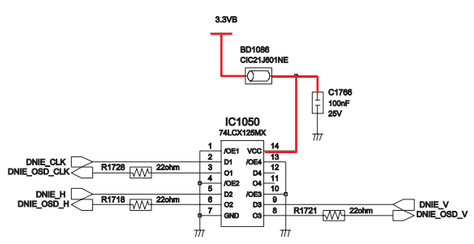
10-1-13 Main Board-13

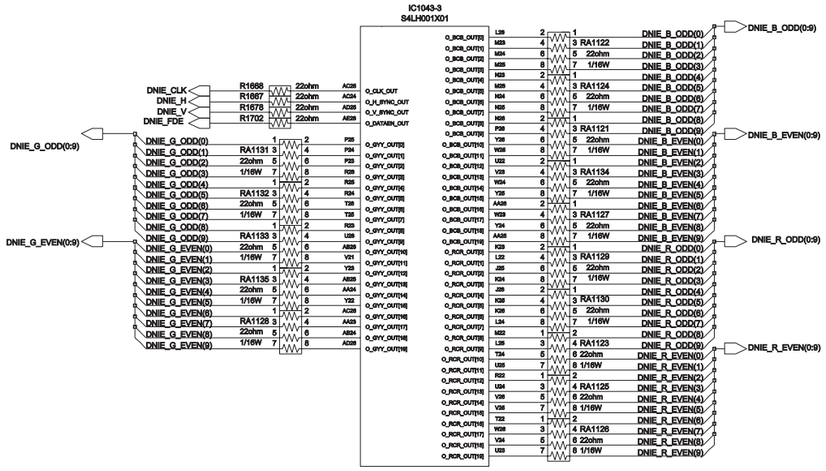
B1_AV

———	Power
———	Signal





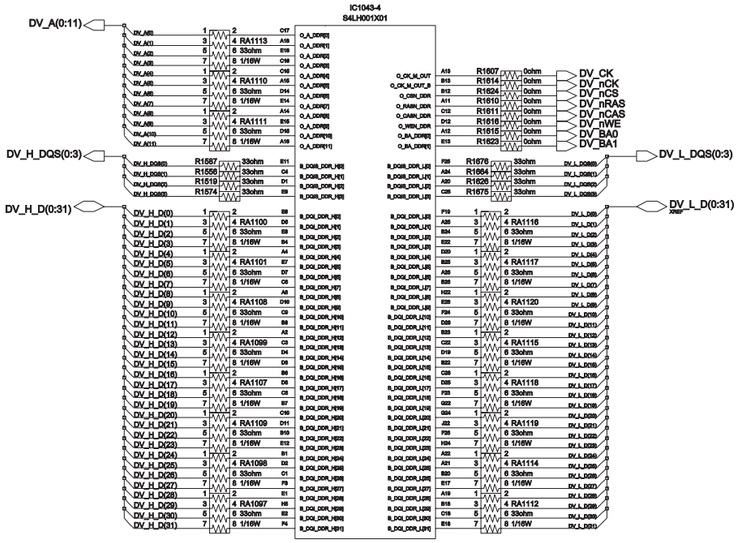


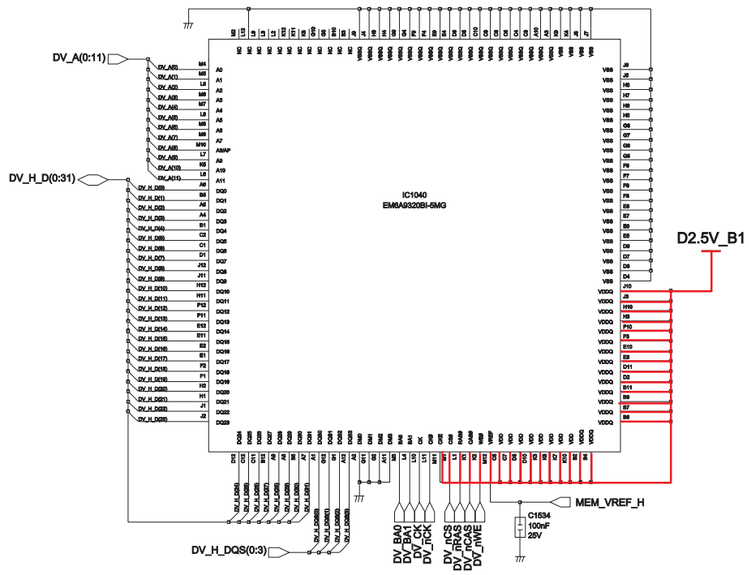


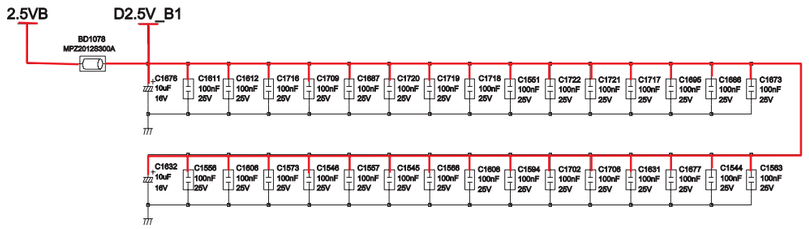
10-1-14 Main Board-14

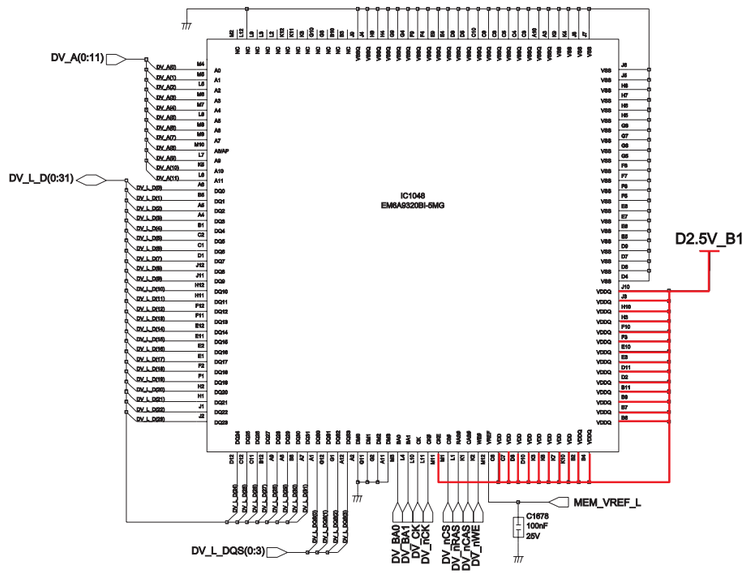
B1_DDR

———	Power
———	Signal





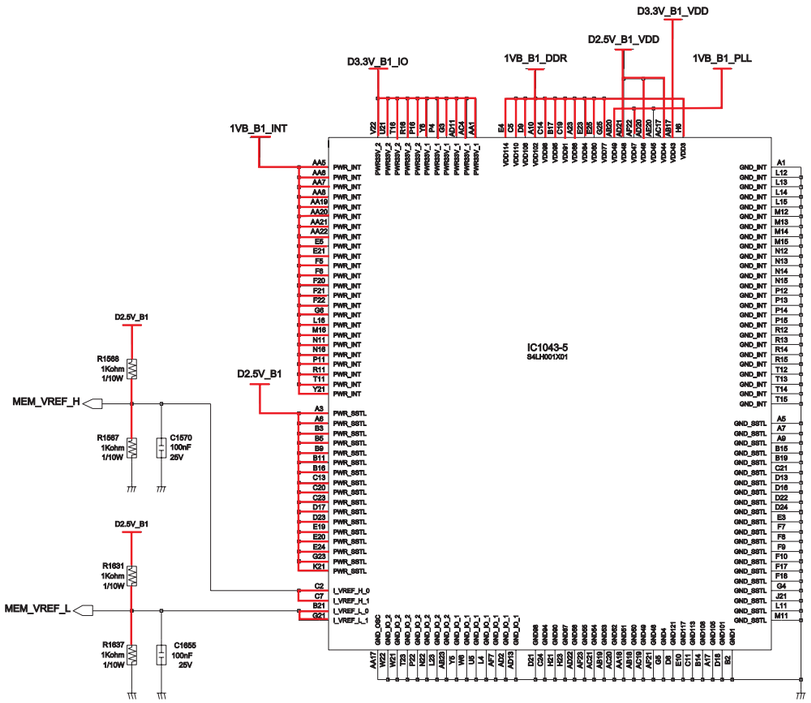


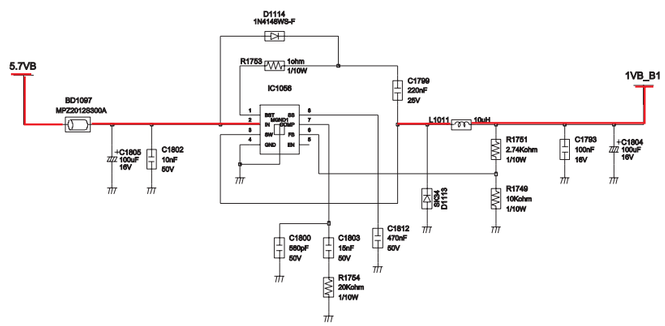


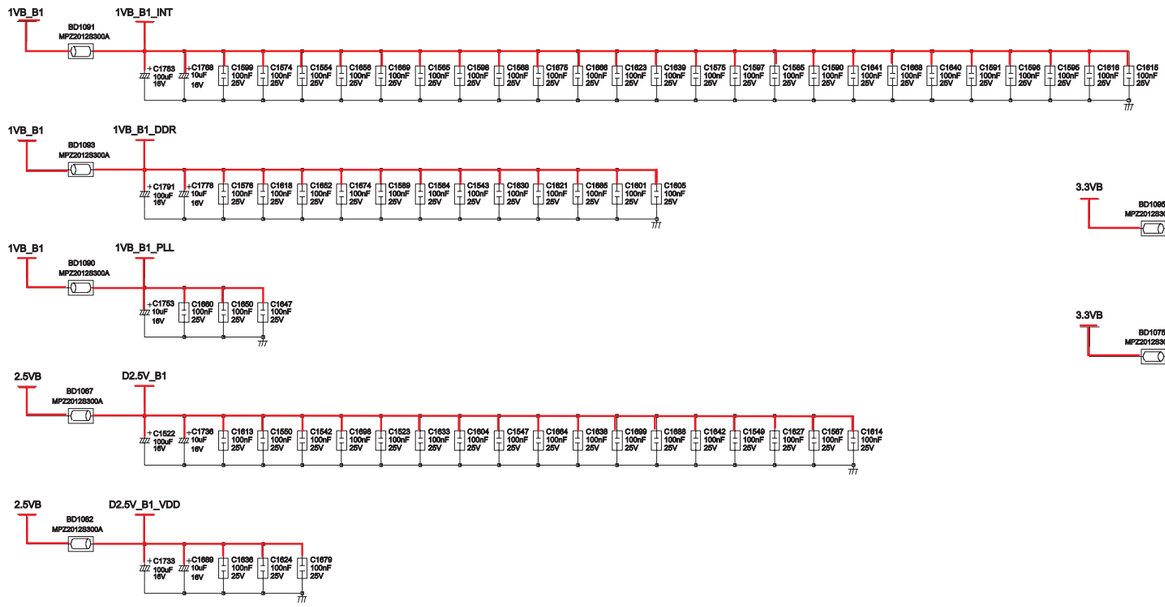
10-1-15 Main Board-15

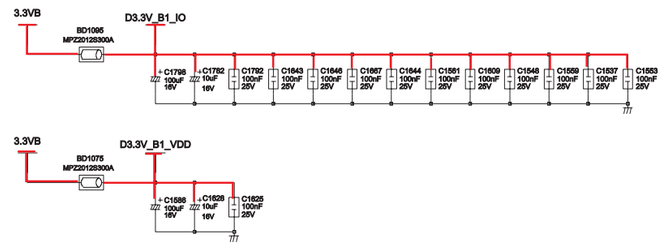
———	Power
———	Signal

B1_POWER





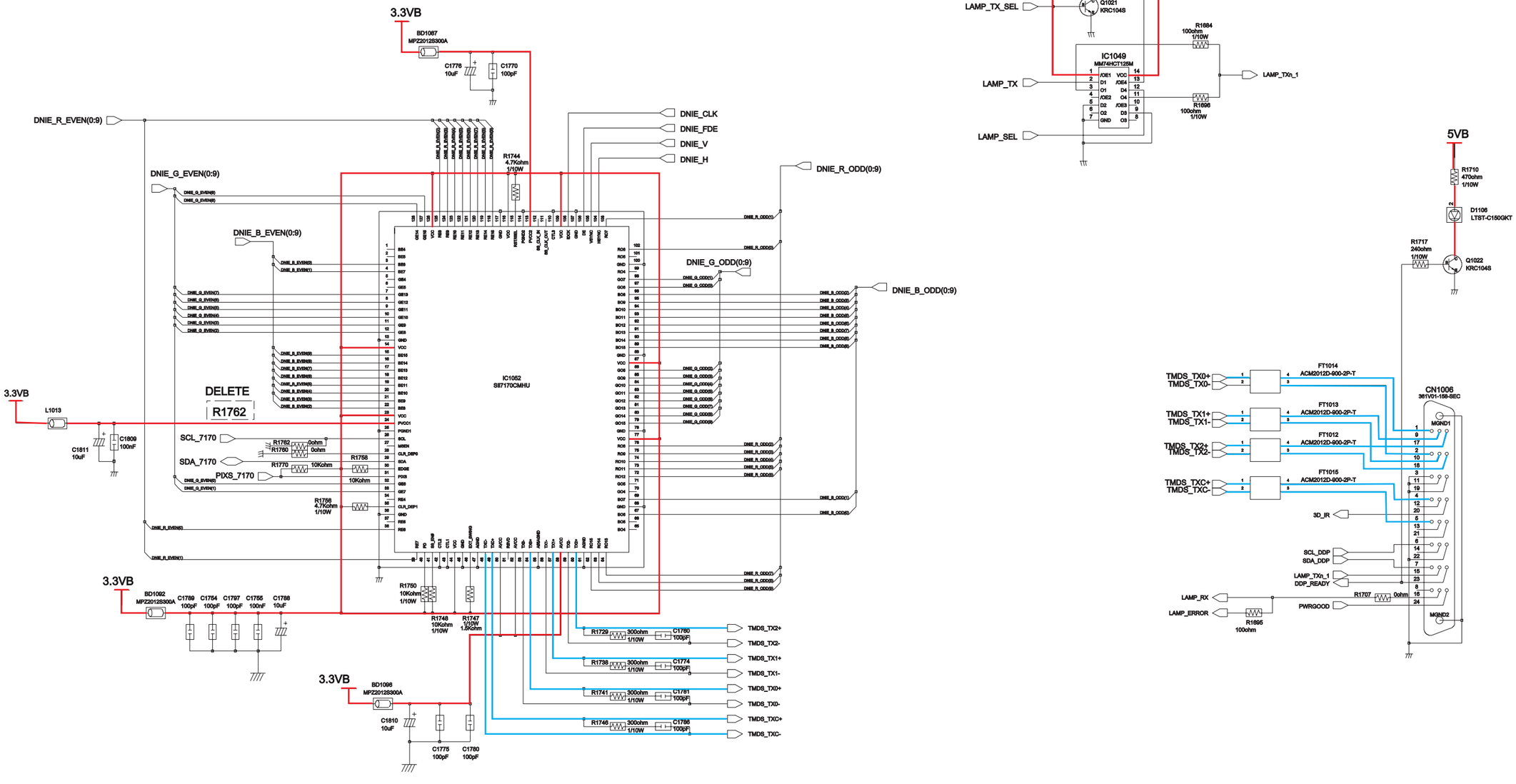




10-1-16 Main Board-16

TRANSMITTER

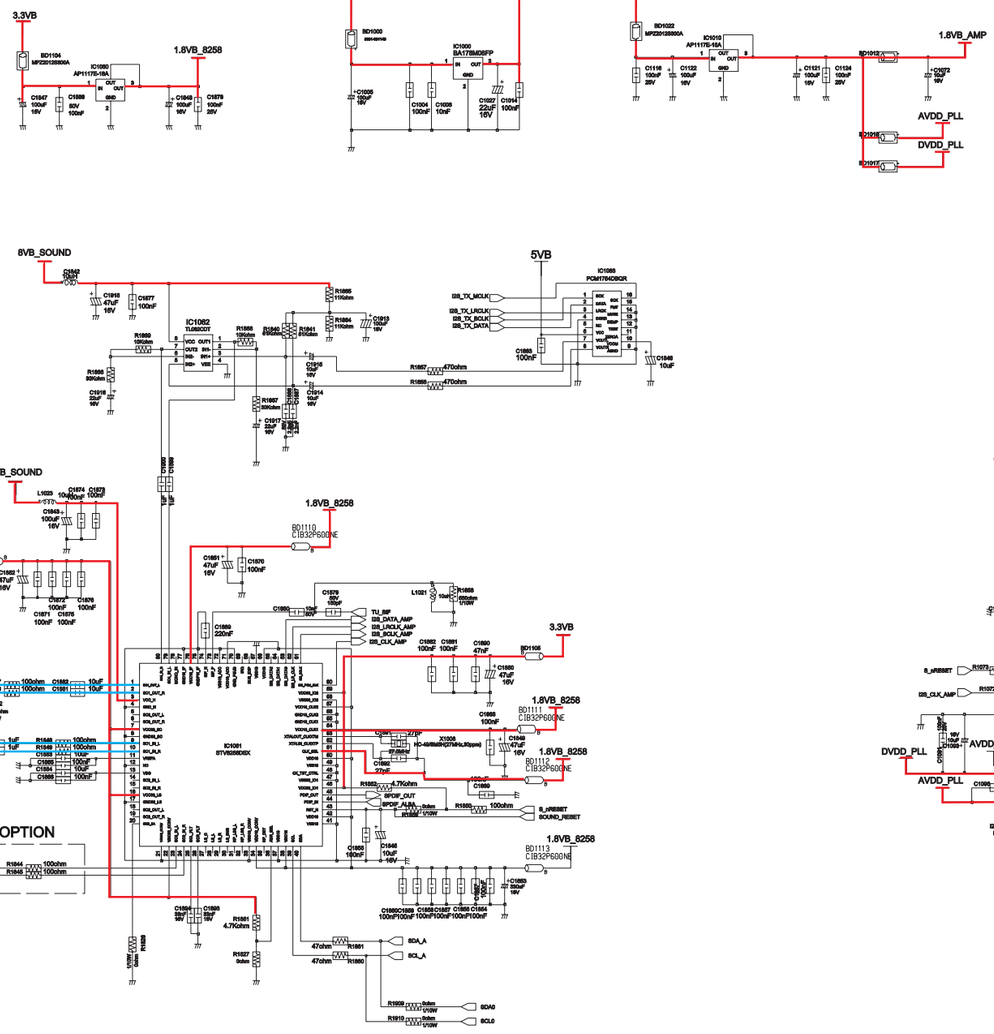
———	Power
———	Signal

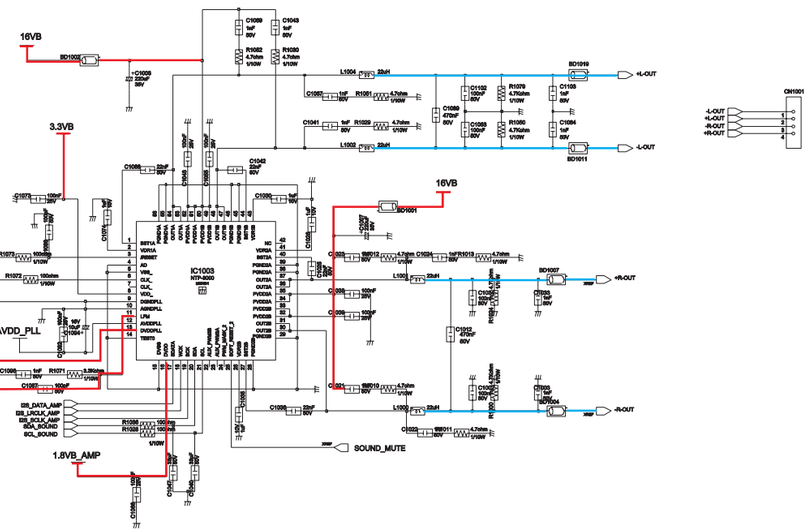


10-1-17 Main Board-17

AUDIO

———	Power
———	Signal

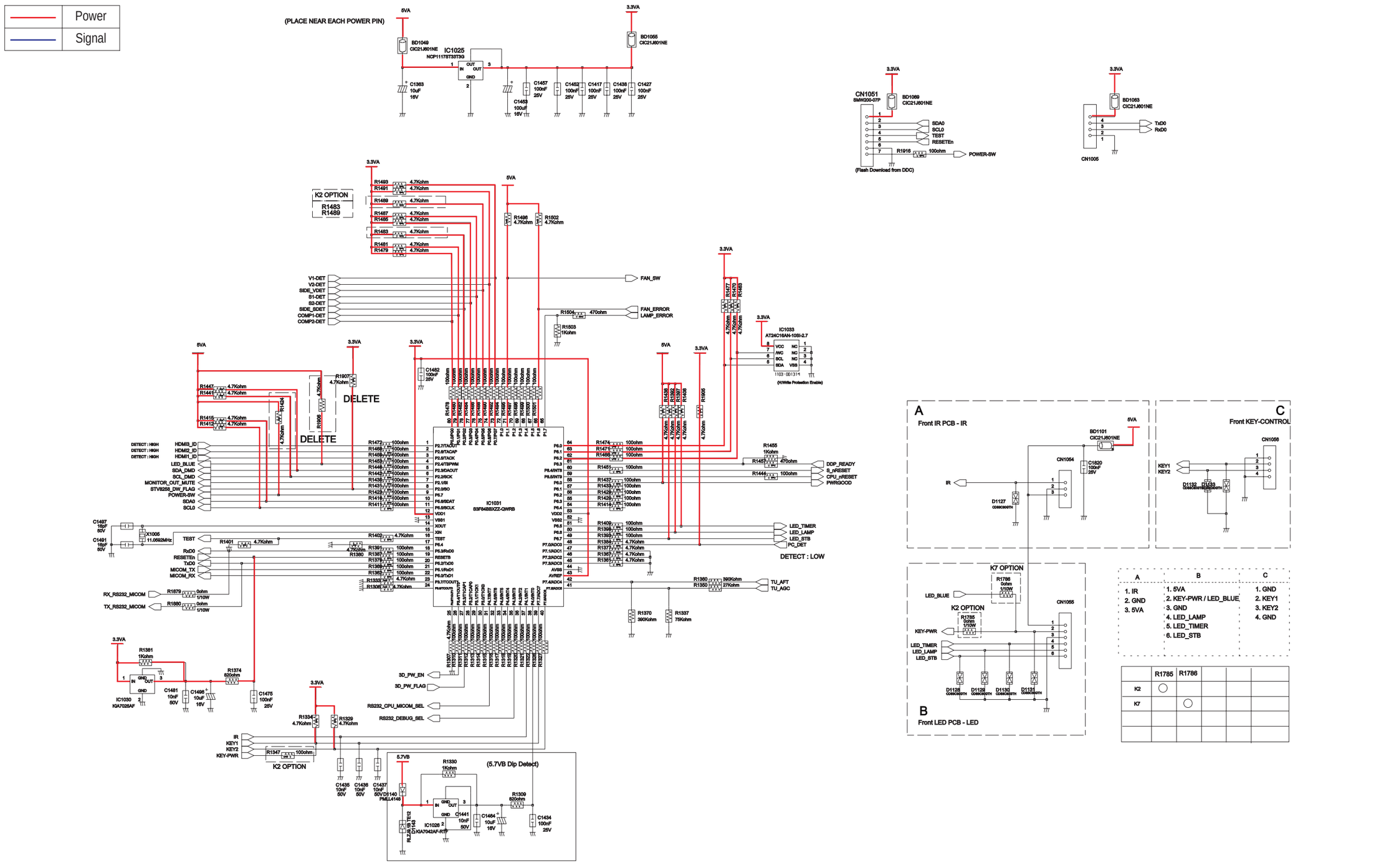




10-1-18 Main Board-18

MICOM

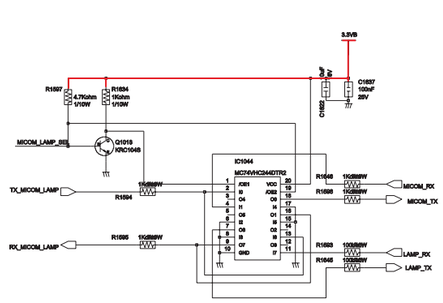
———	Power
———	Signal

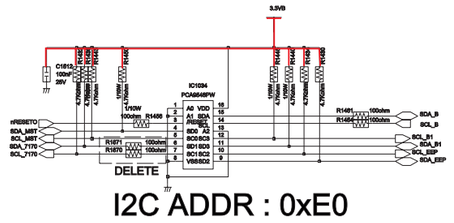


10-1-19 Main Board-19

———	Power
———	Signal

EXPANDER

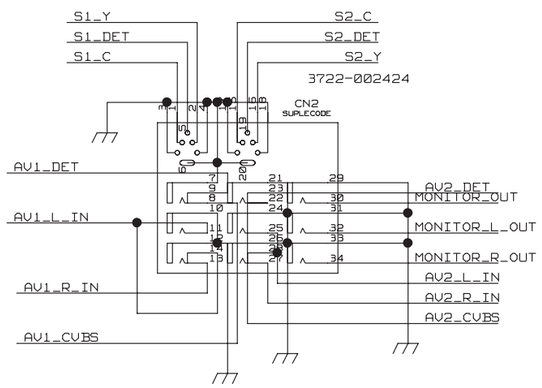


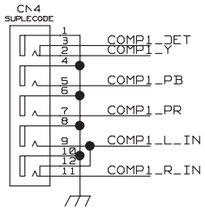


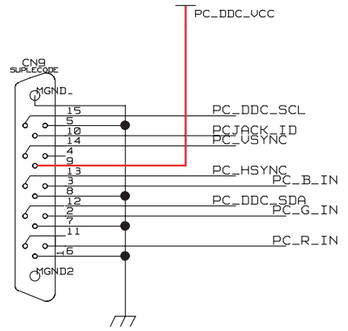
I2C ADDR : 0xE0

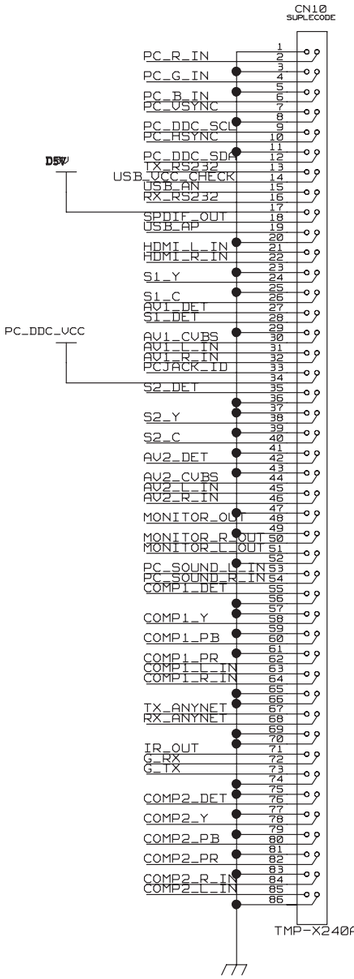
10-2 Jack Board

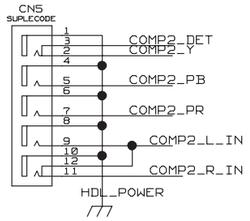
———	Power
———	Signal

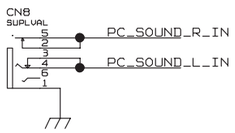


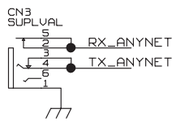


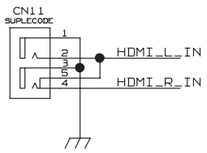


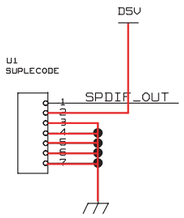


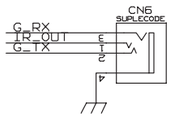


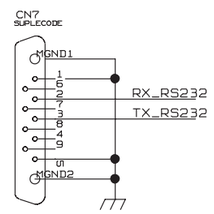


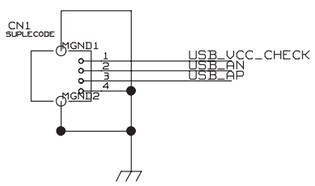






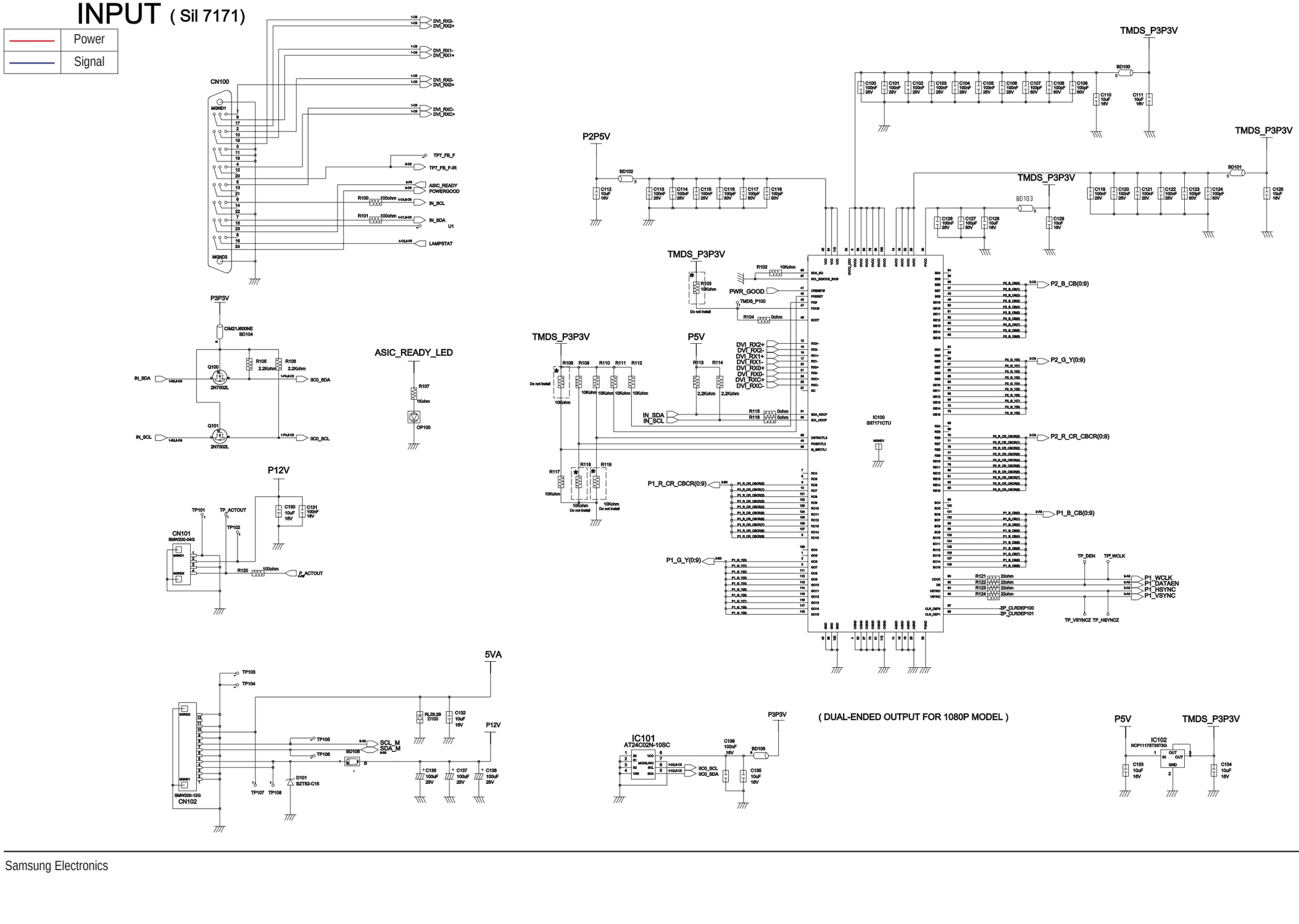




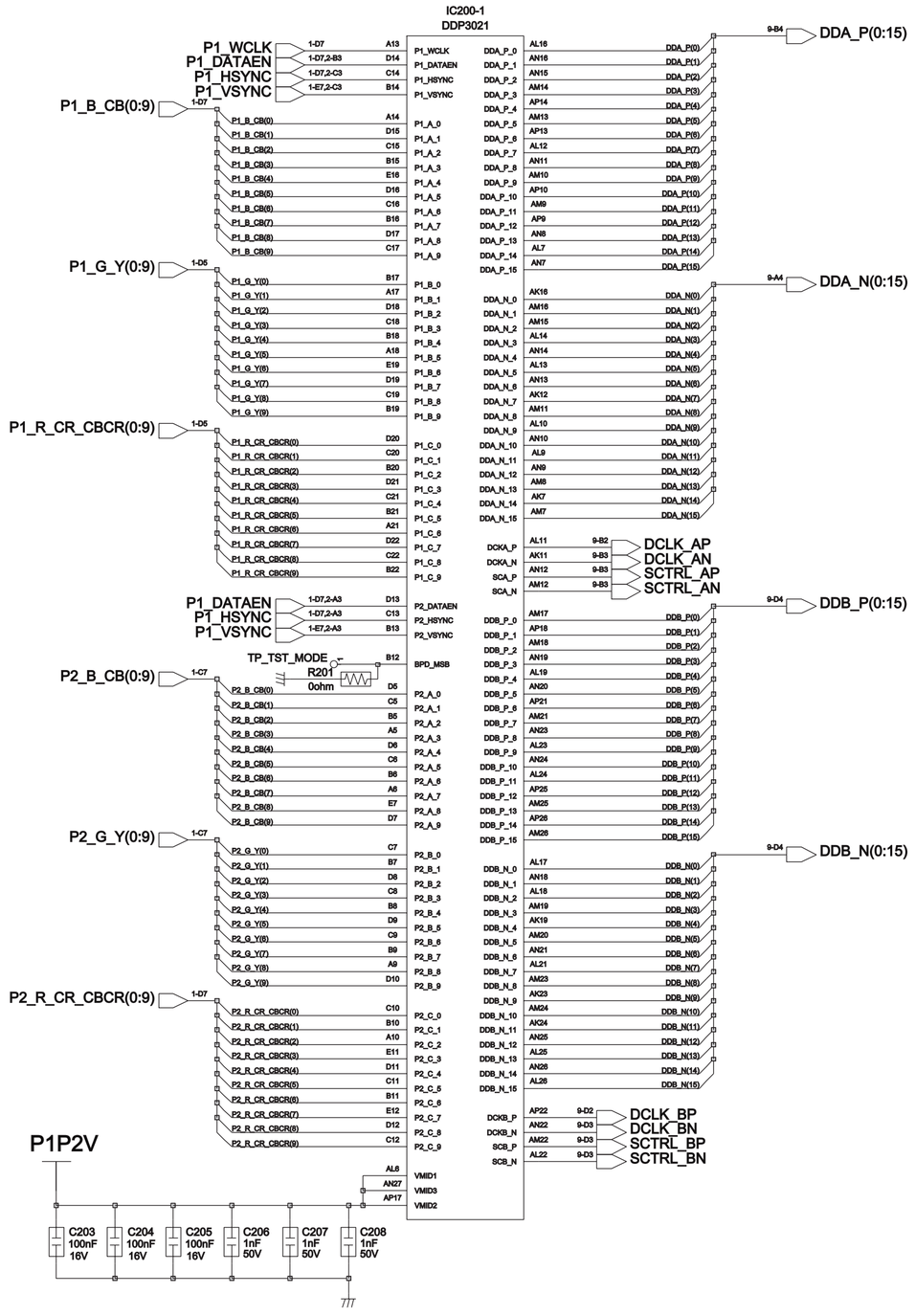


10-3 DMD Board

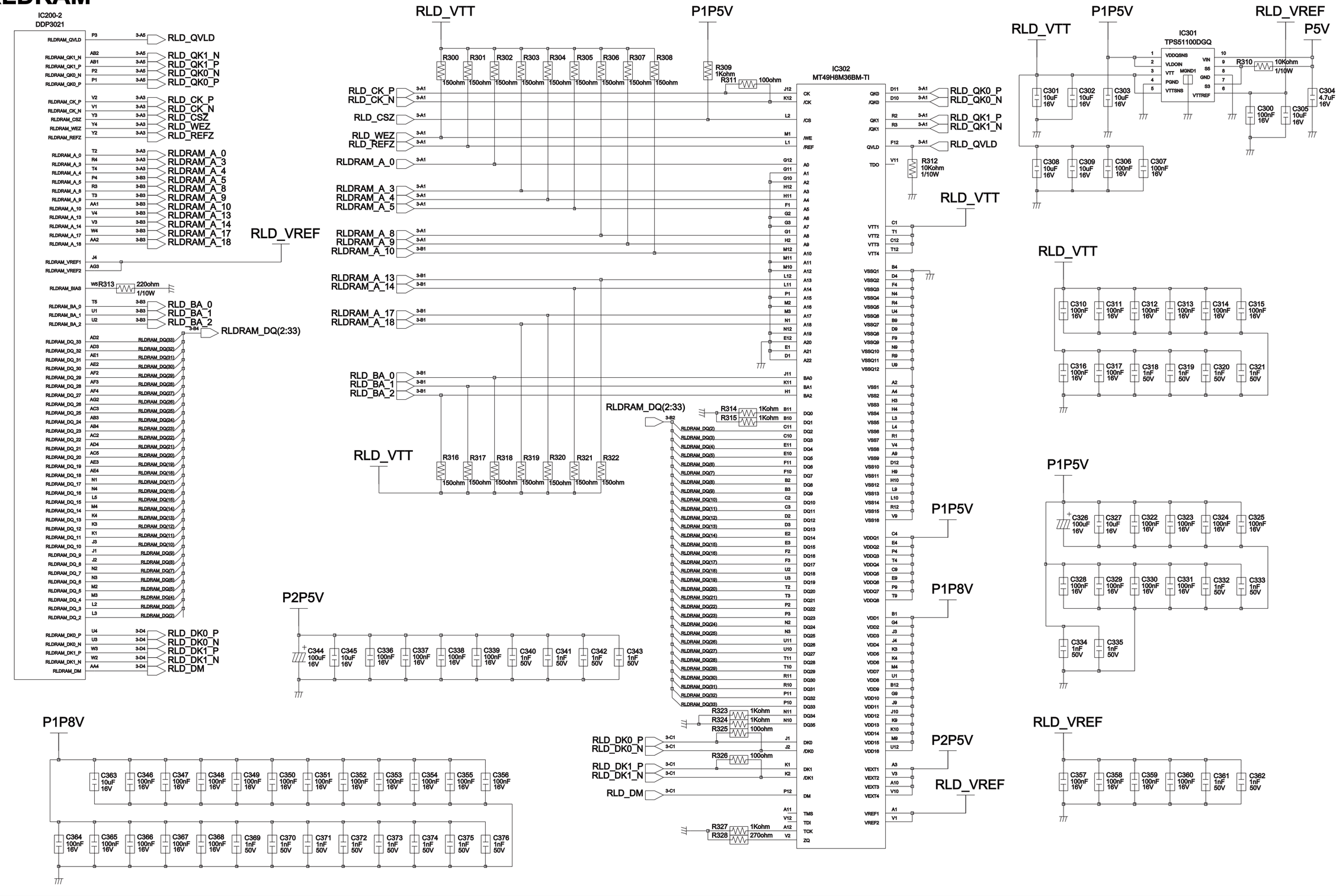
10-3-1 DMD-1



DDP3021 I/O

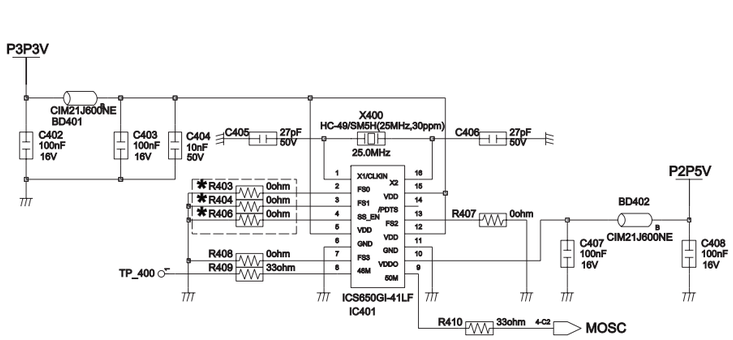


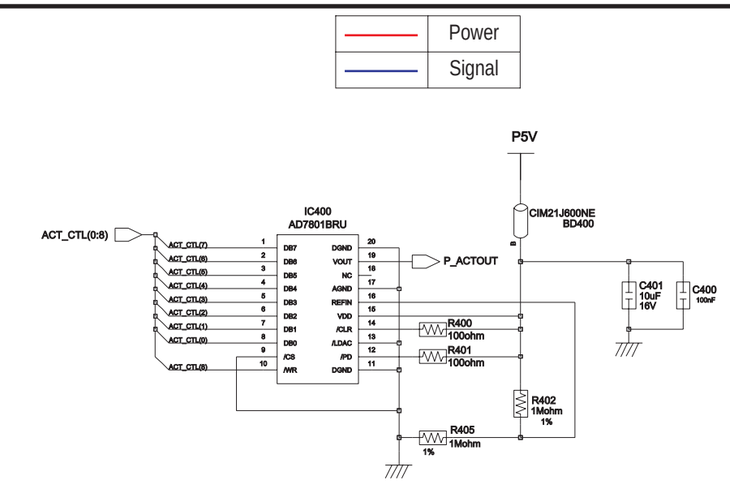
RLDRAM

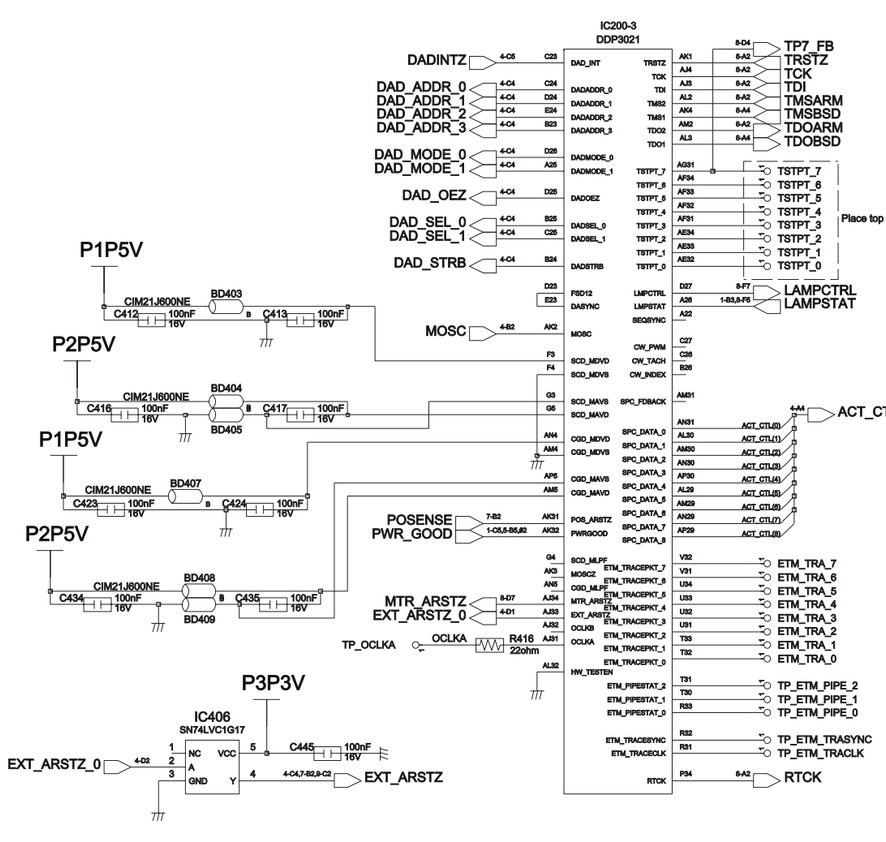


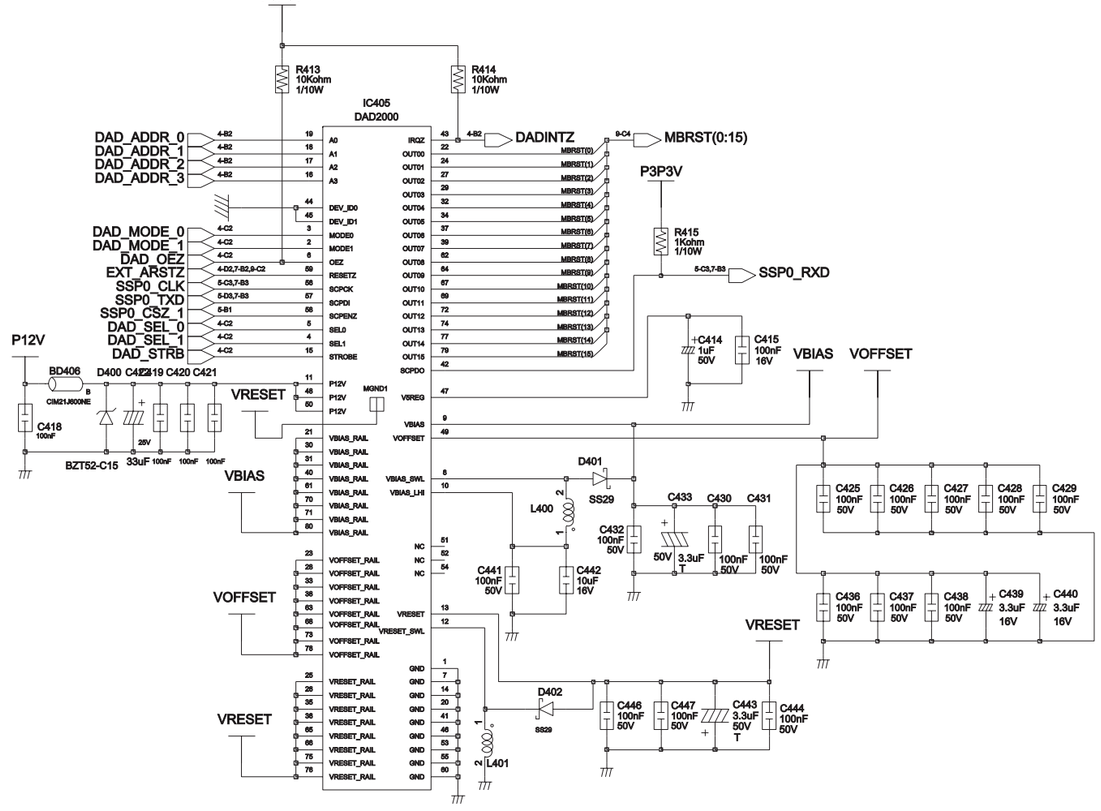
10-3-4 DMD-4

DAD2000





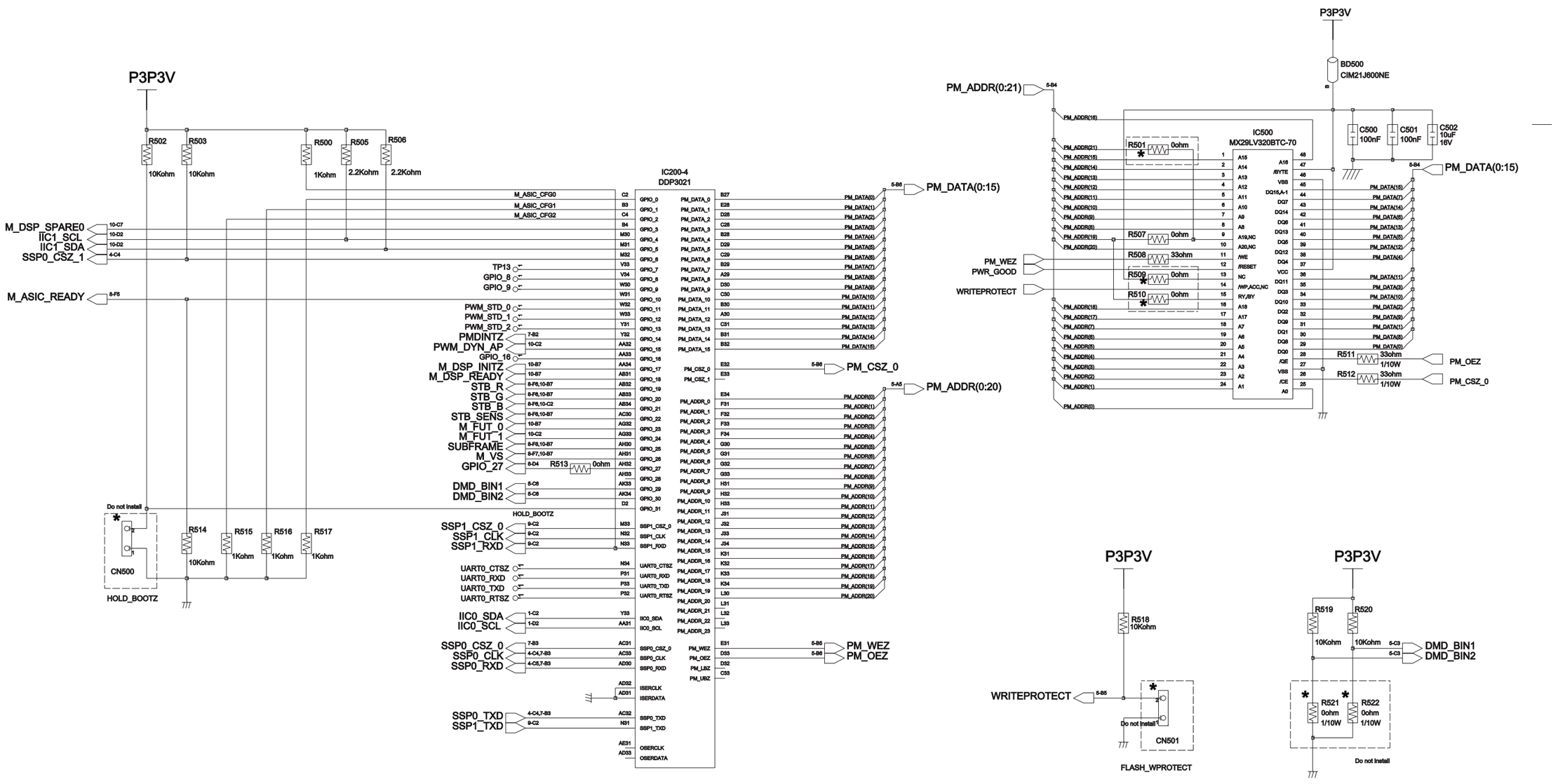




10-3-5 DMD-5

———	Power
———	Signal

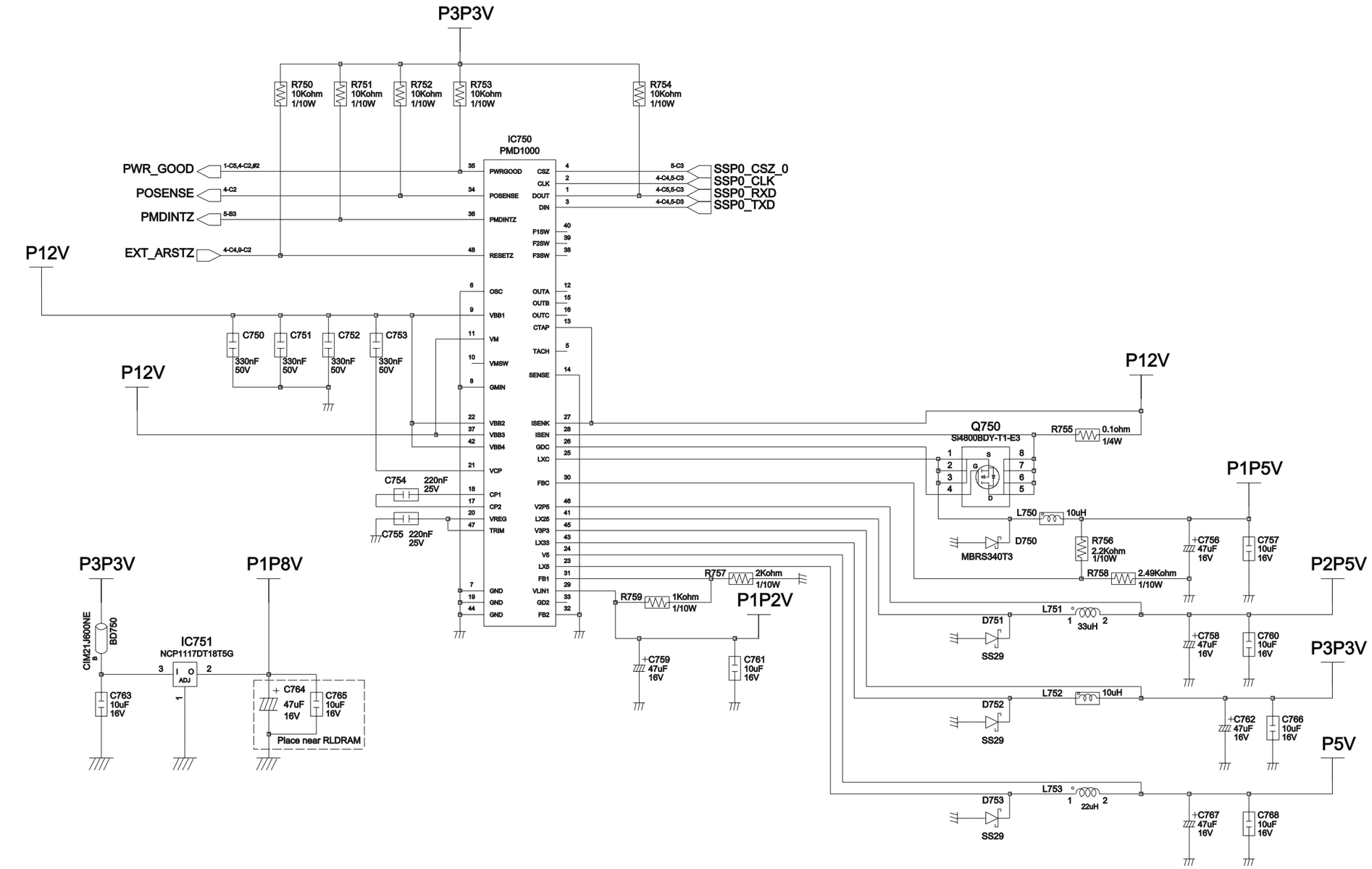
FLASH/GPIO



10-3-6 DMD-6

PMD1000

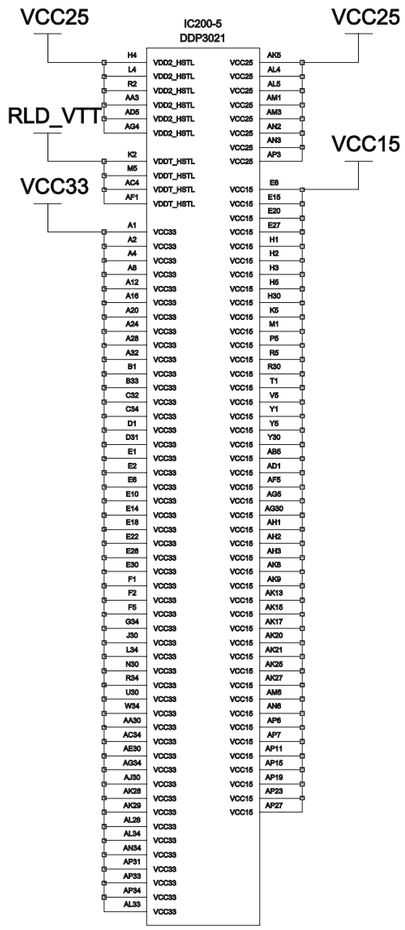
———	Power
———	Signal

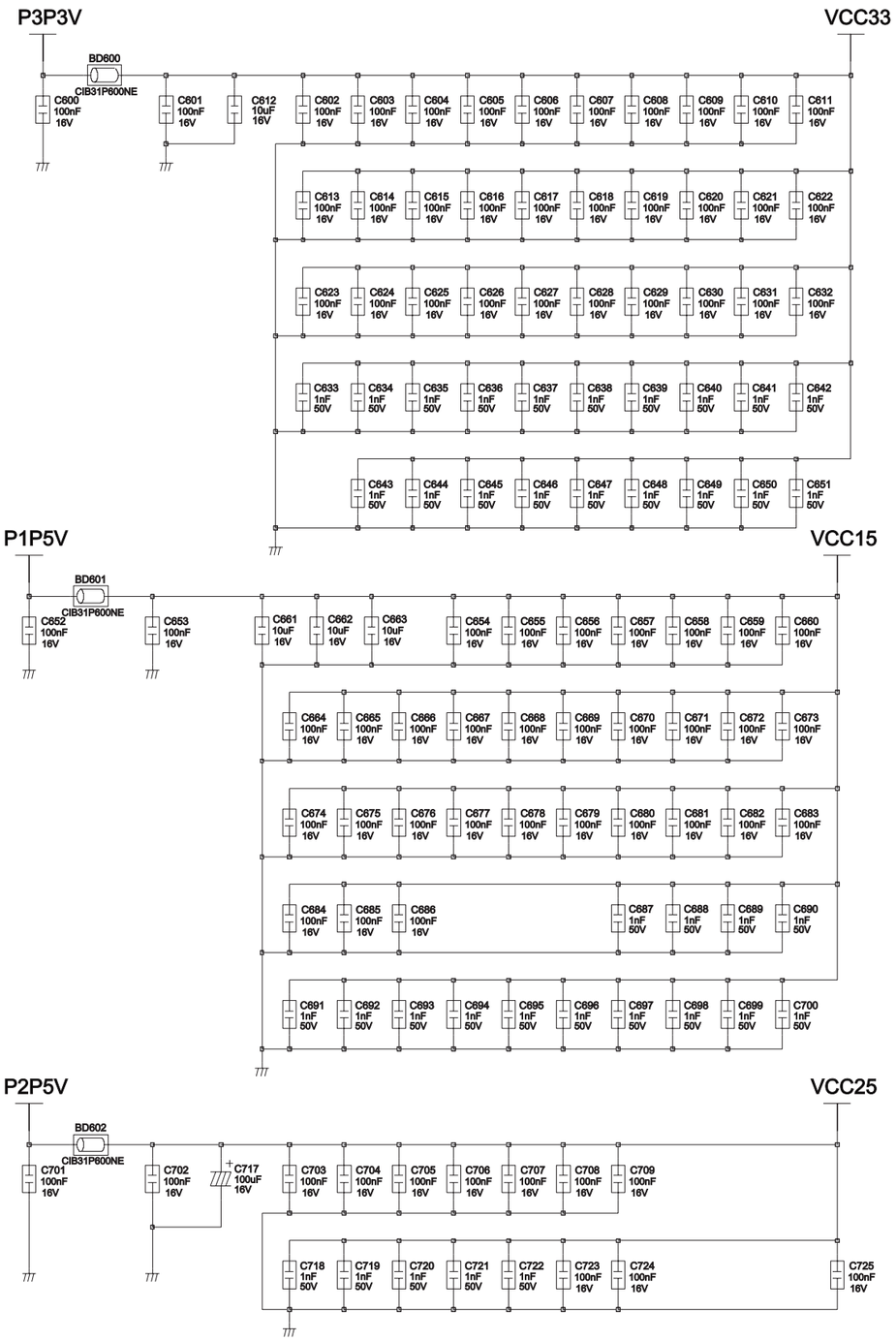


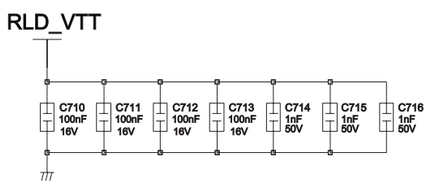
10-3-7 DMD-7

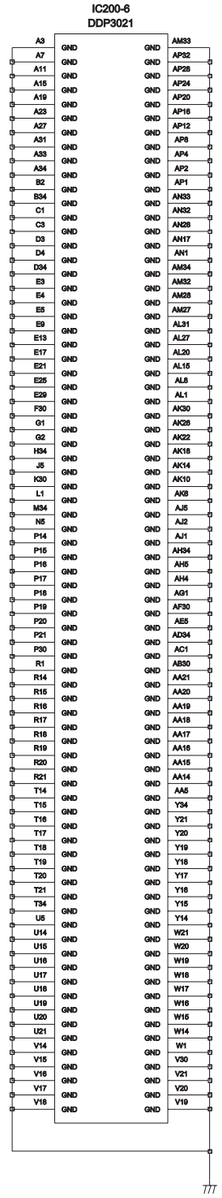
———	Power
———	Signal

DDP3021 POWER



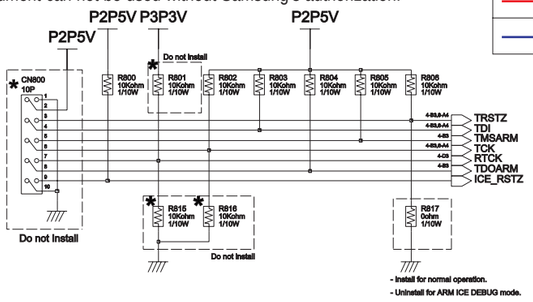


