Service Manual

ViewSonic VX2433wm-1

VX2433wm-CN

Model No. VS12324

23.6” Wide Color TFT LCD Display

(VX2433wm-1_VX2433wm-CN _SM Rev. 1b Feb. 2009)

ViewSonic 381 Brea Canyon Road, Walnut, California 91789 USA - (800) 888-8583

Disclaimer

ViewSonic makes no representations or warranties, either expressed or implied, with respect to the contents hereof and specifically disclaims any warranty of merchantability or fitness for any particular purpose. Further, ViewSonic reserves the right to revise this publication and to make changes from time to time in the contents hereof without obligation of ViewSonic to notify any person of such revision or changes.

Trademarks

Optiquest is a registered trademark of ViewSonic Corporation.
ViewSonic is a registered trademark of ViewSonic Corporation.
All other trademarks used within this document are the property of their respective owners.

Product disposal at end of product life

The lamp in this product contains mercury. Please dispose of in accordance with local, state or federal laws.

Revision History

Revision	SM Editing Date	ECR Number	Description of Changes	Editor
1a	11/27/2008		Initial Release	Eden Chang
1b	2/10/2009		Revise “5.7.2 Using Novatek ISP Tool Update FW” item	Eden Chang

TABLE OF CONTENTS

1. Precautions and Safety Notices 1

2. Specification 4

3. Front Panel Function Control Description 13

4. Circuit Description 17

5. Adjusting Procedure 27

6. Trouble Shooting Flow Chart 33

7. Block Diagrams 40

8. Schematic Diagrams 50

9. PCB Layout Diagrams 56

10. Exploded Diagram And Spare Parts List 60

11. Recommended Spare Parts List 71

1. Precautions and Safety Notices

1. SAFETY PRECAUTIONS

This monitor is manufactured and tested on a ground principle that a user's safety comes first. However, improper used or installation may cause damage to the monitor as well as to the user.

WARNINGS:

- This monitor should be operated only at the correct power sources indicated on the label on the rear of the monitor. If you're unsure of the power supply in you residence, consult your local dealer or Power Company.
- Use only the special power adapter that comes with this monitor for power input.
- Do not try to repair the monitor by yourself, as it contains no user-serviceable parts. Only the qualified technician can repair it.
- Do not remove the monitor cabinet. There are high-voltage parts inside that may cause electric shock to human bodies.
- Stop using the monitor if the cabinet is damaged. Have it checked by a service technician.
- Put your monitor only in a lean, cool, dry environment. If it gets wet, unplug the power cable immediately and consult your closed dealer.
- Always unplug the monitor before cleaning it. Clean the cabinet with a clean, dry cloth. Apply non-ammonia based cleaner onto the cloth, not directly onto the glass screen.
- Do not place heavy objects on the monitor or power cord.

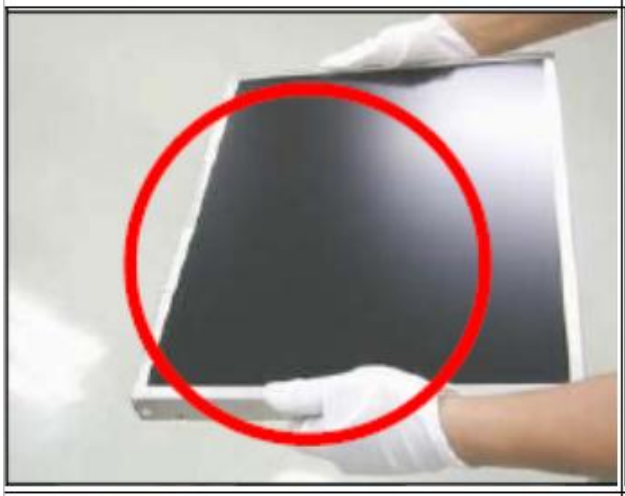
2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety visual inspections and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Before replacing any of these components read the parts list in this manual carefully. The use of substitute replacement parts, which do not have the same safety characteristics as specified in the parts list, may create shock, fire, or other hazards.

3. SERVICE NOTES

- When replacing parts or circuit boards, clamp the lead wires around terminals before soldering.
- Keep wires away from high voltage, high temperature components and sharp edges.
- Keep wires in their original position so as to reduce interference.
- Adjustment of this product please refers to the user' manual.

Handling and Placing Methods

Correct Metbods:	Incorrect Methods:
Only touch the metal frame of the LCD panel or the front cover of the monitor. Do not touch the surface of the polarizer	Surface of the LCD panel is pressed by fingers and that may cause "Mura"
	
	
Take out the monitor with cushions	Taking out the monitor by grasping the LCD panel. That may cause "Mura"
	

Place the monitor on a clean and soft foam pad.	Placing the monitor on foreign objects.That could scratch the surface of the panel or cause "Mura"
	
	The panel is placed facedown on the lap. That may cause "Mura".
	