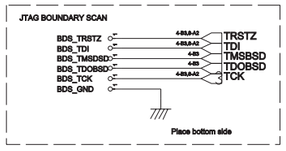


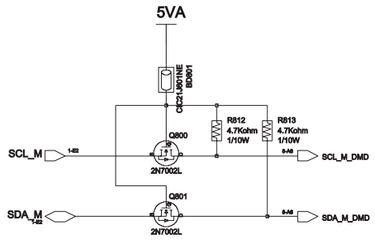


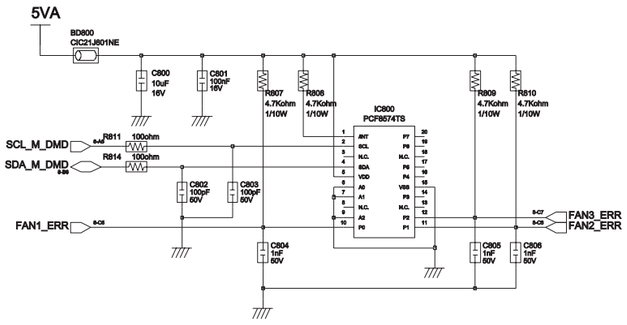
10-3-8 DMD-8

Power
Signal

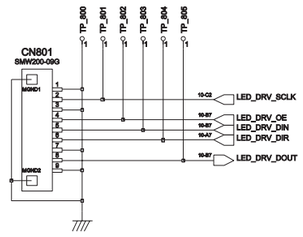




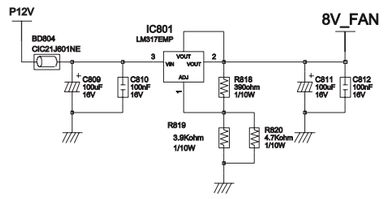


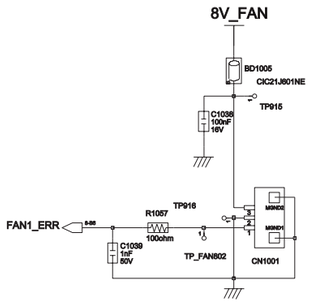


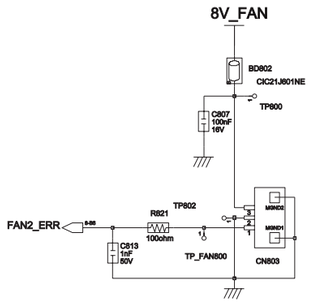
CONNECTOR FOR DRIVER CONTROL

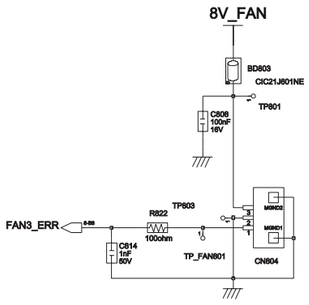


FAN

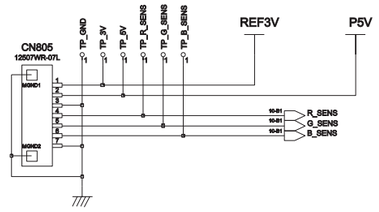




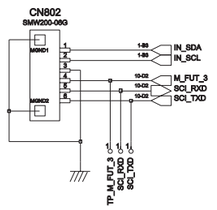




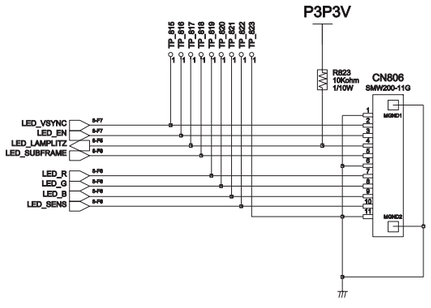
CONNECTOR FOR COLOR SENSOR



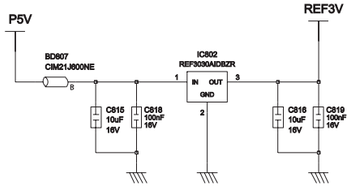
CONNECTOR FOR SCI



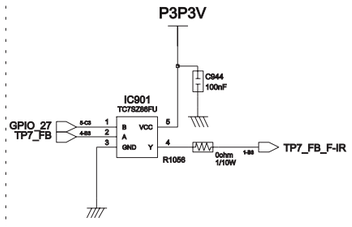
CONNECTOR FOR LED DRIVER



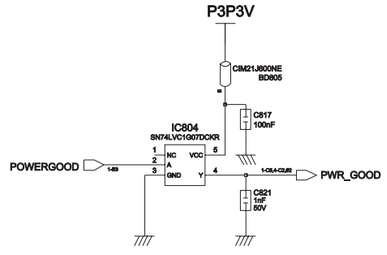
POWER FOR COLOR SENSOR

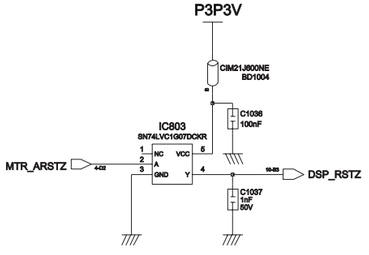


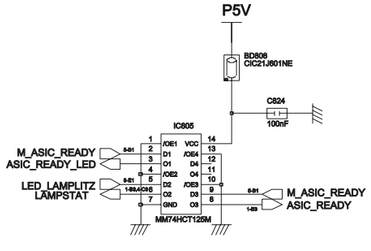
3D_Interface

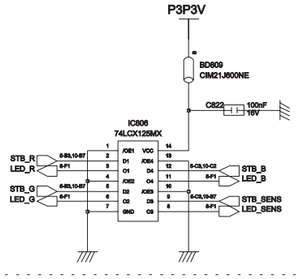


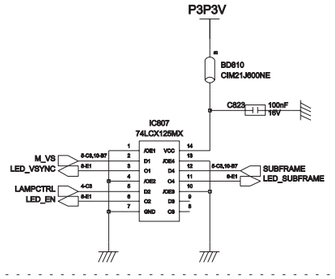
SINGLE BUFFER





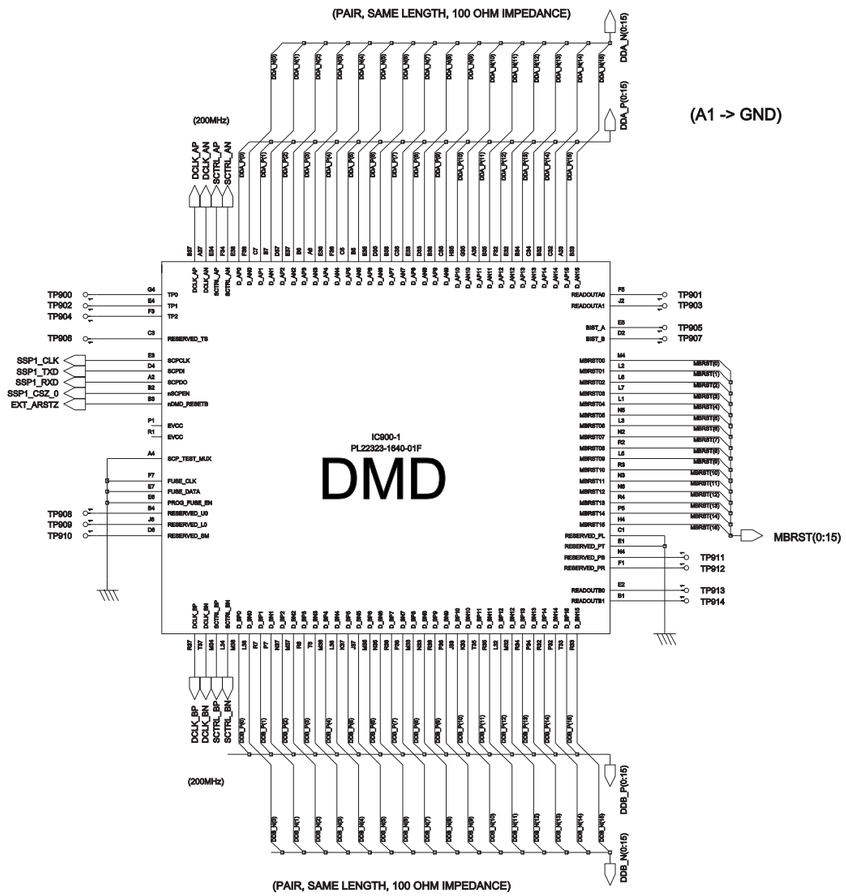


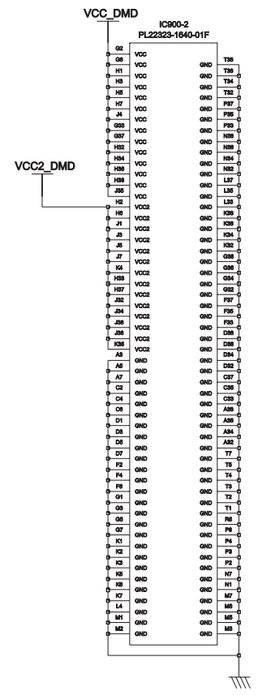


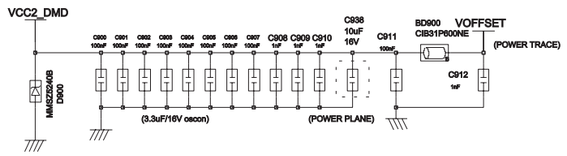


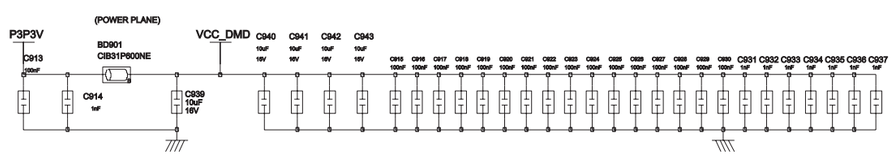
10-3-9 DMD-9

DMD



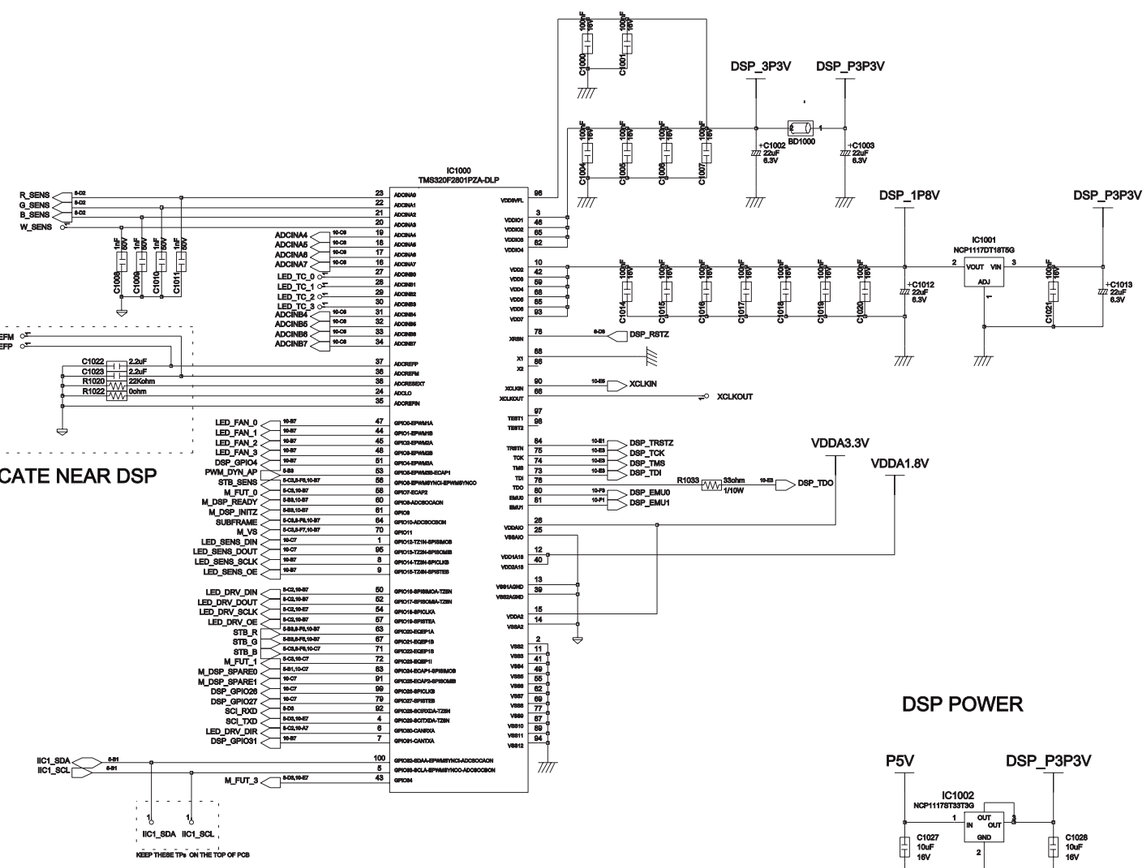


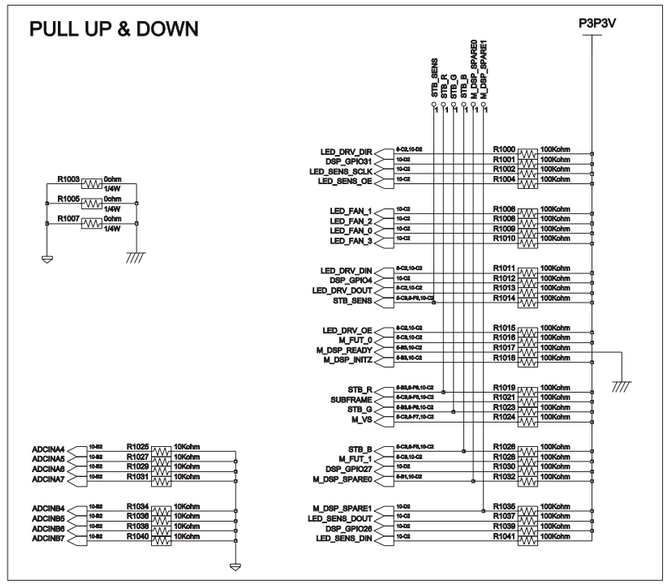


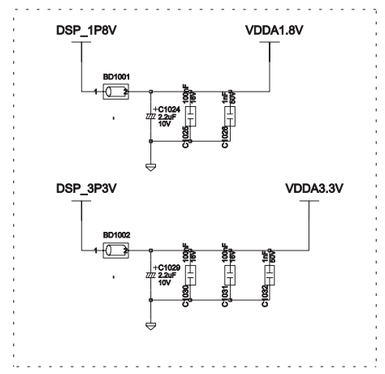


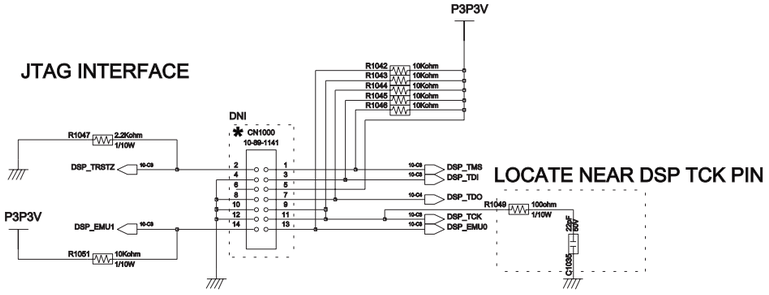
10-3-10 DMD-10

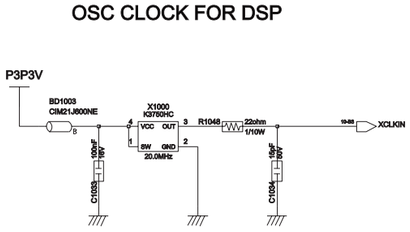
DSP

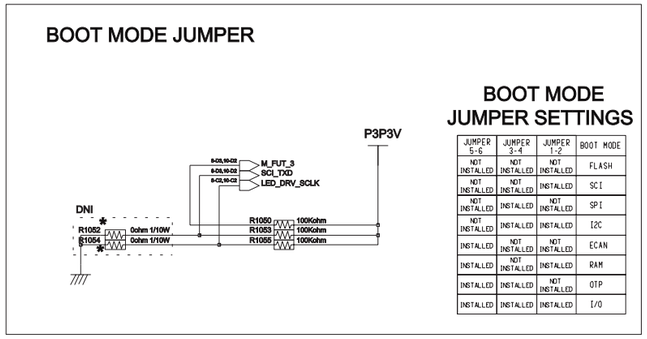




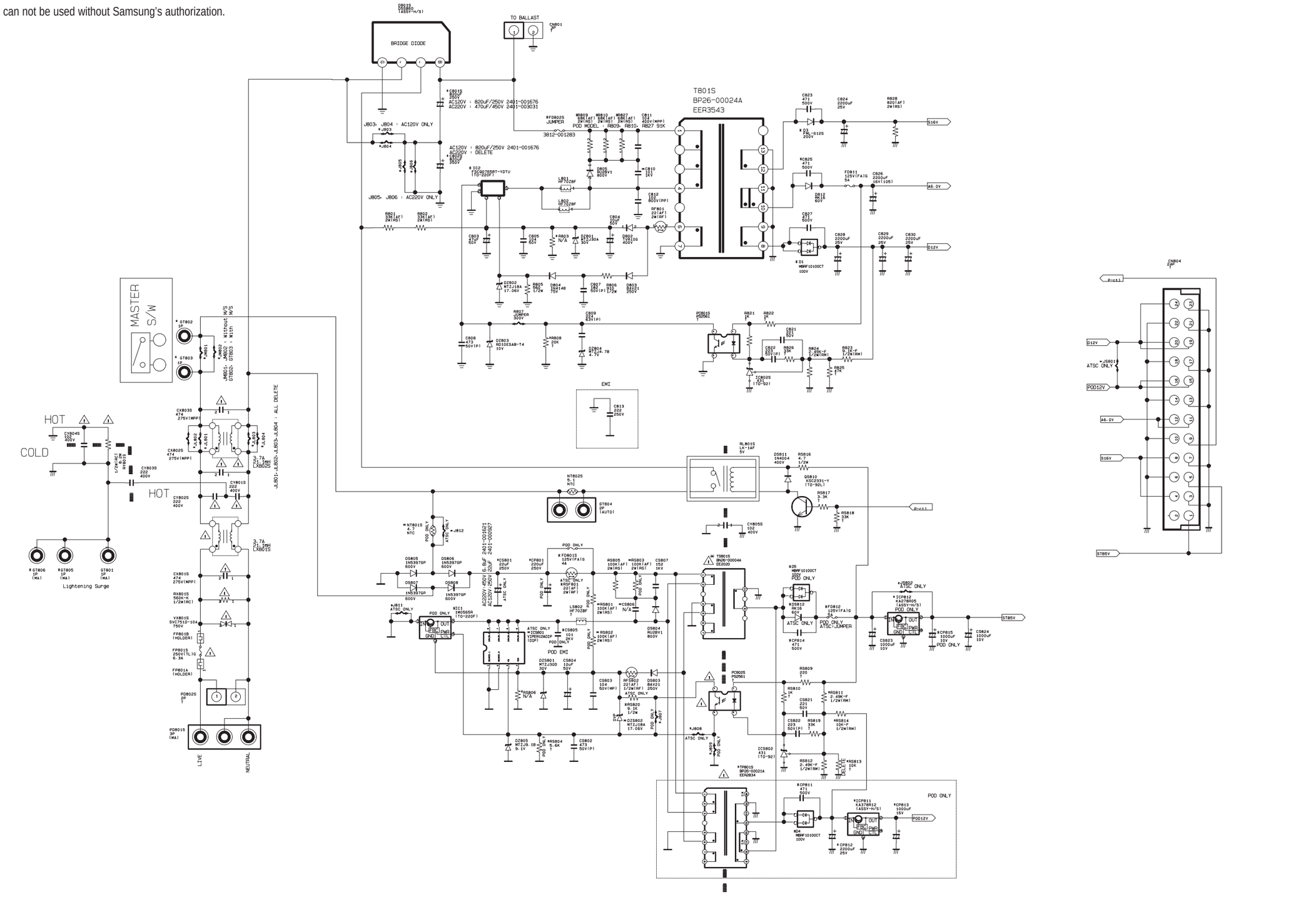








10-4 Power

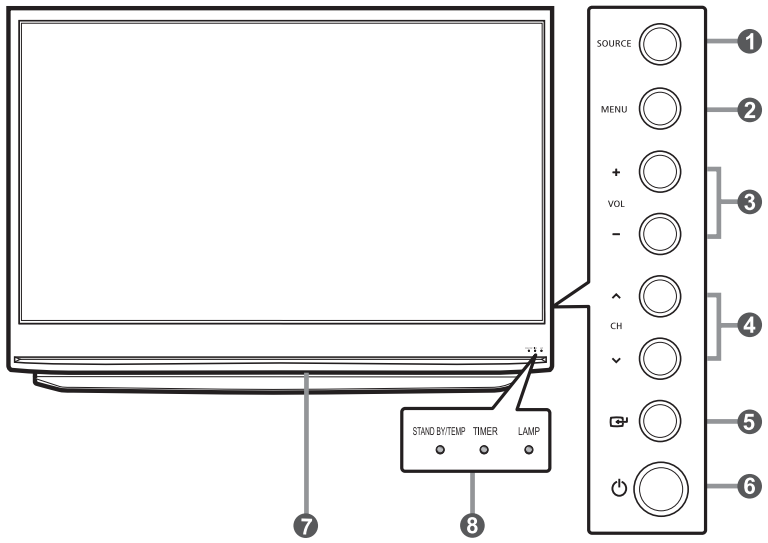


11. Operation Instruction & Installation

11-1 Product Features and Functions

11-1-1 Right side buttons

The buttons on the right side panel control your TV's basic features, including the on-screen menu system.
To use the more advanced features, you must use the remote control.



▶ The product color and shape may vary depending on the model.

1 SOURCE
Toggles between all the available input sources (TV, AV1, AV2, S-Video1, S-Video2, Component1, Component2, PC, HDMI1, HDMI2, or HDMI/DVI3).

2 MENU
Press to see an on-screen menu of your TV's features.

3 + VOL –
Press to increase or decrease the volume.
In the on-screen menu, use the + VOL – buttons as you would use the ◄ and ► buttons on the remote control.

4 ∧ CH ∨
Press to change channels.
In the on-screen menu, use the ∧ CH ∨ buttons as you would use the ▲ and ▼ buttons on the remote control.

5 (ENTER)
Press to confirm a selection.

6 POWER
Press to turn the TV on and off.

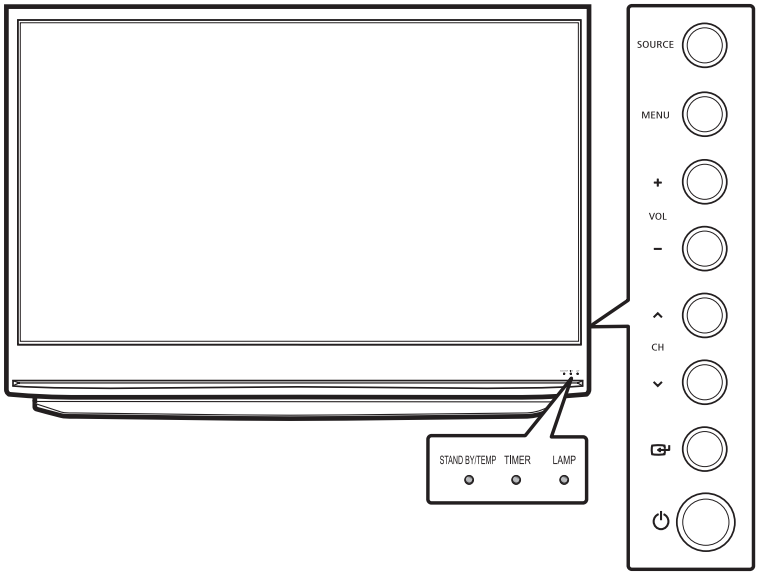
7 Remote Control Sensor
Aim the remote control towards this spot on the TV.

Indicator Lights
Blinks and turns off when the power is on and lights up in stand-by mode.

→
- You can use the channel selection buttons to switch on the TV when it is in standby mode depending on the model.
- When using the on-screen menu the volume adjustment and channel selection buttons have the same function as the ▲/▼/◄/► buttons on the remote control.
- If the remote control no longer works or you have lost it, you can use controls on the panel of the TV.

11-1-2 Front Panel LED Indicators

The three lights on the front panel indicate the status of your TV.



Indicator Light Key

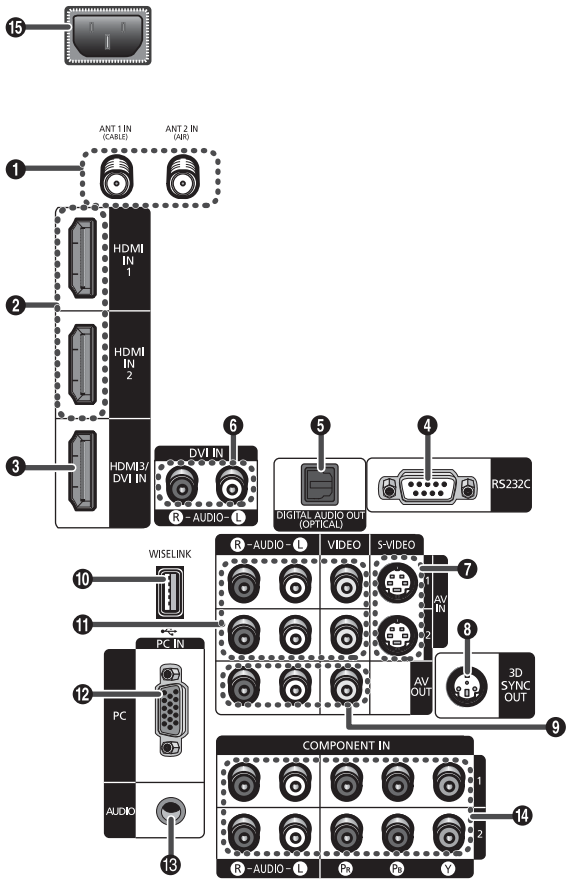
● : Light is On
◑ : Light is Blinking
○ : Light is Off

TIMER	LAMP	STAND BY/TEMP	Indication
○	○	●	Standby state.
○	◑	○	The picture will automatically appear in about 15 seconds.
●	◑	○	Auto Timer ON/OFF has been set and the set will automatically be turned on in about 15 seconds.
◑	○	◑	A cooling fan inside the set is not operating normally.
○	◑	◑	Lamp cover on the rear of the set is not properly shut.
○	○	◑	Check if the ventilation hole on the rear of the set is blocked, because if the inner temperature is too high, the power will shut off.
◑	◑	◑	Lamp may be defective. Please contact a certified technician.

• It takes about 30 seconds for the TV to warm up, so normal brightness may not appear immediately.
• The TV has a fan to keep the inside lamp from overheating. You'll occasionally hear it working.

11-1-3 Side Panel Jacks

Use the rear panel jacks to connect components such as a VCR. You can connect different components such as VCRs, Set-Top Box and a DVD player etc., because there are two sets of video input jacks and two sets of component video input jacks on the rear panel of your TV. For more information, see "Connections".



▶ The product color and shape may vary depending on the model.

① **ANT 1 IN (CABLE)/ANT 2 IN (AIR)**
75Ω Coaxial connector for Air/Cable Network.

② **HDMI IN 1/HDMI IN 2**
Connect to the HDMI jack of a device with HDMI output.

③ **HDMI3/DVI IN**
Connect to the HDMI jack of a device with HDMI output. This input can also be used as a DVI connection with separate analog audio inputs. An optional HDMI/DVI cable will be necessary to make this connection.