2. Specification

2.1 INTRODUCTION

1	LCD PANEL	Panel:		CMO (M236H1-L01 ver0.0)
		Size		23.6” Wide Color a-Si TFT Active Matrix LCD
		Display area		525.22(W) x 297.22(H) mm
		Optimum Resolution		1920x1080(WUXGA)
		Pixel Pitch		0.2715(H) x 0.2715(V) mm
		Glass Treatment		Anti-Glare, Hard coating (3H),Haze25
		Contrast Ratio	CR >= 10	1000 :1
		Dynamic Contrast		20000:1 (typ.)
		Viewing Angle		170/160 (degrees; typ)
		Colors		16.7Mcolors (6 bit +Hi FRC panel)
		Luminance		300 cd/m2 @8.0mA(typ.)
		Response Time	On/Off	5 ms (typ.) /10 ms (max.)
		Backlight		4 CCFL
		Backlight Life		50000 Hrs (Typ) @7.0mA
		Mercury		3.6 mg per lamp(max)
2	INPUT SIGNAL	Video		RGB Analog (0.7 / 1.0 Vp-p , 75 ohms), DVI-D / HDMI (TMDS, 100ohms)
		Sync		Separate Sync / Composite Sync / SOG Fh = 24 – 83 kHz ; Fv = 50 – 76 Hz
3	COMPATIBILITY	PC		PC Compatibles (from VGA up to 1920x1080 Non Interlaced)
		Mac		Power Mac (up to 1920x1080)
4	RESOLUTION	Recommended		1920 x 1080 @ 60Hz
		Supported		Refer to setion 4.4
5	AUDIO	Speaker		2W*2
6	CONNECTORS	Video	Analog	DB-15
			Digital	DVI-D
				HDMI (Supported HDMI ver. 1.3 spec)
		Audio	Audio Out	3.5 mm jack (blue)
			Audio In	3.5 mm jack (green
		Power		Internal Power Adapter, 3-pin plug (CEE22)
7	POWER	Voltage		AC 100-240V (Universal); 50-60 Hz
		Consumption	Typ/Max	45 W (typ.) / 55 W (Max)
		ECO Mode	Optimize	37 W (typ.)
			Conserve	30 W (typ.)

8	ERGONOMICS	Tilt Range Swivel Rotation Height Adjust		20 ~ -5 degrees N/A N/A N/A
9	CONTROLS	Physical	Key buttons	[⏻] [1] [2] [▼] [▲]
		OSD Function	Main Menu	 Auto Image Adjust Contrast/Brightness Input Select D-SUB, DVI,HDMI PC,HDMI AV Audio Adjust Volume, Mute Color Adjust sRGB, 9300K, 7500K, 6500K, 5000K, User Color [R, G, B] Information Manual Image Adjust H/V Position, Horizontal Size, Fine Tune, Sharpness, Dynamic Contrast, Response Time, Aspect ratio, Display Mode, Eco mode Setup Menu Language Select, Resolution Notice, OSD Position, OSD Time Out, OSD Background, Sleep
			Short cut key	Memory Recall [1] : Main Menu [2] : Input Select [Dn] : To immediately activate Audio menu. [up] : To immediately activate Contrast menu. It should be change to Brightness OSD by push button [2] [Dn] (Keep pushing 5 sec) ：Under HDMI mode, toggle audio source between HDMI and jack plug [Up] or [Dn] : Contrast / Brightness [Up] + [Dn] : 1. In the CR/ BT menu, Recall Contrast or Brightness to default in its menu without OSD message. 2. In the Audio menu, Recall both of audio volume and mute to default without OSD message. * While OSD menu off, recall CR/ BT/ Audio volume and mute to default

				without OSD message. [1] + [2] : Toggle 720x400 and 640x400 mode [1] + [Up] + [Dn] : Auto White Balance [1] + [Dn] : Power Lock [1] + [Up] : OSD Lock [2] + [Dn] : Toggle DDC/CI and DDC/2B
10	BANDWIDTH			Analog : 205 MHz Digital : 175 MHz
11	OPERATING CONDITION	Temperature Humidity		32°F to 104°F (0°C to 40°C) 20% to 90% (no condensation)
12	STORAGE / SHIPPING CONDITION	Temperature Humidity		-4°F to 140°F (-20°C to 60°C) 5% to 90% (no condensation)
13	DIMENSIONS	Physical: (W x H x D) Packing (W x H x D)	Display w/ Stand Wall Mount	572 mm (W) x 418 mm (H) x 231mm (D) 22.52" (W) x 16.46" (H) x 9.09" (D) 572 mm (W) x 359 mm (H) x 62.3mm (D) 22.52" (W) x 14.13"" (H) x 2.45" (D) 632 mm (W) x 482 mm (H) x 152mm (D) 24.88" (W) x 18.98" (H) x 5.98" (D)
14	WEIGHT		Net Gross	5.04kg(11.11lb) 7.05kg(15.53lb)
15	REGULATIONS			UL, CUL, FCC-B (ICES), CB, CE, CES-003B, VCCI , Nemko ERGO (MPR II, ISO 13406-2), TUV-S, NOM, GOST-R, HYGIENIC (20 copies), Energy Star, CCC, BSMI, PSB, C-TICK, KTL/MIC, SASO, WEEE, RoHS, Ukraine, EPEAT Silver
16	RELIABILITY	MTBF		100,000 Hr (Excluding Panel).
17	POWER SAVING FUNCTION	"On" "Active Off" “Off”	Blue AMBER	Normal ≦ 1 W ≦ 0.5 W
18	LOGISTICS	Container Load Pallet Load	20' 40'	480 sets 1008 sets 48 sets