When using an optional HDMI/DVI adapter, the DVI analog audio inputs on your TV allow you to receive left and right audio from your DVI device.

④ **RS232C**
For service only.

⑤ **DIGITAL AUDIO OUT (OPTICAL)**
Connect to a Digital Audio component.

⑥ **DVI IN (AUDIO-L/R)**
Connect to the DVI audio output jack of an external device.

⑦ **S-VIDEO (AV IN 1, 2)**
Video input for external devices with an S-Video output, such as a Camcorder or VCR.

⑧ **3D SYNC OUT**
Connect to 3D IR Emitter.

⑨ **VIDEO/AUDIO OUT-L/R (AV OUT)**
Video/Audio outputs for external devices.

⑩ **WISELINK**
Connect an USB mass storage device to view photo files (JPEG) and play audio files (MP3).

⑪ **VIDEO/AUDIO-L/R (AV IN 1, 2)**
Video input for external devices, such as a Camcorder or VCR.

⑫ **PC IN**
Connect to the video output jack on your PC.

⑬ **PC AUDIO IN**
Connect to the audio output jack on your PC.

⑭ **COMPONENT IN 1, 2**
Video (Y/PB/PR) and audio (L-AUDIO-R) component inputs.

⑮ **POWER IN**
Connect the supplied power cord.

11-1-4 Remote Control

You can use the remote control up to about 23 feet from the TV. When using the remote control, always point it directly at the TV. You can also use your remote control to operate your VCR, Cable box, DVD player or Samsung Set-Top Box.

1. POWER
Turns the TV on and off.

2. Numeric Buttons
Press to directly select a channel.

3. -
Press to select additional channels being broadcast by the same station. For example, to select channel"54-3", press "54", then press"-" and "3".

4. CH LIST
Used to display Channel Lists on the screen.

5. ANTENNA
Press to select "Air" or "Cable".

6. VOL +, VOL -
Press to increase or decrease the volume.

7. MUTE
Press to temporarily cut off the sound.

8. MENU
Displays the main on-screen menu.

9. RETURN
Returns to the previous menu.

10. S.MODE
Press to select the sound mode.

11. P.MODE
Press to select the picture mode.

12. FAV.CH
Press to switch to your favorite channels.

13. GAME
Press to select the Theater Game mode except for the TV mode.

14. MTS
Press to choose Stereo, Mono or Separate Audio Program (SAP broadcast).

15. 3D
Press to select the 3D mode.

16. SET
Sets the remote to control your TV, VCR, Cable, DVD, or Set-Top Box.

17. TV, DVD, STB, CABLE, VCR
Press to operate your TV, DVD, STB, CABLE (box), or VCR.

18. SOURCE
Press to display all of the available video sources.

19.
Press to activate the backlight of the VOL, CH and the active source button (TV, DVD, CABLE, STB, VCR) on the remote control.