		UPC Code Serial Format EDID Code Country of origin	20' 40' VX2433wm-1 VX2433wm-CN	76690732861 5 R4F R8W 2238 China
19	Wall Mount	VESA		100mm x 100mm
20	OTHERS			DDC/2B, DDC/CI, HDCP, Detachable Base, KENSINGTON MicroSaver Security Compatible, WorldWide Model, Vista Premium, SRS WOW HD,HDMI
21	Package Contents	LCD Display Power Cable Audio Cable VGA Cable DVI Cable Quick Start Guide (One page) ViewSonic Wizard CD-ROM		
22	EU Packaging Information	Carton -- One piece construction with double wall, 0.72 Kg Plastic Handle -- PE-LD, 11 g Poly Foam – 100 g Accessory Plastic Bags -- PE-LD, 3 g The PE bag that cover monitor -- PE-LD, 25 g Pallet -- For E/M model: Solid Wood (Fumigation), 13.6 kg For A/G/J//K/P model: Poly-wood, 13.6 kg Note : P model must use Plywood. And for every P model lot, SI shall provide plywood certification.		

2.2 PRODUCT DEFINITION AND SPECIFICATION

Product Name	ViewSonic VX2433wm
Oracle P/N	VX2433WM/VX2433WM-CN
Model Number	VS12324
OSD Languages: 11	English, French, German,Italian, Spanish, Finnish, Russian Japanese, Korean, S. Chinese, T. Chinese
TFT LCD Panel and Model #	1st panel: CMO M236H1-L01
Scalar	Novatek NT68672
Input Signal	D-Sub / DVI-D/HDMI
Sync Compatibility	Separate Sync/ Composite Sync / SOG
Adapter	Internal Power Board
Power Cable	Yes
Analog Cable (1.8 m, black), with PC 2001 and Hot Plug Detect &DDC	Yes
DVI-D Cable(1.8m, black) with PC 2001	Yes
Audio Cable(1.8m, black) with PC 2001	No
MIC Cable(1.8m, black) with PC 2001	No
USB Cable (V2.0)	No
ViewSonic CD Wizard	English, French, German, Dutch, Finnish, Swedish, Italian, Spanish, Greek, Russian, Czech, Hungarian, Turkish, Polish, Romania. Bulgaria, Slovakia, Croatia, Serbia, Slovenian, Portuguese, Arabic, Japanese, Simplified Chinese, Traditional Chinese. Korean , Ukrainian
ViewSonic Quick Start Guide	English, French, German, Dutch, Finnish, Swedish, Italian, Spanish, Greek, Russian, Czech, Hungarian, Turkish, Polish, Romania. Bulgaria, Slovakia, Croatia, Serbia, Slovenian, Portuguese, Arabic, Japanese, Simplified Chinese, Traditional Chinese. Korean
Screen Protector Mylar	Yes
Energy Star Sticker	No
POP Sticker	Yes
Service Insert	For Region code = M units only
Warranty Card	For Region code = G units only
Carton Sticker	For Region code = G units only
PE bag of Carton	For Region code = G units only

2.3 GENERAL SPECIFICATION

Test Resolution & Frequency	1920x1080 @ 60Hz
Test Image Size	Full Size
Contrast and Brightness Controls	Factory Default: Contrast = 70%, Brightness = 100%

2.4 VIDEO INTERFACE

Input Connector (refer the Appendix A)	Analog = DB-15 (Analog) Digital = DVI-D (Digital) HDMI (Digital)	
Default Input Connector	Defaults to the first detected input	
Video Cable Strain Relief	Equal to twice the weight of the monitor for five minutes	
Video Cable Connector Pin out	Refer to Appendix A; Compliant DDC/2B and DDC/CI	
Video Signals	Video RGB (Analog) Separate Sync / Composite Sync / SOG TMDS (Digital)	
Video Impedance	75 Ohms (Analog), 100 Ohms (Digital)	
Maximum PC Video Signal	950 mV with no damage to monitor	
Maximum Mac Video Signal	1250 mV with no damage to monitor	
Sync Signals	TTL	
DDC 2B	Compliant with Revision 1.3; The DDC communication shall not interrupt when power off.	
DDC/CI	Compliant with Revision 1.1; The DDC communication shall not interrupt when power off.	
Digital link protection	HDCP	
Sync Compatibility	Separate Sync / Composite Sync / SOG	
Video Compatibility	Shall be compatible with all PC type computers, Macintosh computers, and after market video cards	
Video timing support (HDMI)	480i / 480p @ 60Hz	576i / 576p @ 50Hz
	720p @ 50/60Hz	1080i / 1080p @ 50/60Hz
Resolution Compatibility	Refer to Segment 4-5	
Exclusions	Not compatible with interlaced video	

2.5 POWER SUPPLY

<table>
<tr><td>Internal Power Supply</td><td>ILPI-107</td></tr>
<tr><td>Input Voltage Range</td><td>90 to 264 VAC</td></tr>
<tr><td>Input Frequency Range</td><td>47 to 63 Hertz</td></tr>
<tr><td>Short Circuit Protection</td><td>Output can be shorted without safety issue</td></tr>
<tr><td>Over Current Protection</td><td>5.0A typical at 24VDC
(Protect when short circuit)</td></tr>
<tr><td>Leakage Current</td><td>3.5MA (MAX) AT 264VAC / 60HZ</td></tr>
<tr><td>Efficiency (at 115VAC Full Load)</td><td>Typical: 80%
Minimum: 75%</td></tr>
<tr><td>Fuse</td><td>Internal and not user replaceable</td></tr>
<tr><td>Power Output</td><td>45 Watts (typ)</td></tr>
<tr><td>Ripple and Noise</td><td>Ripple:<3%
Noise: <1%</td></tr>
<tr><td>Max Input AC Current</td><td>1.5A (MAX)</td></tr>
<tr><td>Inrush Current (Cold Start)</td><td>80 A MAX./ 240V_{AC} / 50HZ
(COLD START AT 25℃,FULL LOAD)</td></tr>
<tr><td>Power Supply Cold Start</td><td>Shall start and function properly when under full load, with all combinations of input voltage, input frequency, and operating temperature.</td></tr>
<tr><td>Power Supply Transient Immunity</td><td>Shall be able to withstand an ANSI/IEEE C62.41-1980 6000V 200 ampere ring wave transient test with no damage.</td></tr>
<tr><td>Power Supply Line Surge Immunity</td><td>Shall be able to withstand ±1KV (L-L) and ±2KV (L-PE)
(Refer to EN55024:1998 / CISPR24.1997 / IEC1000-4-5: 1995 / EN61000-4-5: 1995)</td></tr>
<tr><td>Power Supply Missing Cycle Immunity</td><td>Shall be able to function properly, without reset or visible screen artifacts, when ½ cycle of AC power is randomly missing at nominal input.</td></tr>
<tr><td>Power Supply Acoustics</td><td>The power supply shall not produce audible noise that would be detectable by the user. Audible shall defined to be in compliance with ISO 7779 (DIN EN27779:1991) Noise measurements of machines acoustics. Power Switch noise shall not be considered.</td></tr>
<tr><td>Power Saving Operation(Method)</td><td>VESA DPMS Signaling</td></tr>
<tr><td>Power Consumption</td><td>
<table>
<tr><th>Mode</th><th>LED</th><th>Power Consumption</th></tr>
<tr><td>On</td><td>BLUE</td><td>45W(typ)
55W(max)</td></tr>
<tr><td>ECO Mode</td><td>Blue</td><td>37W (Optimize)
30 W (Conserve)</td></tr>
<tr><td>Active off</td><td>Amber</td><td><1 W</td></tr>
<tr><td>Off</td><td>Off</td><td><0.5W</td></tr>
</table>
</td></tr>
<tr><td>Recovery Time</td><td>On Mode = N/A, Active Off < 3 sec</td></tr>
</table>

2.6 ELECTRICAL REQUIREMENT

Horizontal / Vertical Frequency

Horizontal Frequency	24 – 83 kHz
Vertical Refresh Rate	50 –76* Hz
Maximum Pixel Clock	Analog : 205 MHz Digital : 175 MHz
Sync Polarity	Independent of sync polarity