20. PRE-CH
Tunes to the previous channel.

21. WISELINK
This function enables you to view and play photo (JPEG) and audio files (MP3) from an external device.

22. HDMI
Selects the HDMI mode directly.

23. VCR/DVD Functions
- Rewind
- Stop
- Play/Pause
- Fast Forward

24. CH ∧ ,CH ∨
Press to change channels.

25. EXIT
Press to exit from the menu.

26. UP ▲/DOWN▼/LEFT◀/RIGHT▶/ ENTER
Use to select on-screen menu items and change menu values.

27. INFO
Press to display information on the TV screen.

28. CAPTION
Controls the caption decoder.

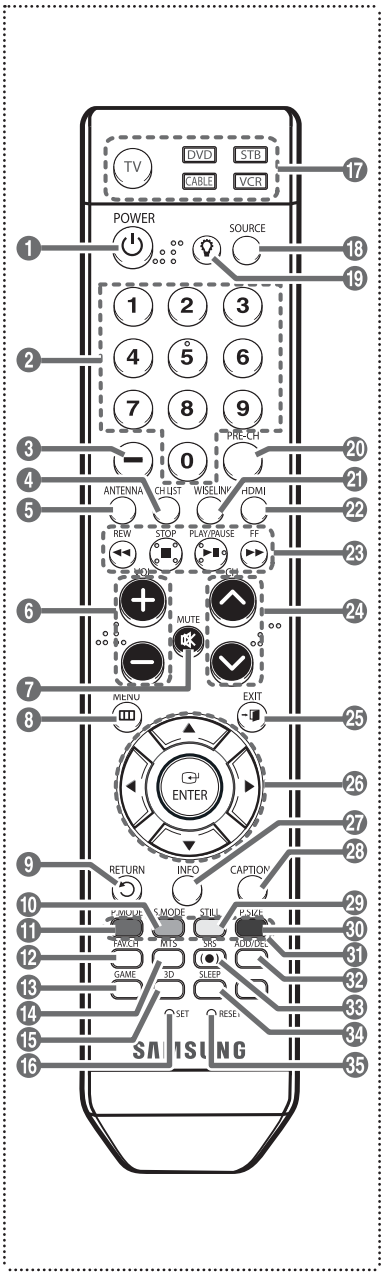
29. STILL
Press to stop the action during a particular scene.
Press again to resume normal video.

30. P.SIZE
Press to change the screen size.

31. Color buttons
Press to add or delete channels and to store channels to the favorite channel list in the **Channel List** menu.

32. ADD/DEL
Use to store and delete channels to/ from memory.

33. SRS
Selects SRS TruSurround XT mode.



NOTES

* The performance of the remote control may be affected by bright light.
* This is a special remote control for the visually impaired persons, and has Braille points on the POWER, Channel, Volume, STOP, and PLAY/PAUSE buttons.

34. SLEEP

Press to select a preset time interval for automatic shut off.

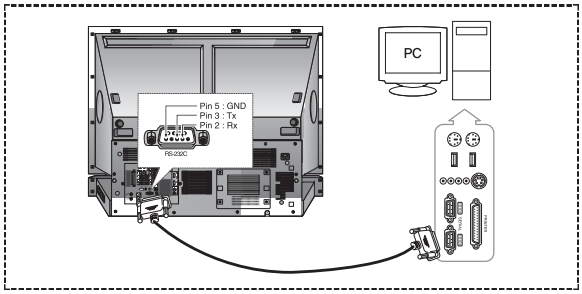
35. RESET

When your remote control does not work, change the batteries and press the RESET button for 2-3 seconds before use.

11-2 New Features

11-2-1 RS-232C

Connect the DLP DTV using the serial port.



- Do not disconnect or connect the RS-232C cable while the Computer or the DLP TV is operating. It may cause serious damage to the Computer or the DLP TV.
- If the PC is not properly configured, the RS-232C connection may not work properly. For further details, refer to the Computer's product documentation.

Serial Port Settings

Specification	RS-232C
Bit Rate	19200 bps
Data Bits	8 bits
Parity	None
Stop Bits	1 bit
Flow Control	None

Serial Communication Protocol

Command Packet Structure [7bytes]

0x08	0x22	Cmd1	Cmd2	Cmd3	Value	CS

- A command packet consists of 7 bytes in total.
- The two bytes 0x08 and 0x22 signify that the packet is for serial communication.
- The following 4 bytes represent a pre-defined command that can be defined by the user.
- The last byte is the checksum which checks the validity of the current packet.

Header [2 Byte]: Pre-defined values fixed to 0x08 and 0x22.
Cmd1 [1 Byte]: The first value of the code defined in the command list (Hexadecimal)
Cmd2 [1 Byte]: The second value of the code defined in the command list (Hexadecimal)
Cmd3 [1 Byte]: The third value of the code defined in the command list (Hexadecimal)
Value [1 Byte]: Input parameter for the command (Default: 0) (Hexadecimal)
CS [1 Byte]: Checksum (the 2's complement of the sum of all the values except for the CS value.)

Response Packet Structure [3 Bytes]

- Success

0x03	0x0C	0xF1

- Fail

0x03	0x0C	0xFF

When the received packet from an external device has a valid value, a Success packet is sent. Otherwise, a Fail packet is sent.

A Fail packet is sent if:
- The received packet length is not equal to 7 bytes.
- The 2 byte packet header value is not equal to 0x08, 0x22.
- The check sum is incorrect.

Failure detection by an external device
An external device classifies the packet as Fail if it does not receive a Success packet within 100ms.

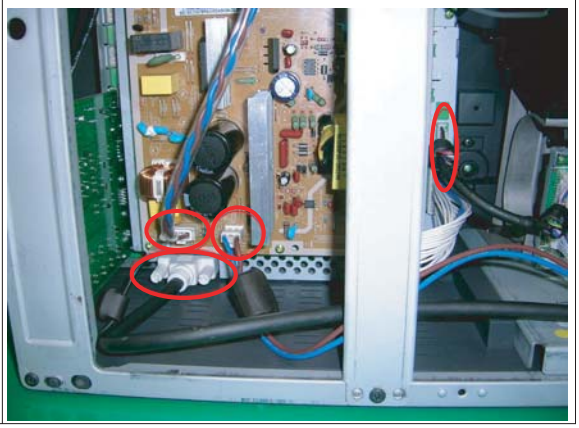
Communication Sequence

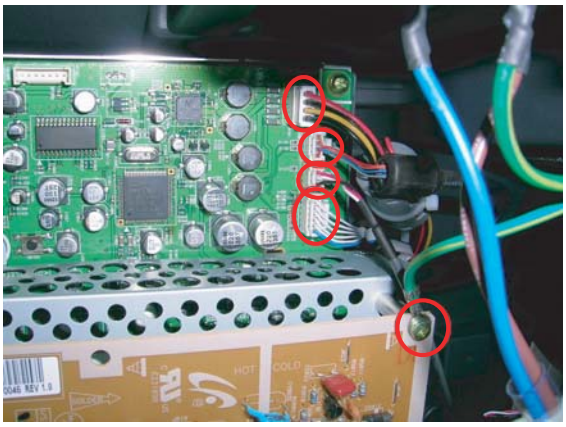
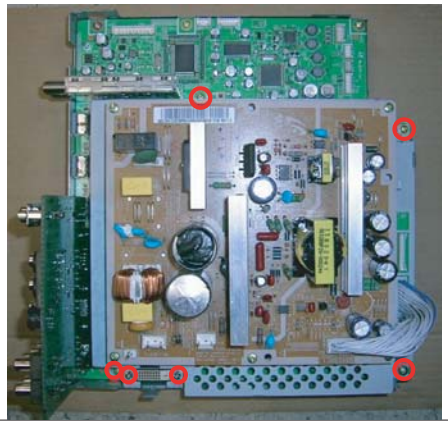
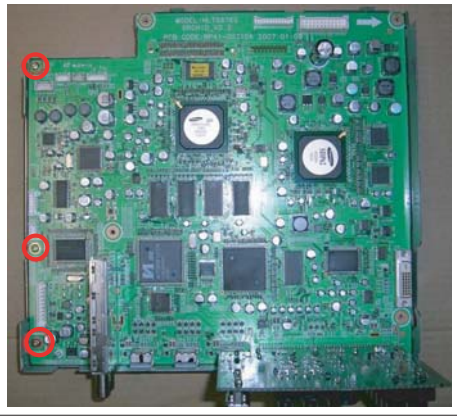
- PC
  Creates a command packet and sends it through RS232C.
- DLP DTV
  Receives a packet and parses the packet.
  Determines whether it is a success or fail, and transmits the Ack packet to the PC.
  Controls the DLP DTV with the parsed command.
- PC
  Waits for the Ack packet.
  Prepares the next command, if a Success packet arrives immediately.

12. Disassembly & Reassembly

12-1 Overall Disassembly & Reassembly

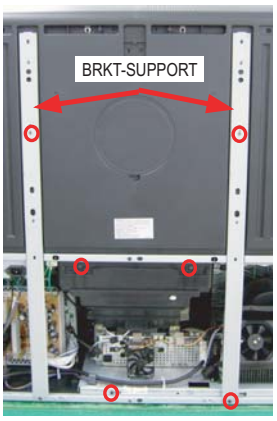
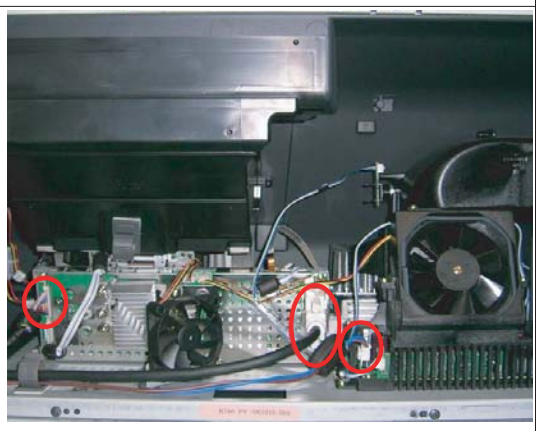
12-1-1 Separation of the back cover and the chassis

Part Name	Description	Description Photo
Back Cover	① Remove 20 screws to remove the back bottom cover. : BH,+,S,M4,L10,Z,PC(BLK),SWRCH18 (6ea) : BH,+,B,M4,L12,ZPC(BLK),SWRCH18 (14ea)	
Terminal Board	① Remove 2 screws to remove the side terminal board. : TH,B,M4.L15,BLK,SWRCH18A	
DVI cable	① Separate DVI, inlet, ballast and 12p wire. ⚠: The DVI screw is made of soft plastic and may easily break when applying excessive force through a screw driver. Ensure that extreme caution is taken when loosening the screw.	

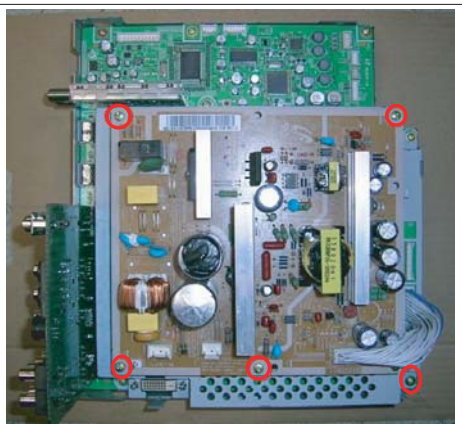
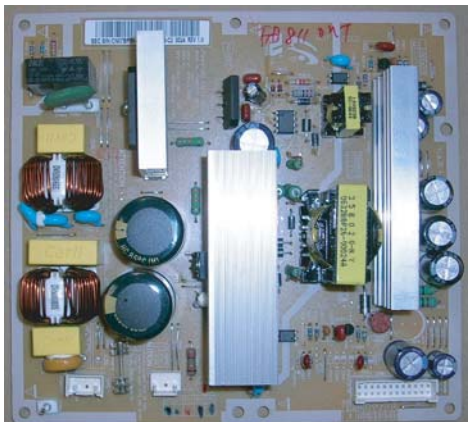
Part Name	Description	Description Photo
DVI cable	① Separate speaker,key_control, RMC, indicator_LED and SMPS_ground wires.	
Holder Chassis	① Pull out the holder Chassis. Side direction.	
	① Remove 4 screws and 2 stand-offs, then take off the top shield.	
	① Remove 3 screws.	

Part Name	Description	Description Photo
Main Board	① Remove the bottoms shields.	

12-1-2 Separation of the optical engine

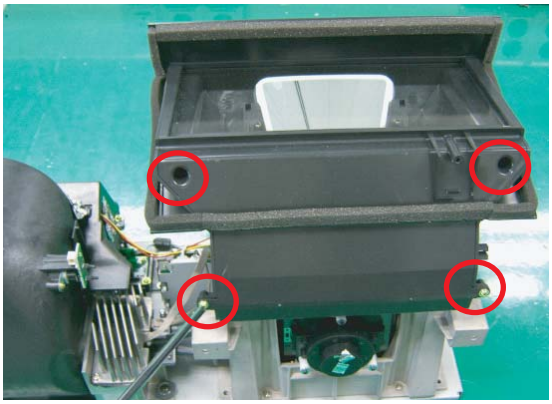
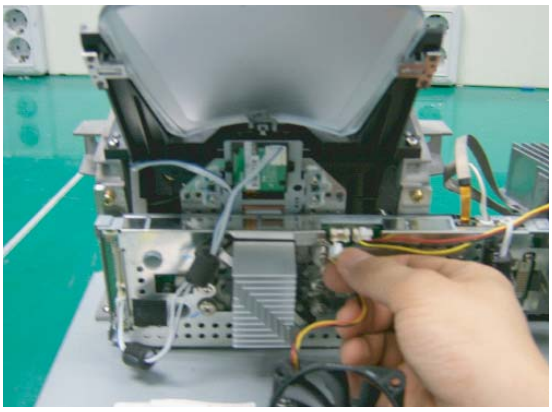
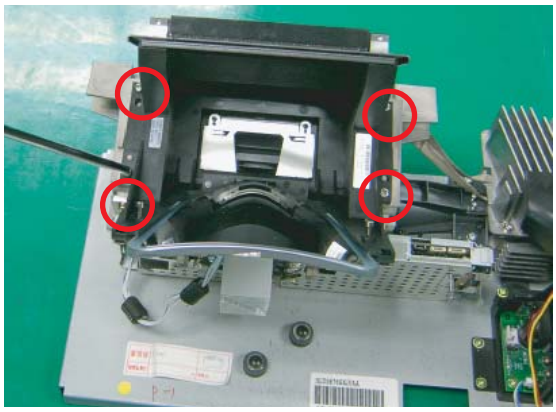
Part Name	Description	Description Photo
Optical Engine	① Remove 6 screws, then remove the BRKT-SUPPORT and vertical bar.	
	① Separate ballast cable, DVI cable and 12p wire cable.	
	① Separate RMC 3p wire.	
	① Separate detect switch cable. ② Remove the engine by pulling it out of the cabinet. ⚠: Be careful when removing the Light Engine as it may get caught up by the upper cable of the case.	

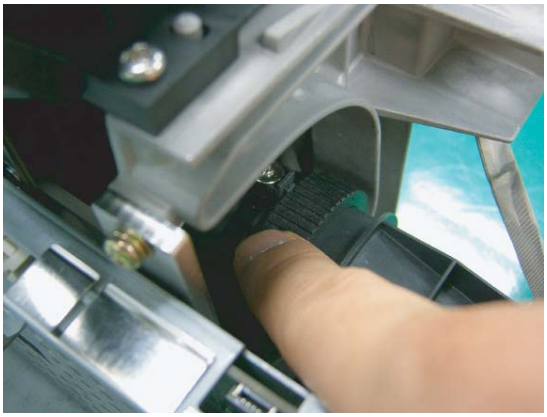
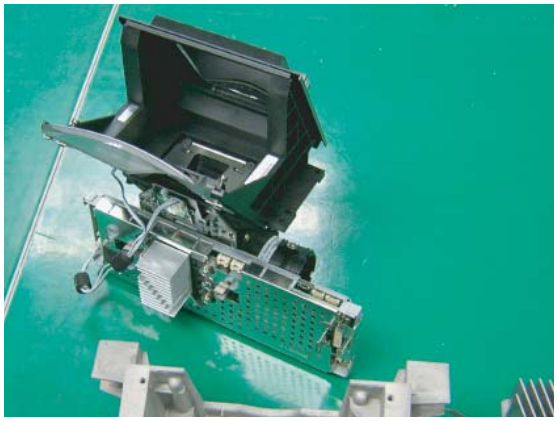
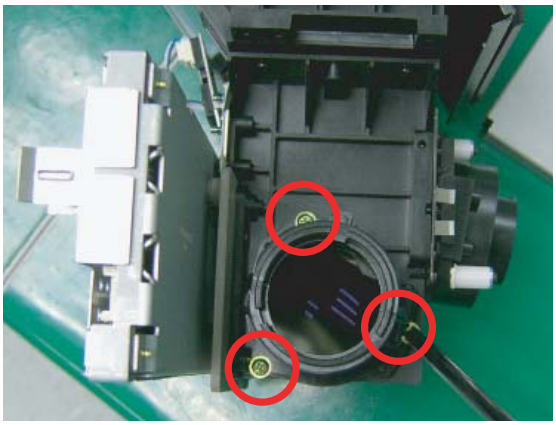
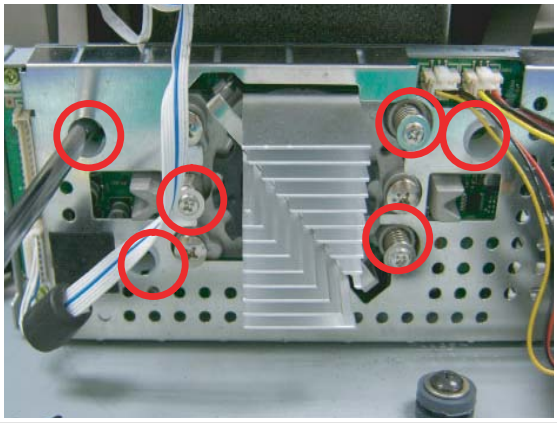
12-1-3 Separation of the Power Board

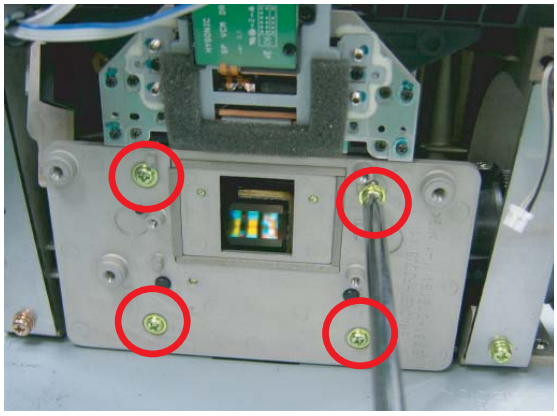
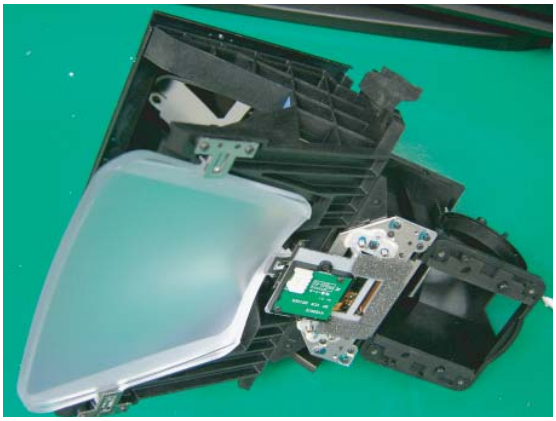
Part Name	Description	Description Photo
Power Board	① Separate holder chassis, first,refer12-1-1.	
	① Remove 5 screws.	
	① Remove the bottoms shields.	

12-1-4 Actuator(Smooth Picture) Replacement

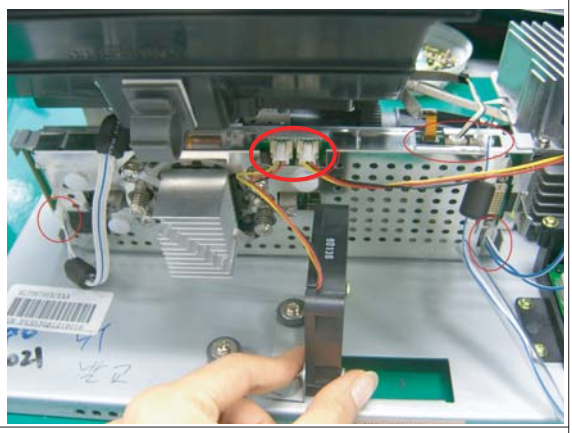
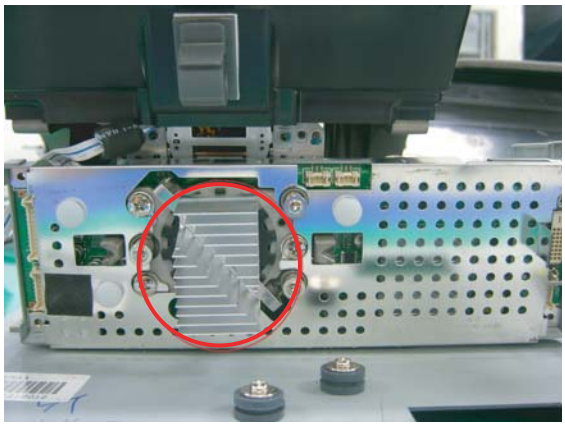
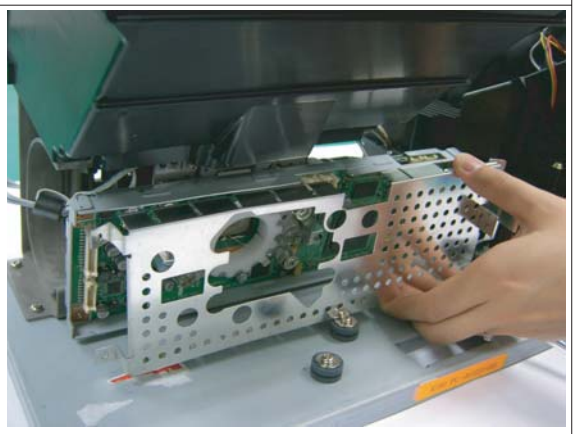
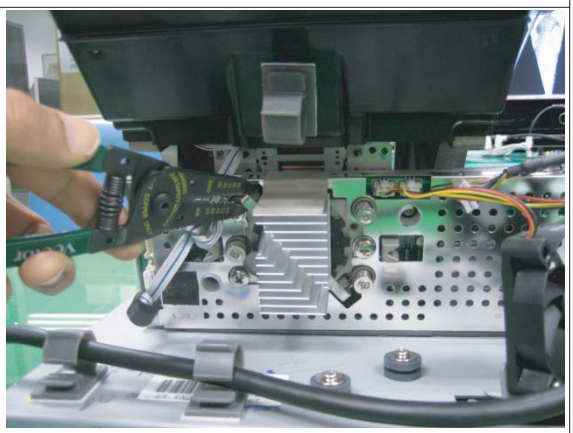
※If you need to replace the actuator,you have to replace the whole projection module.

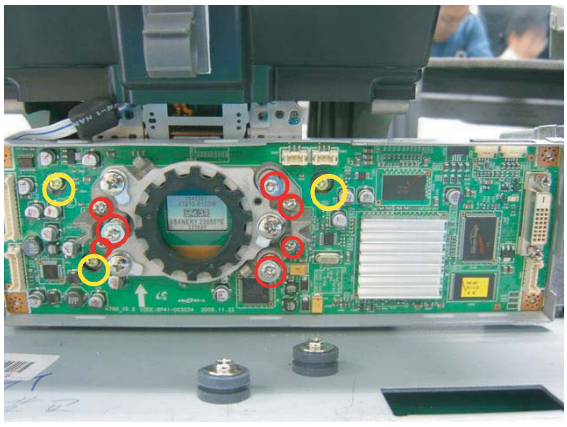
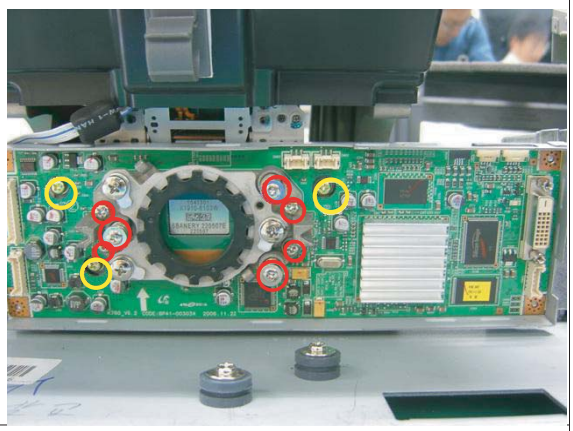
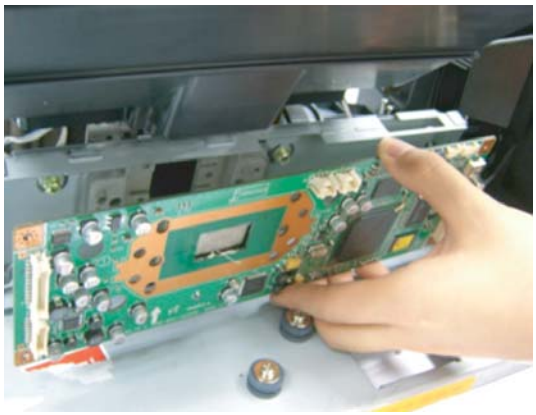
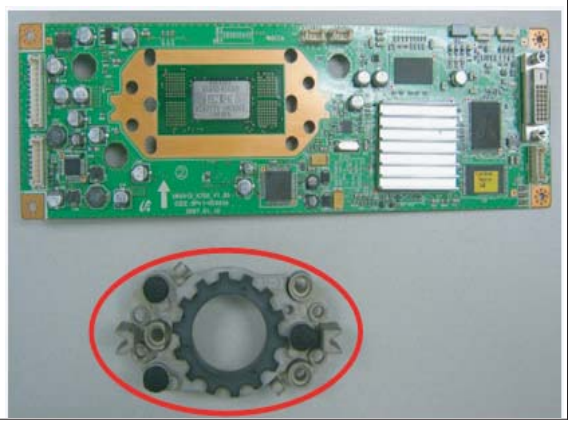
Part Name	Description	Description Photo
Actuator	① Remove the 4 screws.	
	① Separate cover-dust assy.	
	① Disconnect cables	
	① Remove the 4 screws.	

Part Name	Description	Description Photo
Actuator	① Rotate helm and disassembling.	
		
	① Remove the 3 screws and disassmebling.	
	① Remove the 7 screws and disassmebling.	

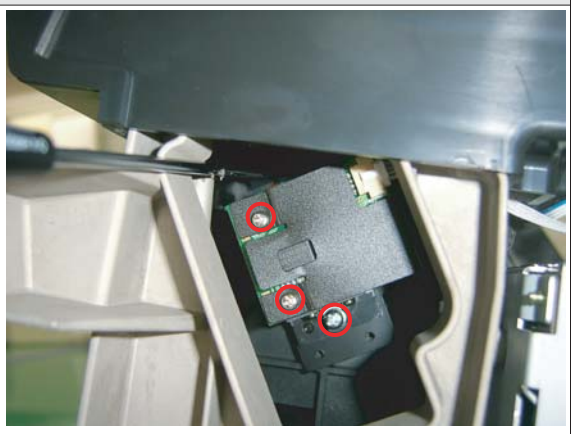
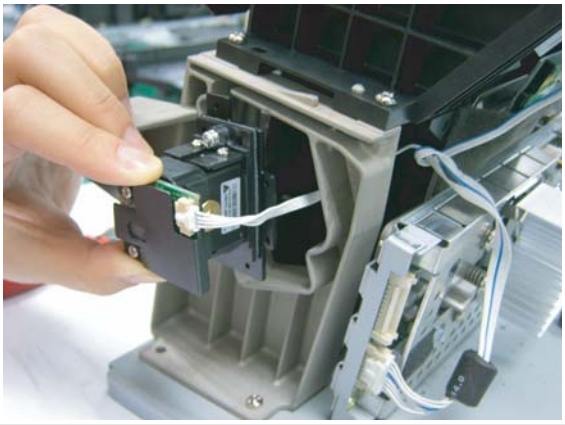
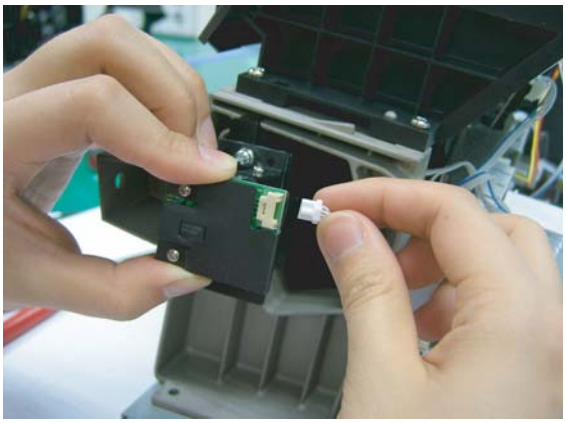
Part Name	Description	Description Photo
Actuator	① Remove the 4 screws and disassmebling.	
	① Change projection module	

12-1-5 Separation of the DMD Board and Panel

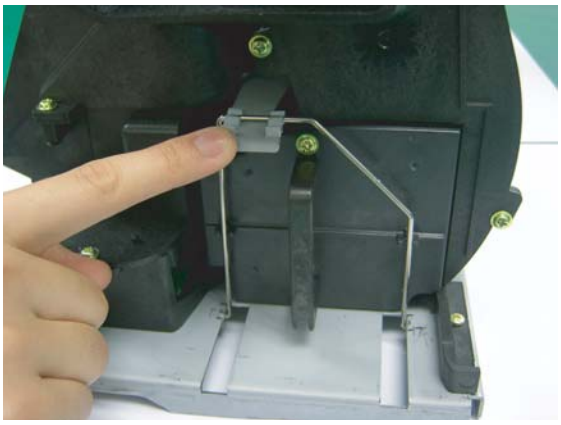
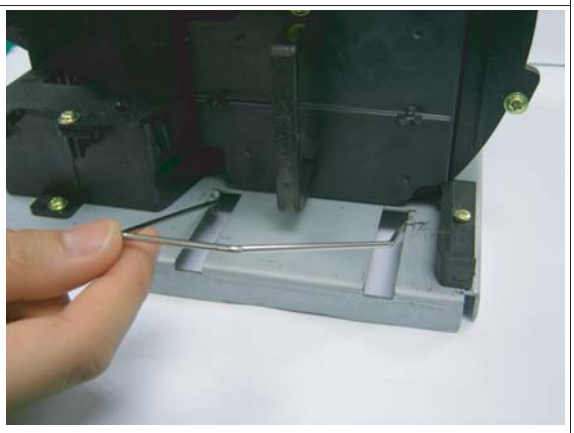
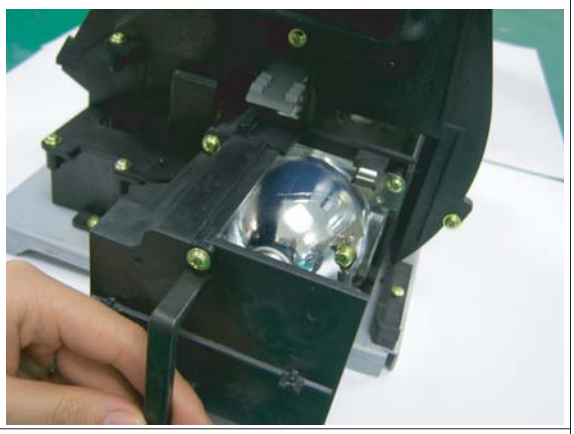
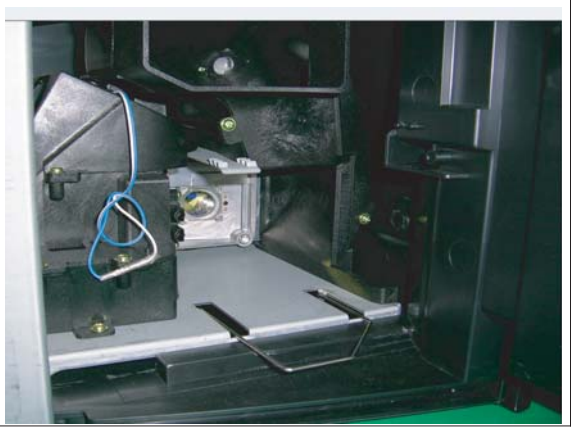
Part Name	Description	Description Photo
DMD Board	① Remove the FAN in front of the DMD Board Separate the 8 point Cables.	
	① Separate Spring and Heat Sink from DMD Board.	
	① Shield Case-DMD, DMD SHIELD.	
	① Remove Heat Sink with tools.	

Part Name	Description	Description Photo
DMD Board	① Remove the 7 point screws. * Do not remove 3 Yellow point screws.	
	① Remove the DMD Board.	
	① Change New DMD Board.	 

12-1-6 Dynamic Black replacement

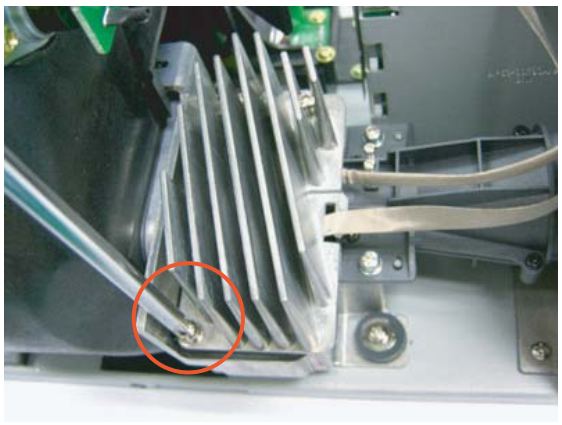
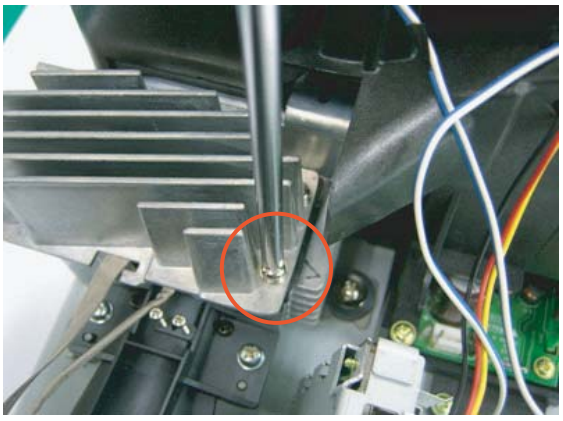
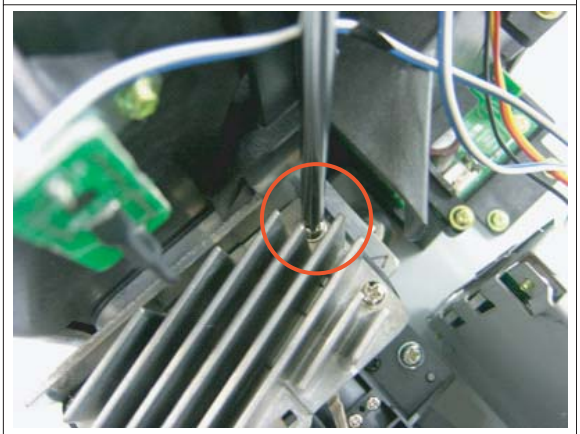
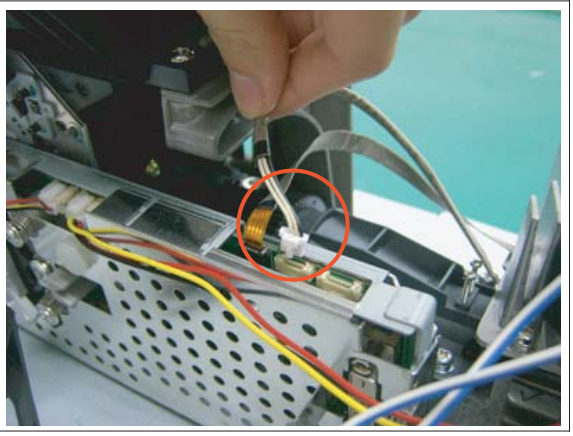
Part Name	Description	Description Photo
Dynamic black	① Remove 3 screws, the black one. ※ In the picture, 2 screw points are removed. and 1 point is removing with screw driver.	
	① Lower the the Dynamic Black and Pull out.	
	① Disconnector connector.	

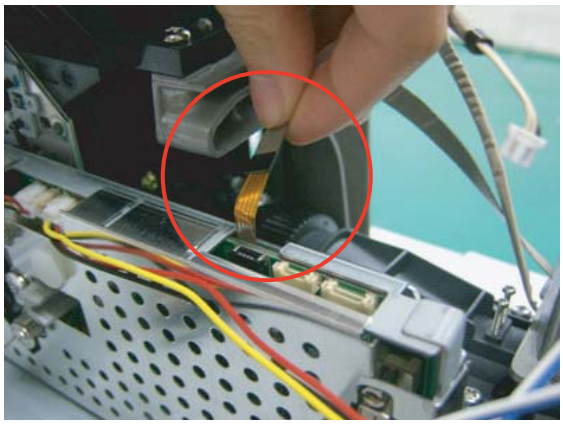
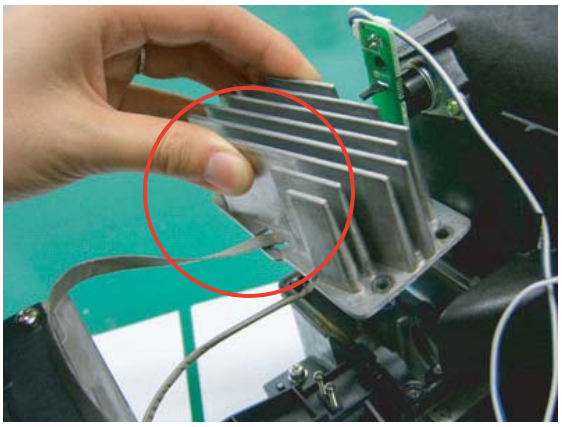
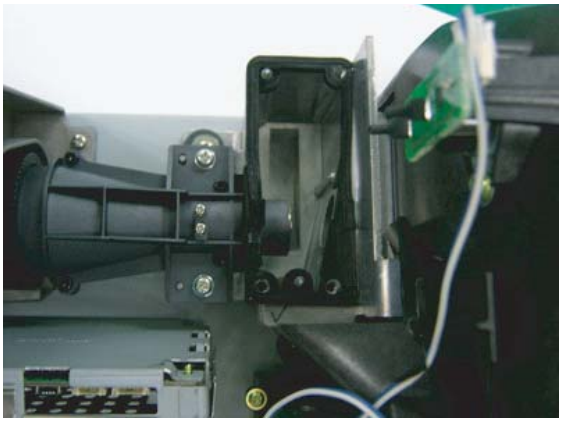
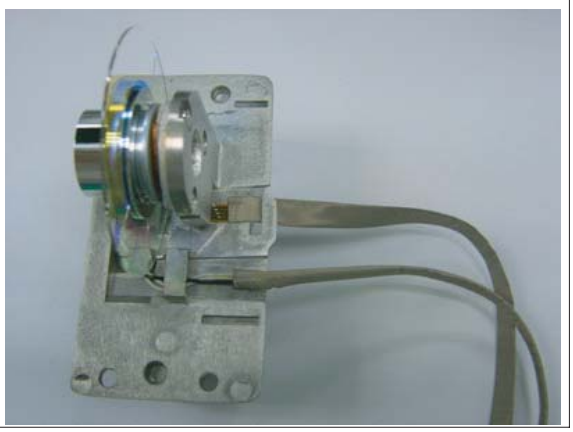
12-1-7 Separation of the LAMP

Part Name	Description	Description Photo
LAMP	① Push the top hinge.	
	① Remove the hinge wire.	
	① Remove the Lamp	
	① Empty LAMP space.	

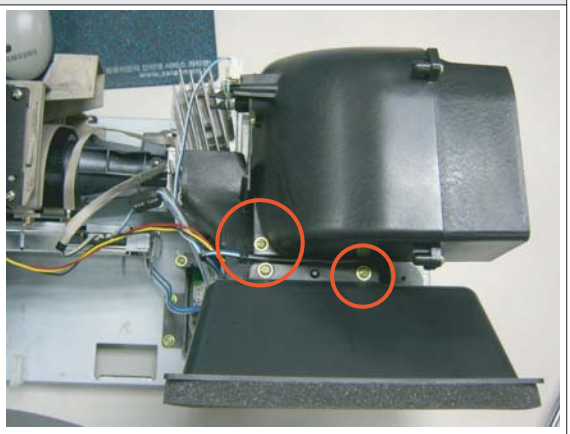
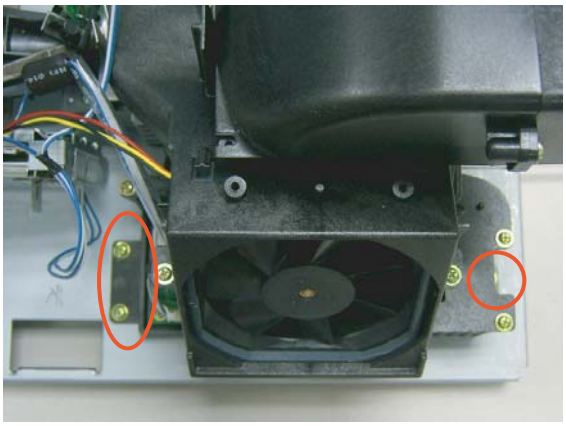
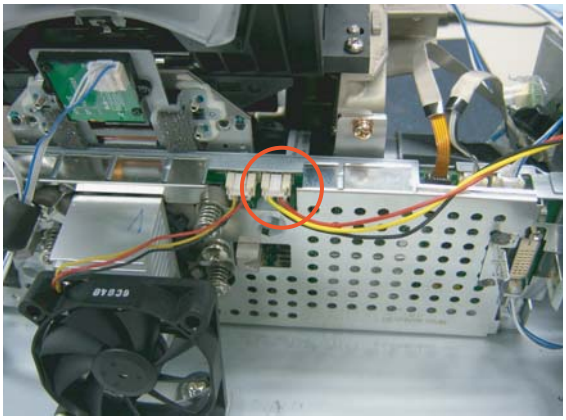
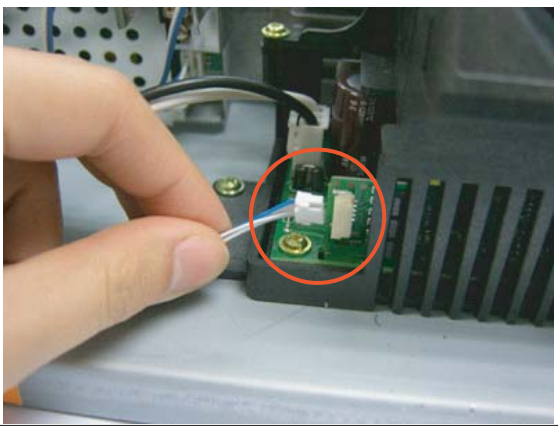
Part Name	Description	Description Photo
LAMP	① LAMP	

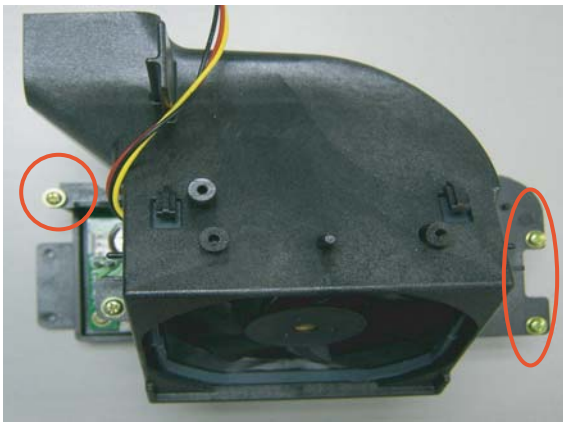
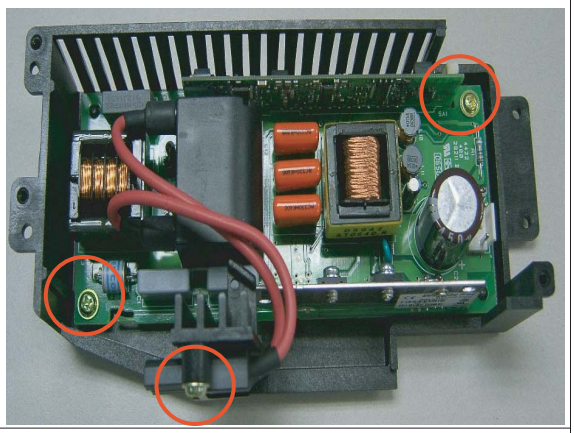
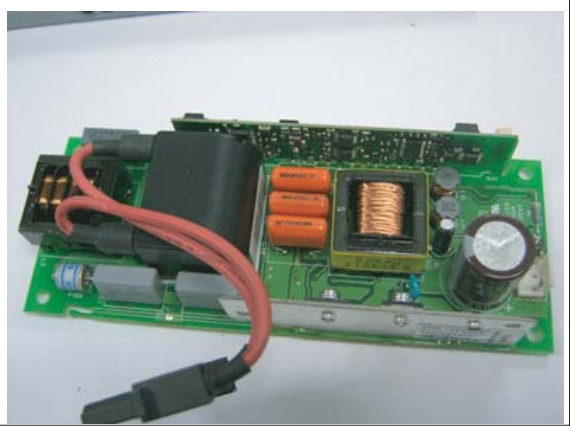
12-1-8 Separation of the Color Wheel

Part Name	Description	Description Photo
Color Wheel	① Unfasten 3 screws.	
		
		
	① Disconnect cable.	