Timing Table

Item	Timing						Analog			Digital - TMDS	Remark
							Separated	Composite	SOG		
1	640 x 350	@	70	Hz,	31.5	KHz	v	v	v	v	DMT
2	640 x 400	@	60	Hz,	31.5	KHz	v	v	v	v	DMT
3	640 x 400	@	70	Hz,	31.5	KHz	v	v	v	v	DMT
4	640 x 480	@	50	Hz,	24.7	KHz	v	v	v	v	CVT
5	640 x 480	@	60	Hz,	31.5	KHz	v	v	v	v	DMT
6	640 x 480	@	67	Hz,	35	KHz	v	v	v	v	For MAC
7	640 x 480	@	72	Hz,	37.9	KHz	v	v	v	v	DMT
8	640 x 480	@	75	Hz,	37.5	KHz	v	v	v	v	DMT
9	720 x 400	@	70	Hz,	31.5	KHz	v	v	v	v	DMT
10	720 x 480	@	60	Hz,	31.5	KHz	v	v	v	v	DTV
11	720 x 576	@	50	Hz,	31.3	KHz	v	v	v	v	DTV
12	800 x 600	@	56	Hz,	35.1	KHz	v	v	v	v	DMT
13	800 x 600	@	60	Hz,	37.9	KHz	v	v	v	v	DMT
14	800 x 600	@	72	Hz,	48.1	KHz	v	v	v	v	DMT
15	800 x 600	@	75	Hz,	46.9	KHz	v	v	v	v	DMT
16	832 x 624	@	75	Hz,	49.7	KHz	v	v	v	v	MAC
17	1024 x 768	@	50	Hz,	39.6	KHz	v	v	v	v	CVT
18	1024 x 768	@	60	Hz,	48.4	KHz	v	v	v	v	DMT
19	1024 x 768	@	70	Hz,	56.5	KHz	v	v	v	v	DMT
20	1024 x 768	@	72	Hz,	58.1	KHz	v	v	v	v	DMT
21	1024 x 768	@	75	Hz,	60	KHz	v	v	v	v	DMT
22	1024 x 768	@	75	Hz,	60.2	KHz	v	v	v	v	For MAC
23	1152 x 864	@	75	Hz,	67.5	KHz	v	v	v	v	DMT

24	1152 x 870	@	75	Hz,	68.7	KHz	v	v	v	v	For MAC
25	1152 x 900	@	67	Hz,	62.5	KHz	v	v	v	v	For SUN
26	1280 x 720	@	50	Hz,	37.5	KHz	v	v	v	v	DTV
27	1280 x 720	@	60	Hz,	45	KHz	v	v	v	v	DTV
28	1280 x 768	@	50	Hz,	39.6	KHz	v	v	v	v	DMT;
29	1280 x 768	@	60	Hz,	47.8	KHz	v	v	v	v	DMT;
30	1280 x 768	@	75	Hz,	60.3	KHz	v	v	v	v	DMT;
31	1280 x 960	@	50	Hz,	49.4	KHz	v	v	v	v	DMT
32	1280 x 960	@	60	Hz,	60.0	KHz	v	v	v	v	DMT
33	1280 x 960	@	75	Hz,	75.2	KHz	v	v	v	v	DMT
34	1280 x 1024	@	50	Hz,	52.7	KHz	v	v	v	v	DMT
35	1280 x 1024	@	60	Hz,	64	KHz	v	v	v	v	DMT
36	1280 x 1024	@	75	Hz,	80	KHz	v	v	v	v	DMT
37	1360 x 768	@	60	Hz	47.7	kHz	v	v	v	v	DMT
38	1440 x 900	@	60	Hz	55.9	KHz	v	v	v	v	DMT
39	1440 x 900	@	75	Hz	70.6	KHz	v	v	v	v	DMT
40	1400 x 1050	@	60	Hz	65.3	KHz	v	v	v	v	DMT
41	1400 x 1050	@	75	Hz	82.3	KHz	v	v	v	v	DMT
42	1600 x 1200	@	60	Hz	75.0	KHz	v	v	v	v	DMT
43	1680 x 1050	@	60	Hz	64.7	KHz	v	v	v	v	DMT
44	1680 x 1050	@	60	Hz	65.3	KHz	v	v	v	v	DMT
45	1920x1080	@	60	Hz	67.5	KHz	v	v	v	v	DMT
46	480i	@	60	Hz						v	
47	480p	@	60	Hz			v			v	
48	576i	@	50	Hz						v	
49	576p	@	50	Hz			v			v	
50	720p	@	50	Hz			v			v	
51	720p	@	60	Hz			v			v	
52	1080i	@	50	Hz						v	
53	1080i	@	60	Hz						v	
54	1080p	@	50	Hz			v			v	
55	1080p	@	60	Hz			v			v	

*1. Tolerance ≧ ±2KHz. (if no over lapping issue)

*2. Any timing not in the list, it should display as normal or show on “OUT OF RANGE” OSD message without blanking.

*3. The image quality of 85Hz mode might be worse than 75Hz.

Primary Presets

1920x1080 @ 60Hz

User Presets

Number of User Presets (recognized timings) Available: 10 presets total in FIFO configuration

Changing Modes

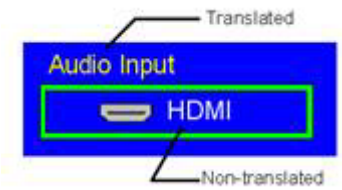
- Maximum Mode Change Blank Time for image stability : 3 seconds (Max), excluding “Auto Adjust” time
- It should recall factory setting when execute Auto Image Adjust function by following conditions,
  1. Memory recall under DOS mode (640 x 350, 720 x 400 & 640 x 400).
  2. New timing mode detected under DOS mode (640 x 350, 720 x 400 & 640 x 400).
- The monitor needs to do “Auto Adjust” the first time a new mode is detected (see section “0-Touch™ Function Actions”)
- While running Change Mode, Auto Adjust or Memory Recall, the image shall blank