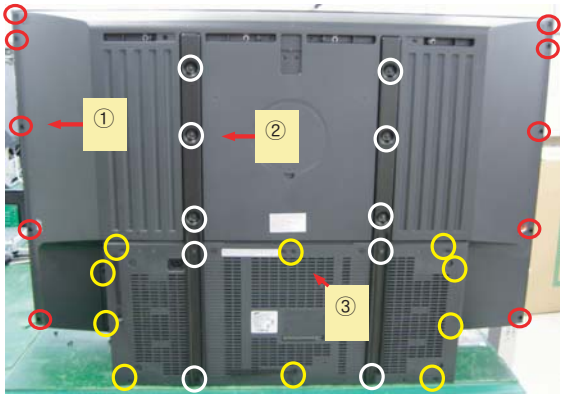
Part Name	Description	Description Photo
Color Wheel		
	① Disassemble the Colorwheel Assy.	
		
		

12-1-9 Separation of the Ballast

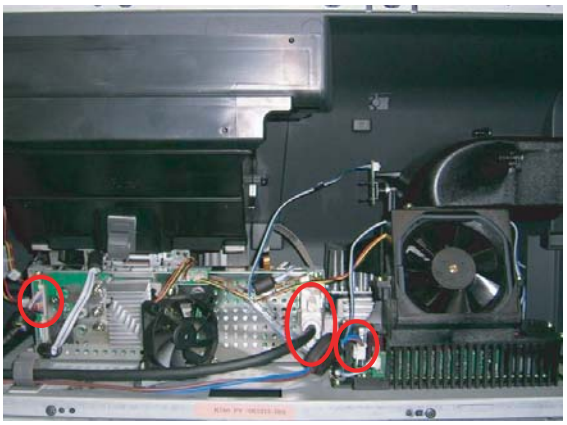
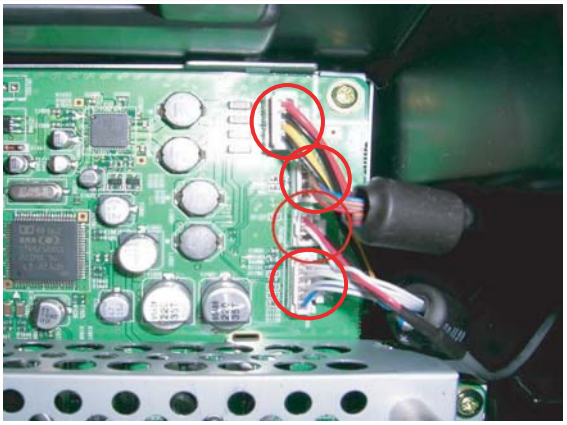
Part Name	Description	Description Photo
Ballast	① Unfasten 3 screws and disassemble the Cover-Fan.	
	① Unfasten 3 screws and disassemble Ballast assy.	  

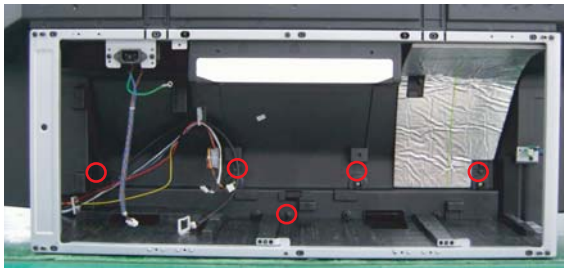
Part Name	Description	Description Photo
Ballast	① Disconnect cables.	
	① Unfasten 3 screws and disassemble Cover-Fan assy.	
	① Unfasten 3 screws.	
	① Change Ballast.	

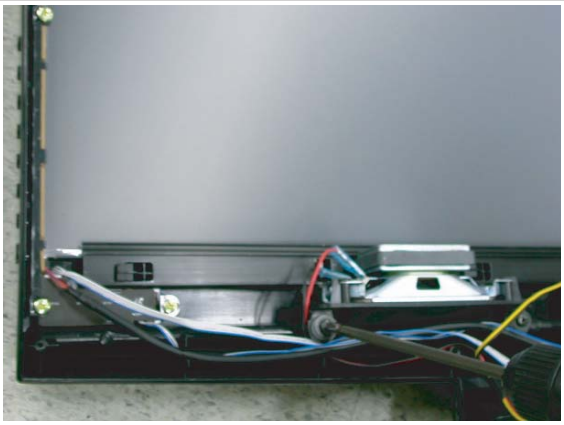
12-1-10 Separation of the SCREEN

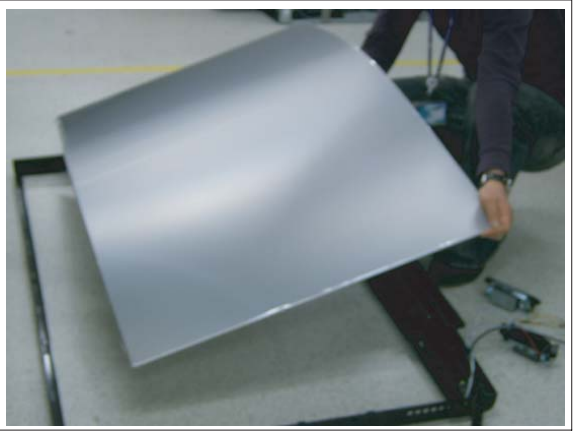
Part Name	Description	Description Photo
SET	① Set.	
FRONT, REAR	① Disassemble 10EA SCREW for assembling COVER-REAR,TOP and COVER-FRONT ② Disassemble 10EA SCREW for assembling BRKT-SUPPORT REAR and BRKT-REAR TOP ③ Disassemble 10EA SCREW for assembling COVER-REAR,BOT and COVER-REAR ④ Disassemble BRACKET-SUPPORT REAR and COVER-REAR, BOT ⑤ Disassemble BOT and COVER-REAR	

12-1-11 Separation of the optical engine

Part Name	Description	Description Photo
Optical Engine	① Remove 6 screws, then remove the BRKT-SUPPORT and vertical bar.	
	① Separate ballast cable, DVI cable and 12p wire cable.	
	① Separate RMC 3p wire.	
	① Separate detect switch cable. ② Remove the engine by pulling it out of the cabinet. ⚠: Be careful when removing the Light Engine as it may get caught up by the upper cable of the case.	

Part Name	Description	Description Photo
CONNEC-TOR	① Separate holder chassis, first,refer12-1-1.	
	① Disassemble 5EA SCREW for assembling COVER-REAR and COVER-FRONT	
FRONT	① Separate COVER-FRONT from the SET	

Part Name	Description	Description Photo
FRONT	① Disassemble of SCREW fixing SPEAKER, KNOB-CONTROL, LED PCB (SPEAKER 4EA, KNOB-CONTROL 2EA, LED PCB 1EA) ② Separate SPEAKER, KNOB-CONTROL, LED PCB.	 
BRKT-SCREEN	① Disassemble of SCREW fixing BRKT. (1EA for each left/right, 1EA for bottom) ② Separate BRKT.(TOP, SIDE,BOTTOM)	 

Part Name	Description	Description Photo
SCREEN	① Lift COVER-FRONT and put a hand under COVER-FRONT to lift SCREEN. ② Put the hand into the center of the screen and lift screen slightly and pull it to the front to disassemble screen.	 
	① Disassemble SCREEN from COVER-FRONT.	

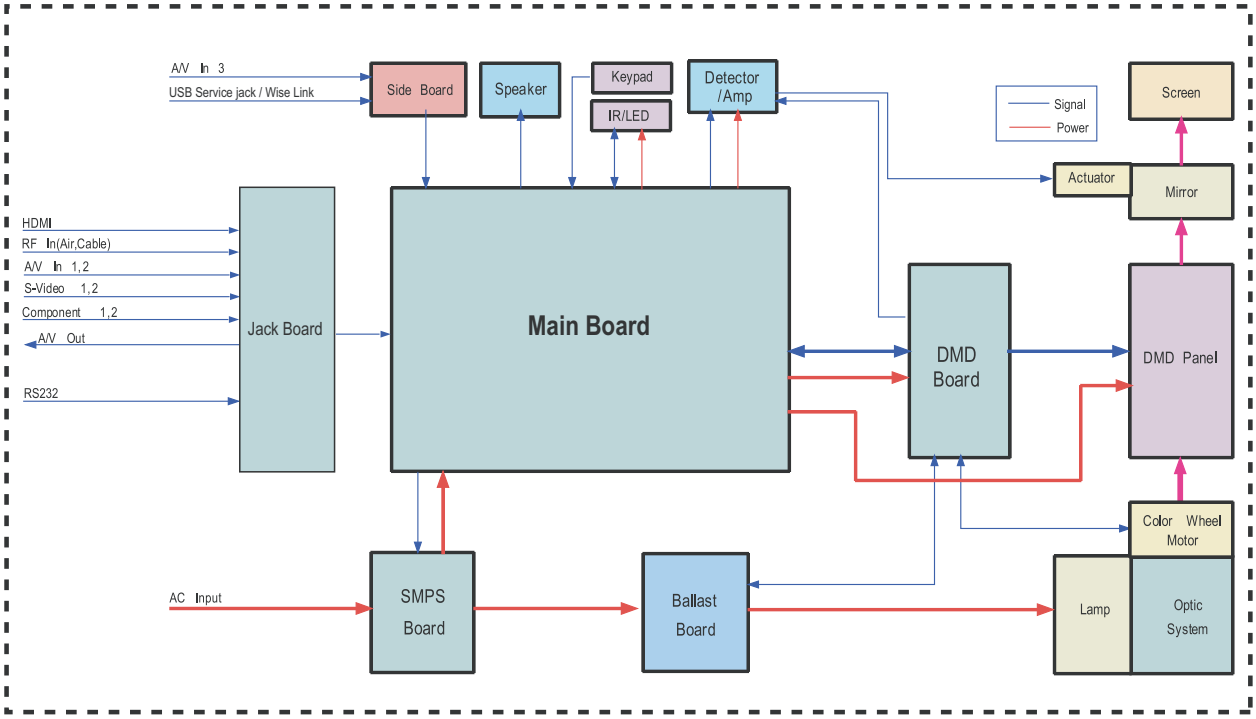
12-1-12 Separation of the Cover dust

Part Name	Description	Description Photo
Cover dust	① The cover dust is in the center of the cover rear.	
	② Put your finger in the gap between cover dust and cover rear.	
	③ Seperate the cover rear from cover rear.	
	④ Cover dust is seperated.	

MEMO

13. Circuit Description

13-1 Overall Block Description



The DLP TV is largely divided into: Power part, Engine part and Main + Rear parts.
The ass'y that consists of the DMD board, Detect (Actuator) board, lamp, ballast and optical devices is called the Engine.
The main + rear board parts receive the AV signals to output voice signals and process the remote control signals.
The engine part displays the video data on the screen, which is generated in the main + rear boards.

The AV signals are input through the main and rear boards. CXD3815 processes the MUX and decoding while S5H2201 processes the CPU functions, MPEG and I2S.
Finally, the improved DNIe image is sent to the DMD engine board.

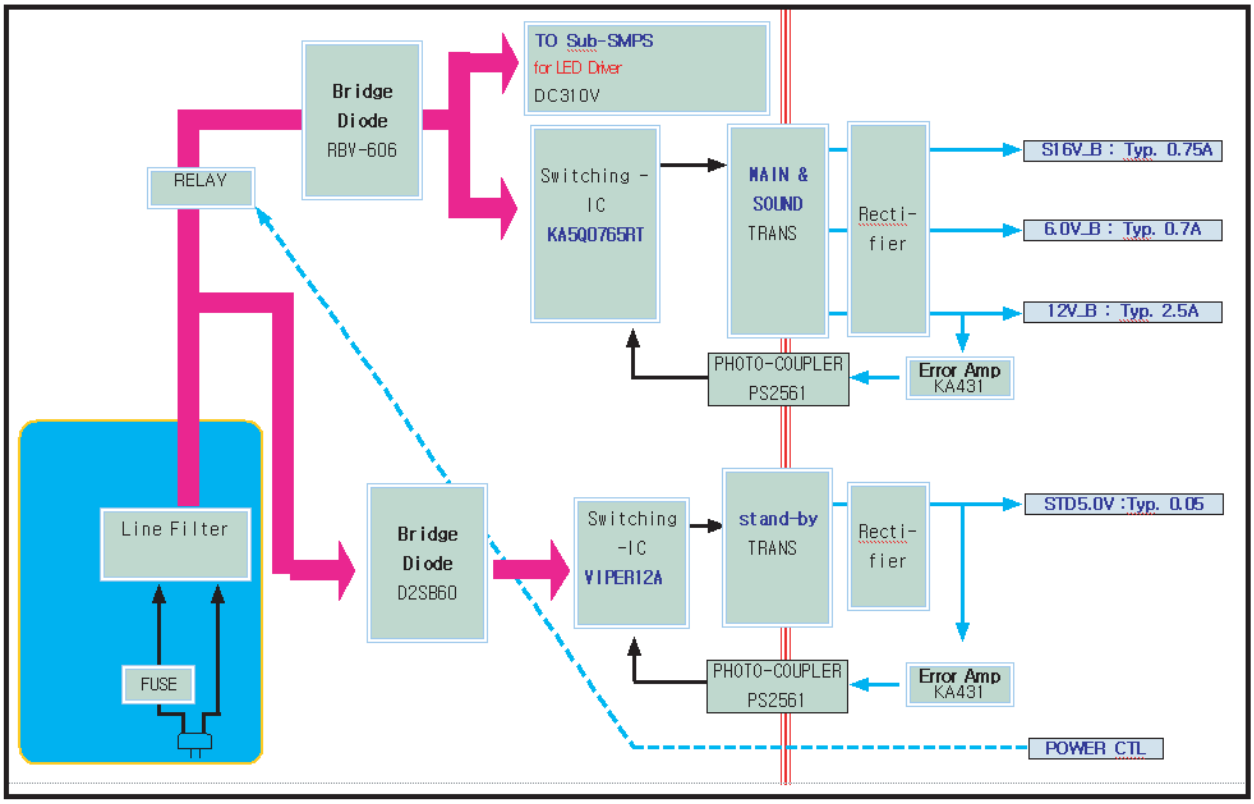
The final data by DNIe is processed in DDP3021 of the DMD board to display the image on the DMD panel. This image is created by the light of the lamp through the color wheel which is enlarged and projected onto the screen.
This is the DLP of the L6,L7,L8,K2 or K3 type that the actuator operates additionally during this process.

The power terminal generates the DC power needed for the product and sends it to the analog board. The analog board supplies the power to the digital and DMD boards.
In the meantime, the power source board supplies DC220V - 400V directly to the ballast in order to light the lamp.
The ballast is like a stabilizer for lighting the lamp.

The ultimate purpose of the TV set is to project an image onto the screen and output the voice signals synchronized with the image. And based on the DMD panel used, a 1-panel TV requires a color wheel while a 3-panel TV does not. The HD3,HD4,HD5 panel needs an actuator while the HD2 does not. However, the drive mechanism and the overall block structure of the two panels are the same.

13-2 Partial Block Description

13-2-1 Power Board Block Description



1. What is SMPS?
   This is an acronym for Switching Mode Power Supply and this is responsible for receiving AC input voltage (Line frequency: 50HZ~60HZ) and supplying insulated DC output.

2. SMPS Components
   1) Standby Power: A combination of ICS801 (SWITCHING IC) and TS801S (TRANS) that supplies STAND-BY 5V for operating the Micom.
   2) Multi Power: The voltage supplied when the power is turned on.It is a combination of IC2 and T801S that supplies various voltages including D12V, A6.0V, S16V

3. SMPS Operation
   1) SMPS System: Uses Fly-Back technology for both standby and multi power.
   2) Operation: Fly-Back is one of the most popular power-supply systems and uses less power than 200W as well as being the cheapest of all multi output SMPS systems.
      Let's have a look at how it operates…
      a. Converts AC input into DC (HOT) (rectifies to DS801 before smoothing to CS801)
      b. The converted DC voltage is high, especially compared to ground, so touching it will cause electric shock. Use T801S (Trans) to insulate the secondary voltage and take advantage of the PWM operations of T801S and IC801S to induce it.
      c. The secondary induced voltage is a dozen-KHZ square wave power, which goes through the smoothing cap (CS822) to be generated in the standby 5V.
      d. Multi power also operates the same way.

※Options are deleted on the ATSC only Model

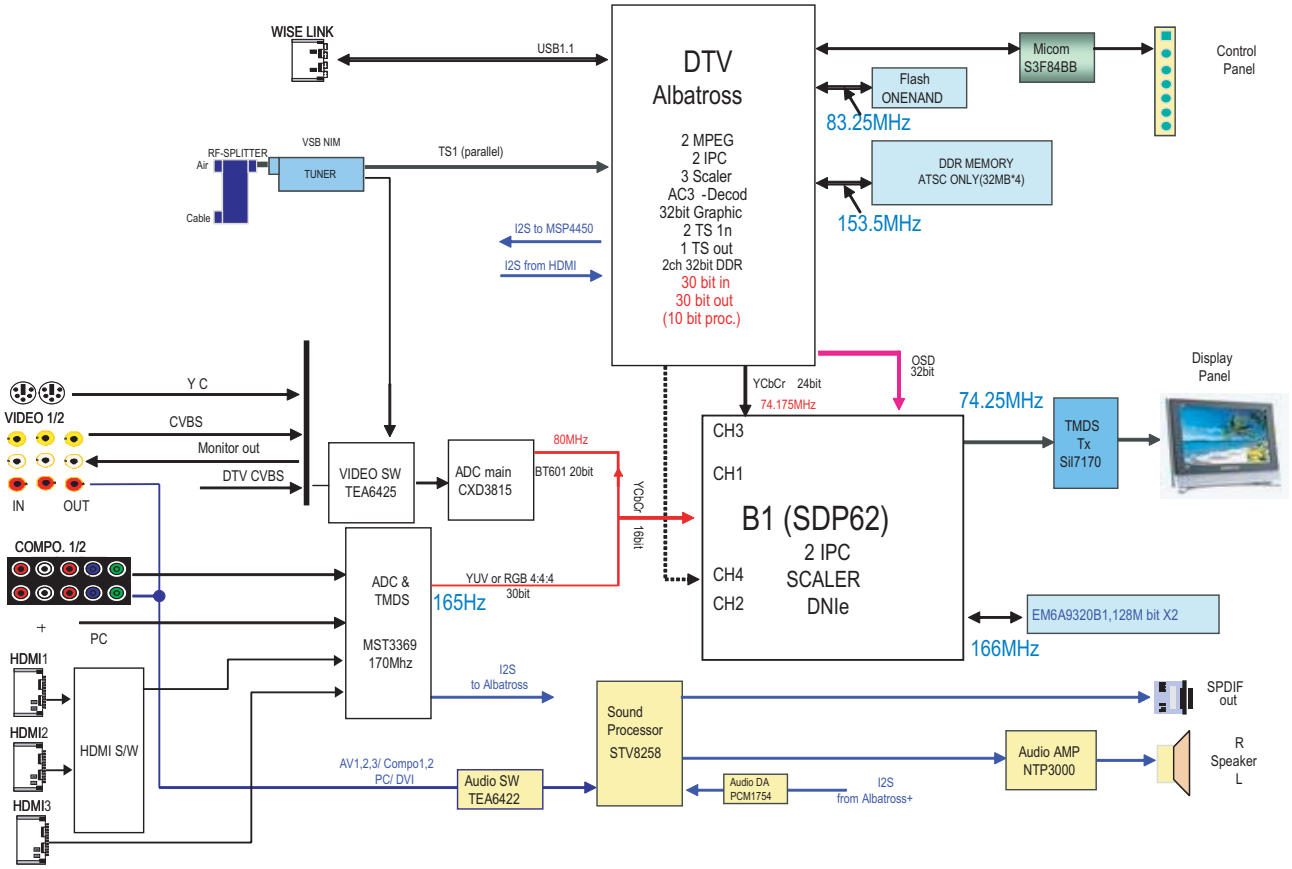
4. Input&Output voltage

1) Input voltage * America(AC120V) - OPTION

2) Output voltage * D12V / 2.5A - 12V , 3.3V , 1.8V : For signal processing
* A6.0V / 0.7A - For driving the tuner
* S16V / 4A -For driving sound processor
* 150W - For driving the Sub SMPS

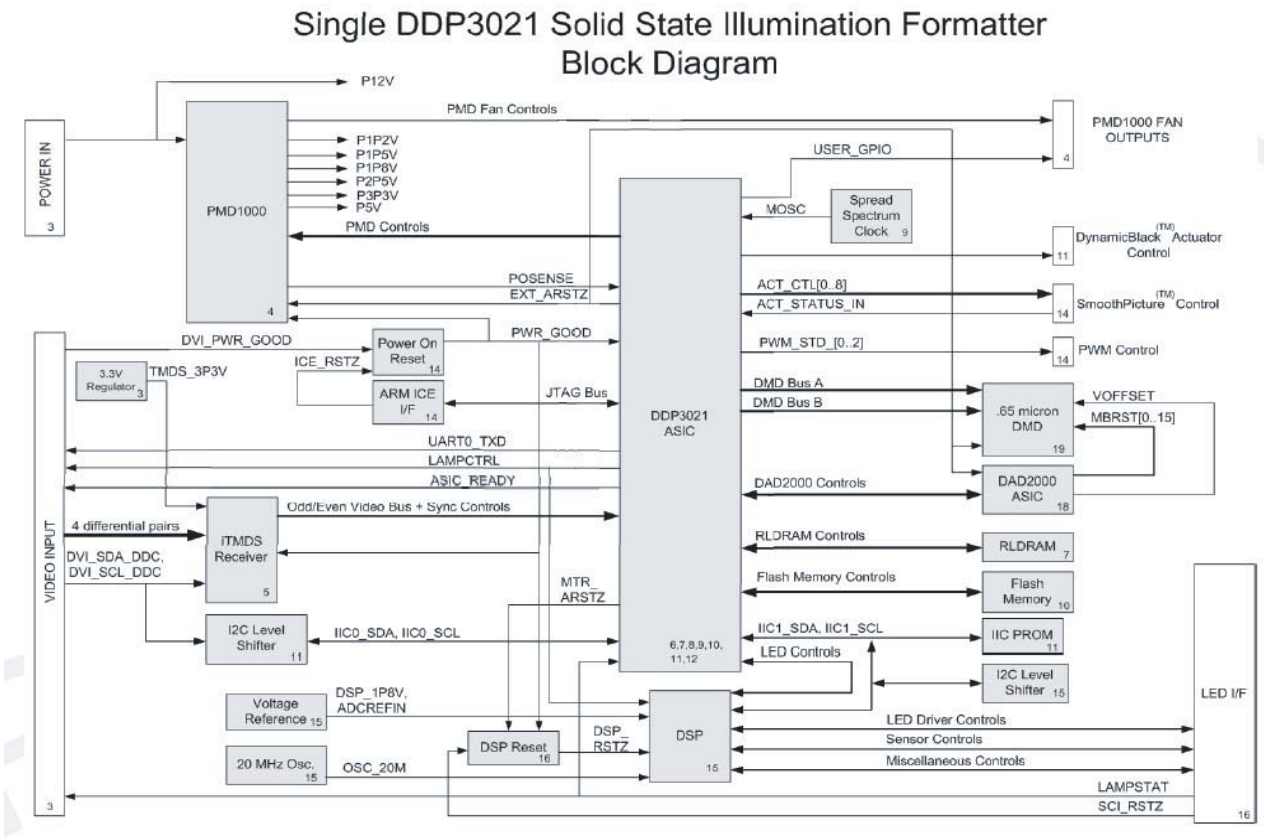
13-2-2 Digital Board Block Description

※Options are deleted on the ATSC only Model



- Select Sound/Video
  One is selected from multiple inputs by the switching ID. MICOM decides which port is used for output.
  For broadcasting signals, sub-outputs are transferred in CVBS and, the main outputs in Y/C through the 3D Comb, to the digital board.
  Sound signals are selected by the switching IC, of which only one input is transferred to the speaker.
- Detection Signal Flow
  When each port is connected to a signal cable, the detection signal is "low" and can be checked by Micom scanning.
- CXD3815: Analog YPBPR, CVBS, Y/C(SUPER), Input MUXING and Video Decoding
- S5H2201: CPU, + MPEG Decoder, Audio signals transferred to MSP of the analog board by I2S
- Tuner: Main-HD Tuner,Sub-Analog Tuner
- HDMI: Receives Two input signal and transfers it to S5H2201.
- Others: Anynet implementation, Optical Power Port, USB Update Port (not available for MP3)