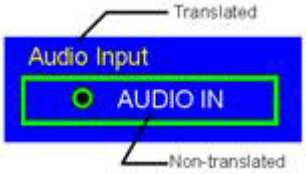
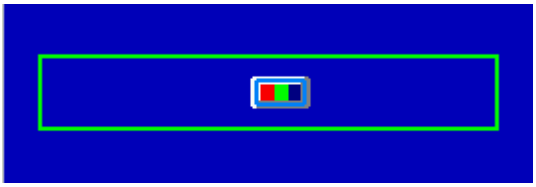
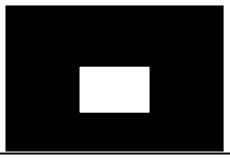
3. Front Panel Function Control Description

3.1 FRONT PANEL HARDWARE CONTROLS

Power Switch (Front Head)	AC Power Switch on the back cover Soft Power Switch on the front bezel
Power LED (Front Head)	Blue – ON Amber – Active Off Dark = Soft Power Switch OFF
Front Panel Controls (Head) [1] [2] [⏻] [▼] [▲]	[⏻] Power [1] BUTTON 1 [2] Button 2 [▲] UP ARROW BUTTON [▼] DOWN ARROW BUTTON Note: Power Button, Button 1 and Button 2 must be one-shot logic operation. (i.e. there should be no cycling)
Reaction Time	OSD must fully appear within 0.5s after pushing Button 1

3.2 SHORT CUTS FUNCTION FROM THE BUTTON(S)

[1]	Main Menu
[2]	Input toggle (Analog or DVI or HDMI; refer to Appendix D)
[▼]	To immediately activate Audio menu.
[▲]	To immediately activate Contrast menu. It should be change to Brightness OSD by push button [2] (refer to the Contrast OSD in segment 4-5-3) *1 refer to the Brightness OSD in segment 4-5-3 *2 Under sRGB or DCR mode, this function is disable
[▼] (Keep pushing 5 sec)	Under HDMI mode, toggle audio source between HDMI and jack plug When switch to HDMI 

	When switch to AUDIO IN (earphone jack) 
[▼]+ [▲]	1. In the CR/ BT menu, Recall Contrast or Brightness to default in its menu without OSD message. 2. In the Audio menu, Recall both of audio volume and mute to default without OSD message. * While OSD menu off, recall CR/ BT/ Audio volume and mute to default without OSD message
[1] + [2]	Toggle 720x400 and 640x400 mode when input 720x400 or 640x400 mode * Default = 720 x 400
[1] + [▼] + [▲] (Keep pushing 5 sec)	White Balance 1. It will not shown on user's guide 2. OSD message as below,  (Image = no blanking) 3. Recommend environment 3.1. Optical (Best) input timing = 640 x 480 @ 60Hz; Following timing modes also recommended, 800 x 600 @ 60 Hz 1024 X 768 @ 60 Hz 3.2. Pattern as below, 
[1] + [▲]	OSD Lock (refer to segment 4-6-4)
[1] + [▼]	Power Lock (refer to segment 4-6-5)
[2] + [▼]	Toggle DDC/CI and DDC/2B (DDC/CI enable/disable) and show following message for 3 seconds,

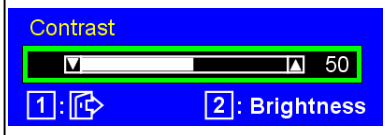
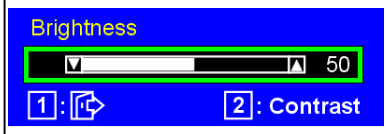
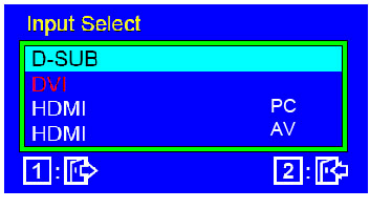
	When switch to DDC/CI DDC/CI When switch to DDC/2B DDC/2B Default = DDC/CI
Signal + [2] + [⏻]	Factory Mode
Remark : All the short cuts function are only available while OSD off	

3.3 MAIN MENU OSD TABLE

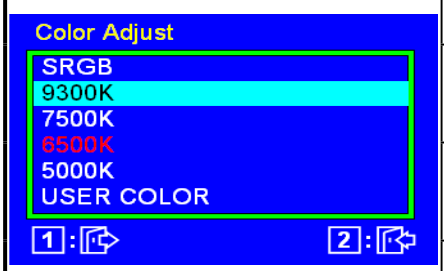
Main Menu

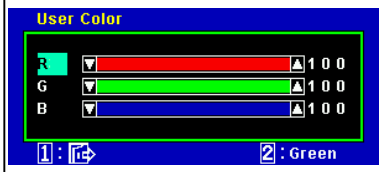
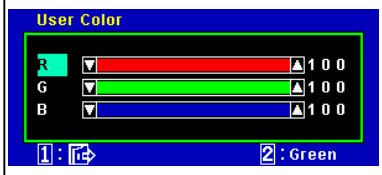
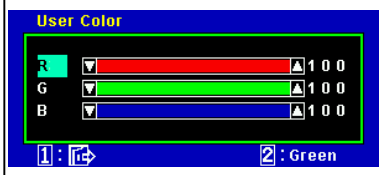
1. Key button definition:
   [1]: OSD off
   [2]: Execute the selected function
   [Up]: Rolling up the slider
   (When push the button on the top position, the slider shall go down to the bottom item)
   [Dn]: Rolling down the slider
   (When push the button on the bottom position, the slider shall go down to the top item)
2. Under sRGB or DCR mode, the Contrast/Brightness shall be disabled with gray color. And it should not be selected.

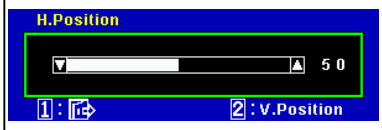
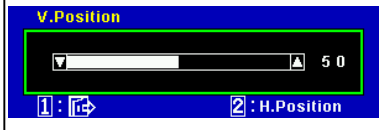
Level 1	Level 2	Level 3
Auto Image Adjust Auto Image Adjust 1. Background = blanking 2. The message OSD position is at the center. 3. After auto tune, OSD shall be off 4. Only for analog mode 4. Only for analog mode		
Contrast/Brightness	**Contrast**	

Jump to Contrast OSD directly	**Contrast**  1. Adjust range = 0 to 100 2. Default = 70 3. Key button definition: [1] = Back to Main Menu or OSD off (depend on previous status) [2] = Change to Brightness OSD [Up] = Increase the OSD value setting [Dn] = Decrease the OSD value [Up]+[Dn]: Recall to default	
	Brightness  1. Adjust range = 0 to 100 2. Default = 100 3. Key button definition: [1] = Back to Main Menu or OSD off (depend on previous status) [2]: Change to Contrast OSD [Up]: Increase the OSD value setting [Dn]: Decrease the OSD value [Up]+[Dn]: Recall to default	
Input Select  1. Show on existing input port by red color	**D-SUB** Step 1: Turn off OSD. Step 2: 1. Target video input port = Analog 2. If signal detected from target port, change to target port. 3. If no signal detected from target port, keep existing input port.	

2. Key button definition: [1]: Back to previous OSD status [2]: Change to the selected input port [Up]: Move up the slider [Dn]: Move down the slider	Step 3: Show on Input Message OSD at the right-top corner of screen for 1 second. 	
	DVI Step 1: Turn off OSD. Step 2: 1. Target video input port = Digital 2. If signal detected from target port, change to target port. 3. If no signal detected from target port, keep existing input port. Step 3: Show on Input Message OSD at the right-top corner of screen for 1 second. 	
	HDMI PC Step 1: Turn off OSD. Step 2: 1. Target video input port = HDMI PC 2. If signal detected from target port, change to target port. 3. If no signal detected from target port, keep existing input port. Step 3: Show on Input Message OSD at the right-top corner of screen for 1 second. 	
	HDMI AV Step 1: Turn off OSD. Step 2:	

	1. Target video input port = HDMI AV 2. If signal detected from target port, change to target port. 3. If no signal detected from target port, keep existing input port. Step 3: Show on Input Message OSD at the right-top corner of screen for 1 second. 	
Audio Adjust  1. The selected icon in Mute will be highlighted 2. Key button definition: [1]: Back to previous OSD status [2]: Change to Volume or Mute the selected audio setting [Up]: Increase the volume settingMove up the slider or Toggle audio to Mute or Audible icon [Dn]: Decrease the volume settingMove down the slider or Toggle audio to Mute or Audible icon 3. No signal, no output 4. This function must memorize its status after DC/AC Off to On	**Volume** 1. Adjust range = 0 to 100 2. Default = 50 3. Key button definition: [1]: Back to Audio Adjust OSD [Up]: Increase the volume setting [Dn]: Decrease the volume setting **Mute** 1. Default = Off 2. Key button definition: [1]: Back to Audio Adjust OSD [2]: Switch to Volume adjustment [Up],[Dn]: Toggle audio to Mute or Audible iconToggle audio to Mute or Audible icon 3. When Mute function is selected, any change in Volume will disable Mute and toggle to Audible icon.	
Color Adjust 	**sRGB** Change Color setting to sRGB	
	9300K Change Color setting to 9300K	
	7500K Change Color setting to 7500K	
	6500K	