13-2-3 DMD Board Block Description

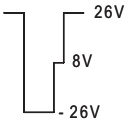


- Controls the lamp (ON/OFF)
- Drives the color wheel motor
- Drives the panel
- Controls the sensors

13-3 New Circuit Description

13-3-1 Output Voltage States of the DMD Board Parts

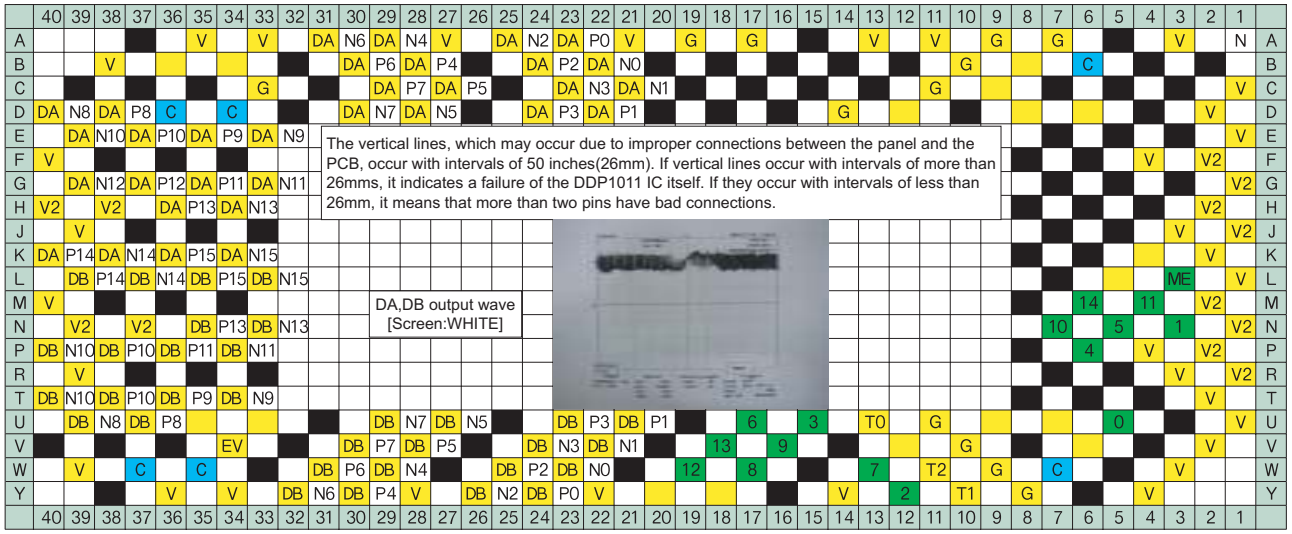
Output Terminal waveform



LOC	Characteristics	
CN805, 4pin	LED_LAMPLITZ	High(3.3V) Beffore the LED Turns on, Low(0V)when the LED Turns on.

13-3-2 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.



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.)		

13-3-3 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 OPERATION)
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

13-3-4 Engine Failure Inspection Flow Chart for the DMD Board

No.	Description	Key Point	Remark
1	1) When the power cord is plugged in, 2) DC220V~410V(typical 300V) is automatically supplied to the ballast.	Check whether the DC220V~410V(typical 300V) power is supplied to the ballast.	
2	1) When the power key is pressed via the remote control, the micom of the analog 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.
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. * When about 4 seconds have passed after changing to pulse waveform, the screens are displayed on the set.
5	1) Method for checking whether the DDP1010 IC RESET is normal.	If the voltage between R254 and R255 is 3V, it is normal.	

13-3-5 IC Line Up

1. Main Board

Items	Descriptions	Remarks
CPU & MPEG	Albatross (S5H2201)	2MPEG, 2IPC, 3Scaler, AC3-Decod, 32bit Graphic, 2TS 1n, 1TS out,2ch 32bit DDR, 30bit in, 30bit out (10bit proc.)
	Albatross DDR Memory (32MB x 4)	ATSC Only Model Memory 128MB
	Albatross DDR Memory (32MB x 2)	POD Model (Full Model) 192MB
	Albatross Flash Shrink (256MB)	
IPC & Scaler	SDP62	IPC & Scaler & Picture Enhance
	SDP62 Memory FBGA Shrink (128MB x 2)	
TMDS	Sil7170	iTMDS Transmitter, 10bit
DCDC	SC4521 : 1V MP1583 (3V/5V/3.3V/1.3V) x 5	DCDC Converter
Decoder & 3D Comb	CXD3815Q	
Micom	S3F84BBXZZ, Samsung	Micro Controller
Audio Processor	MSP4450K, Micronas	Digital Audio Decoder
Sound AMP	NTP3000	Digital AMP
VSB Nim Tuner	DNVS227IV262B	
Video Switch	TEA6425, SGS-Thomson	Video Switch IC for TV * 2
Audio Switch	MM74HC4052M, PHILIPS	Audio Switch IC for TV
HDMI Receiver & ADC	MST3369M , Mstar	MST3369M , Mstar
HDMI Switch	TDMS341, TI	HDMI Switch , TI

2. Main SMPS

Items	Descriptions	Remarks
Multi SMPS	KA5Q0765RT,Fairchild	IC-PWM Controller ; Main Power
Stand-by SMPS	Viper12A, STMicroelectronics.	IC-PWM Controller ; Stand-by Power

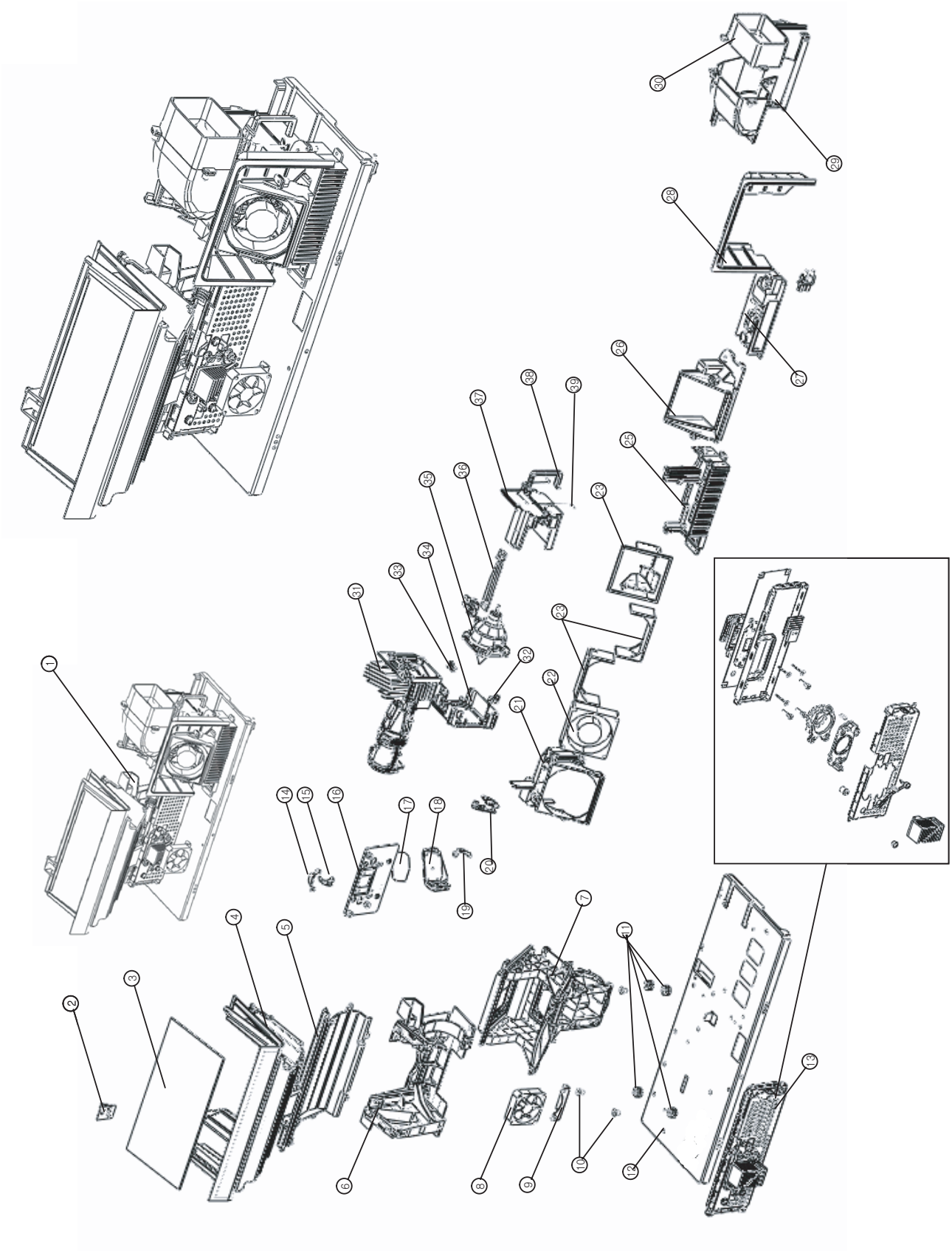
3. Sub SMPS

Items	Descriptions	Remarks
16VB SMPS	MC33067,Onsemiconductor	IC-PWM Controller ; Main Power
12VA SMPS	Viper22A, STMicroelectronics.	IC-PWM Controller ; 12VA

4. DMD Board

Items	Descriptions	Remarks
DMD Driver	DDP3021, TI	DLP Data Processor
Reset, Power	DAD2000, TI	DMD Power and Reset Driver
Motor Controller	PMD1000, TI	12V VCM/Spindle Pre-Driver, Power Supply(2.5V,3.3V,1.5V)
Frame Buffer	MT49H8M36BM-TI, Micron	128M(246K x 16 x 32B), Rambus DRAM
Spread Spectrum Clock Generator	ICS650-41, ICS	50Mhz Spread Spectrum Clock Generator
Program ROM	M29W800BT x 2, ST	8M(1M x 8 or 512K x 16), Flash Memory
Actuator Driver	DDP3021, TI	DLP Data Processor
AD Converter	AD7801BRU	Actuator Drive , 60Hz
TMDS Receiver	SiI7171,Silicon Image	TMDS Digital Receiver, 75MHz
Color Calibration	TMS320F2801PZA, TI	DSP ASIC IC, 1.8V, Data Calibration

13-3-6 K780 Engine Ass'y



K780 Engine Exploded View List			
No.	Description	Specification	Q'ty
1	ASSY ENGINE P-DLP	K780	1
2	ASSY PCB S-RMC	PCB	1
3	COVER-DUST	GLASS T3.0	1
4	COVER-DUST RIGHT	PC G/F 20% T2.5	1
5	COVER-DUST LEFT	PC G/F 20% T2.5	1
6	BASE-PROJECTION	MG D/C T1.8	1
7	ASSY LENS P-PROJECTION MODULE	LENS ASSY	1
8	FAN-DMD	60*60	1
9	BRACKET-FAN	SECC T1.0	1
10	FAN-LOCK	PH ¥õ7	4
11	RUBBER-FAN	SILICON	4
12	BRACKET-ENGINE BASE	SECC T1.6	1
13	ASSY DMD BOARD	PCB	1
14	BRACKET-MIRROR	AL D/C T1.0	1
15	BRACKET-F/MIRROR (L)	SUS T0.3	1
16	BRACKET-FOCUS	MG D/C T3.0	1
17	GLASS-FRONT FOLDING MIRROR	GLASS T1.1	1
18	HOLDER-FOLDING MIRROR	MG D/C T2.0	1
19	BRACKET-F/MIRROR (R)	SUS T0.3	1
20	ASSY MISC-THERMOSTAT	PCB	1
21	COVER-DUCT TOP	PC G/F 20% T2.5	1
22	FAN-DC	80*80	1
23	RUBBER-FAN	SILICON	2
24	COVER-MIDDLE	PC G/F 20% T2.5	1
25	HOLDER-BALLAST	PC G/F 20% T2.5	1
26	COVER-DUCT BOTTOM	PC G/F 20% T2.5	1
27	LAMP-BALLAST	EUC 132D P/42 132W	1
28	COVER-FAN	PS T2.5	1
29	COVER-DUCT RIGHT	PC G/F 20% T2.5	1
30	COVER-DUCT LEFT	PC G/F 20% T2.5	1
31	ASSY LENS P-ILLUMIANTION	LENS ASSY	1
32	HOLDER-LAMP	PPS G/F 30% T2.5	1
33	BRACKET-LAMP	SUS T0.5	1
34	BRACKET-LAMP	SUS T0.5	1
35	LAMP	UHP 120W/132W 1.0 E22	1
36	BRACKET-HINGE TOP	SECC T1.0	1
37	COVER-LAMP	PPS G/F 30% T2.5	1
38	HANDLE-LAMP	PPS G/F 30% T2.5	1
39	BRACKET-HINGE BOTTOM	SUS T2.0	1

MEMO

14. Reference Information

14-1 Other issues related to other products

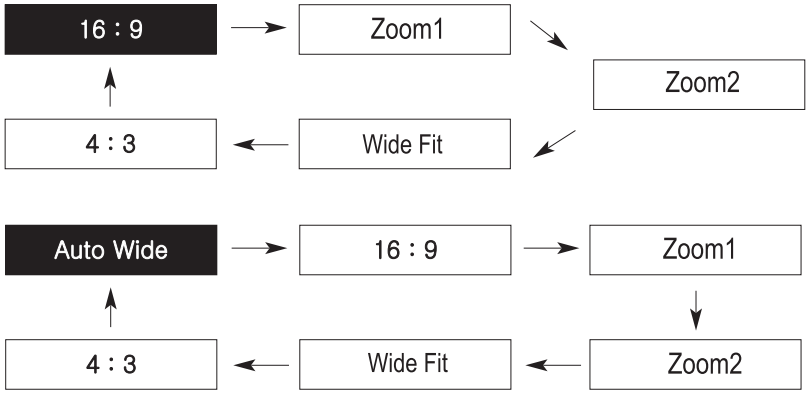
Problem	Descriptions
A fixed screen can cause permanent damage to the TV Braun tube.	Braun, PDP and LCD TVs can all be damaged. When a still image is displayed in a sequence, this can leave stains or after-images due to the characteristics of the panel. However, the DLP TV has the advantage that no stains or after-images are left on the screen. The DLP TV has mirror pixels on the DMD panel that project the beam onto the screen, in which the mirror is a digital representation of 0s and 1s, leaving no trace of light. The mirror returns to a blank state so that no stains or after-images are left.
Confusion between the ANYNET Port and the SERVICE Jack Port	The SAMSUNG SKY500N model has both an ANYNET port and a SERVICE jack port. Because the shape of the ANYNET port on the DLP TV is the same as that of the SERVICE jack port of the SKY500N, it fails to turn the TV off after a connection has been reported. The ANYNET port uses an RS232 port called Phone Jack, and the SERVICE jack port also uses the RS232 port. However, you must not connect the SERVICE port and the ANYNET port. Check if the port is the ANYNET port or the SERVICE port before connecting the port. Even if the TV cannot be turned on after connecting, the TV will turn on if you disconnect the connection.
Length of DVI Cable / PC RGB Cable	- A too long DVI cable may cause a malfunction or degradation of the visual quality due to an attenuation of the signal. There is no recommendation for the cable length at present. In general, although a cable length of up to 5 meters should work, please check if video is properly displayed on the screen after connecting. If you think the length of the cable is longer than for normal use, check the visual quality of the video on the screen and shorten the length, if necessary. - This also applies to the PC RGB (D-Sub) cable. When the length of the cable is longer than for normal use, video may not be displayed on the screen. In this case, shorten the cable length.
When a digitally distributed TV user receives HD-rated broadcasts:	The digital distributed TV (Ready Technique) can render HD sources as HD-rated. However, you need to install a set-top box for this purpose. The digital TV alone cannot render HD broadcasting as HD-rated. Install the formal set-top box for HD broadcasts.
When a digital distributed TV user selects normal size (4:3) to receive SD-rated digital broadcasts:	The digitally distributed TV (Ready Technique) renders any broadcasting service as SD-rated. However, when connected to a set-top box, the digital TV renders HD broadcasts as HD-rated and renders SD as SD-rated. The screen size is scaled to 4:3.
When a digitally built-in TV user receives SD (air) broadcasting:	The digitally integrated TV ("built-in" type) renders SD broadcasting as SD-rated. This can be understood easily. Even a high-resolution TV cannot improve a low resolution picture into high quality. In contrast, an SD-rated TV cannot represent HD broadcasting as HD because the resolution of the TV is lower than the original.
When selecting a picture size of 4:3 in connection with a computer or a multimedia device:	The representation capability of SD or HD-rated depend entirely on the TV set. The HD TV can render HD broadcasting as HD-rated only when it receives HD sources. In the meantime, the HD TV renders SD as SD-rated when it receives SD sources. The picture size has nothing to do with the resolution; TV models like SVP-XXL3HD or SVP-XXL6HD have a size adjustment feature to 16:9, 4:3, Panorama, Zoom1, Zoom2 and Auto Wide. This is about the aspect ratio of the top and bottom boundaries to the overall screen and users can select their preference.

■ SD/HD broadcasts and the TV's display capability are related

1. A digital broadcast should be transmitted in wide screen (an aspect ratio of 16:9) HD. If the broadcasting station converts a conventional program created in normal screen (aspect ratio of 4:3) into a digital signal and broadcasts the signal, the left and right of the picture will not be displayed.
   This symptom also appears in other manufacturer's TV's. The three appliance companies are trying to resolve the problem through the Ministry of Information and Communication.
   * When watching an SD (normal) broadcast through a Digital (Wide) TV (480P normal broadcast)
   * When watching an SD (normal) broadcast through a Digital Ready (Wide) TV (Using a set-top-box)
   * When watching an analog (normal) broadcast through a wide TV
     (When watching a broadcast after changing the aspect ratio of the TV from 16:9 (wide screen) to 4:3)

2. When watching a DVD title or video tape in wide screen (21:9) through a wide (16:9) TV, watching video from a computer or game console by selecting the aspect ratio to 4:3, or watching video from a DVD, VCR, computer or game console through a wide TV by selecting the aspect ratio to normal (4:3) or wide (21:9), the left and right, or top and bottom of the picture will not be displayed.
   This symptom appears in other manufacturer's TV's. The three appliance companies are trying to resolve the problem through the Ministry of Information and Communication.

■ Changing the Order of the Picture Size for 16:9 Display Devices



■ Zoom 3 is available in HD broadcast only.

■ Restrictions

1. When you want to change the picture size in PIP 'ON', you must turn the PIP off before changing the size.
   However, you can change the main picture size even in PIP ON for products with no restrictions.

2. When the picture size is not Normal (4:3 for 4:3 display devices, 16:9 for 16:9 display devices) and you turn PIP on, the picture size is changed to Normal.
   However, you can turn PIP on without changing the picture size for products with no restrictions.

3. In the OSD notation for the picture size, 16:9 is represented as "Wide" instead of "16:9" for devices other than with 16:9 dis plays.
   Ex: For LCD 15:9 devices, "Wide" is displayed on the OSD instead of "16:9".

4. The picture size can be changed even in the blue screen.
   However, the picture size should be controlled by the product specifications if the change is impossible due to hardware restrictions.

14-2 Technical Terms

PIP (Picture In Picture)
A feature to enable two video images being displayed on one screen at the same time. For instance, you can see the TV channel and the video image at the same time.

Digital Broadcasting
The ATSC (Advanced Television Systems Committee) signals that the station digitalizes before transferring the audio/video signals.

Mono
A sound system that transmits voice signals in only one channel. It is hard to experience a 3D effect but can be run with one speaker.

LNA (Low Noise Amplifier)
This uses satellite technologies to amplify weak signals for improved quality even in poor reception areas.

Stereo
A sound system that transmits voice signals in two channels This implements 3D effects by transmitting to both speakers (left/right).

Analog Broadcasting
The conventional system in which the station transfers the audio/video signals in NTSC formats.

Antenna Terminal
A terminal which the TV antenna is connected to. A round coaxial cable is connected to this terminal, which is usually used to watch air broadcasts.

English Captions (Subtitle)
A feature to provide English captions or character information services, which the user can use to study English using AFKN broadcasting or video tapes marked with "CC".

Audio/Video Terminal
The old 3- or 4-channel TV with no AV terminal has a low quality issue for video tape. The problem can be resolved using an A/V terminal that separates the audio and video signals. The video terminal is in yellow; the audio terminal is divided in two, white for left and red for right.

External Source
This includes sources from the video recorder, DTV set-top box and DVD player, (anything but the TV).

DVI-I Cable
One of the DVI cables that can transfer both digital and analog signals.

Satellite Broadcasting
This uses a satellite system to support a maximum of 100 channels including air services and provides high quality pictures anywhere in the country, even in poor reception areas. A set-top box (unbundled) is required to watch satellite broadcasting.

Closed Broadcasting
Other than VHF and UHF, this includes movies, entertainment and educational programs broadcast by hotels or schools. This is different from cable broadcasting.

Multiplexing
Two languages are provided at the same time when broadcasting foreign movies, dramas and news programs. You can choose either a native or foreign language, or choose both at the same time.

Component Terminal (Green, Blue, Red)
This provides maximum quality by dividing the contrast signals before transferring.

Cable Broadcasting
Compared to air broadcasting, it uses the cable system to transfer the signals. You should subscribe to a local cable broadcasting company and install a separate receiver.

Tuner
A device used to select a particular frequency from the TV set or the radio receiver.

Anynet
An AV networking system of Samsung's various AV devices, which enables the user to conveniently control AV devices using the TV.

DVD (Digital Versatile Disc)
This is a CD-sized, high storage disk that can store multimedia data including videos, games and audio applications using MPEG-2 compression technology.

DVI (Digital Visual Interface) Terminal
This is a digital signaling standard.
This uses TMDS to reduce the signal loss rate for sharper images.

DVI-D Cable
One of the DVI cables that can only transfer digital signals.

HDMI (High Definition Multimedia Interface)
An interface into which the digital signals as well as the high quality image data can be connected with one cable. There is no need to compress the bit rate.

S-video Terminal
This is, called "Super-video", divided into video and color signals for sharper image display.

VHF/UHF
VHF refers to the 2 - 13 channel system; UHF indicates the 14 - 69 channel system.