1. Show on existing input port by red color 2. Default = 6500K 3. Key button definition: [1]: Back to previous OSD status [2]: Change to the selected color setting [Up]: Move up the slider [Dn]: Move down the slider 4. Under DCR mode (Dynamic Contrast = On), SRGB shall be disabled with gray color. And it should not be selected.	Change Color setting to 6500K	
	5000K Change Color setting to 5000K	
	User Color Jump to Red OSD directly	**Red**  1. Adjust range = 0 to 100 2. Default = 100 3. Key button definition: [1]: Back to Color Adjust OSD [2]: Jump to Green OSD [Up]: Increase the OSD value setting [Dn]: decrease the OSD value setting
		Green  1. Adjust range = 0 to 100 2. Default = 100 3. Key button definition: [1]: Back to Color Adjust OSD [2]: Jump to Blue OSD [Up]: Increase the OSD value setting [Dn]: decrease the OSD value setting
		Blue  1. Adjust range = 0 to 100 2. Default = 100 3. Key button definition: [1]: Back to Color Adjust OSD [2]: Jump to Red OSD

		[Up]: Increase the OSD value setting [Dn]: decrease the OSD value setting
Information PC timing – Display Resolution  Video timing – Display Video Format  Key button definition: [1]: Back to Main Menu OSD		
Manual Image Adjust  1. Key button definition: [1]: Back to previous OSD status [2]: Execute the selected function [Up]: scroll up the slider (When push the button on the top position, the slider shall go down to the bottom item [Dn]: Scroll down the slider	**H/V Position** Jump to Horizontal Position OSD directly	**Horizontal Position**  1. Adjust range = 0 to 100 2. Key button definition: [1]: Back to Manual Image Adjust OSD [2]: Change to Vertical Position OSD [Up]: Increase the OSD value setting [Dn]: Decrease the OSD value **Vertical Position**  1. Adjust range = 0 to 100

<table>
<tr>
<td rowspan="4">(When push the button on the bottom position, the slider shall go down to the top item
2. Under Digital mode, all the H./V. Position, Horizontal Size and Fine Tune shall be disabled with gray color. And it should not be selected.
3. Under native mode, Sharpness shall be disabled with gray color. And it should not be selected.
4. Under SRGB mode, Dynamic Contrast shall be disabled with gray color. And it should not be selected.
5. When move to Dynamic Contrast, the right-bottom side icon will change to “[2]: ☑/☐”</td>
<td></td>
<td>2. Key button definition:
[1]: Back to Manual Image Adjust OSD
[2]: Change to Horizontal Position OSD
[Up]: Increase the OSD value setting
[Dn]: Decrease the OSD value</td>
</tr>
<tr>
<td>Horizontal Size
 

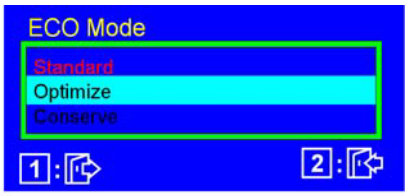
1. Adjust range = 0 to 100
2. Key button definition:
[1]: Back to Manual Image Adjust OSD
[Up]: Increase the OSD value setting
[Dn]: Decrease the OSD value</td>
<td></td>
</tr>
<tr>
<td>Fine Tune
 

1. Adjust range = 0 to 100
2. Key button definition:
[1]: Back to Manual Image Adjust OSD
[Up]: Increase the OSD value setting
[Dn]: Decrease the OSD value</td>
<td></td>
</tr>
<tr>
<td>Sharpness
 

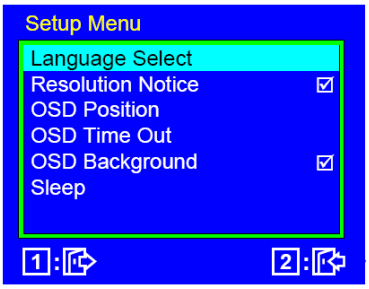
1. Adjust range = 0 to 100
(0,25,50,75,100)
2. Default = 50
3. Key button definition:
[1]: Back to Manual Image Adjust OSD
[Up]: Increase the OSD value setting</td>
<td></td>
</tr>
</table>

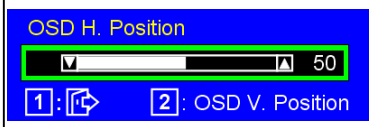
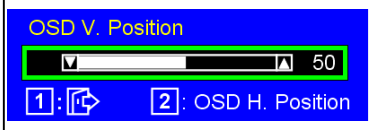
	[Dn]: Decrease the OSD value	
	Dynamic Contrast Swap on and off the Dynamic Contrast function Default = Off When Dynamic Contrast is on, below functions will be disabled: 1. Brightness/Contrast menu 2. SRGB selection in Color Adjust 3. White balance hot key 4. DDC/CI BR/CT adjustment	
	Response Time  1. Show on existing Response Time setting by red color 2. Key button definition: [1]: Back to previous OSD status [2]: Change to the selected Response Time setting. [Up]: Scroll up the slider (When push the button on the top position, the slider shall go down to the bottom item) [Dn]: Scroll down the slider (When push the button on the bottom position, the slider shall go up to the top item) 3. Default = Advanced	**Standard** Over Drive = off
		Advanced Over Drive = Level 1 (best quality with over drive)
		Ultra Fast Over Drive = Level 2

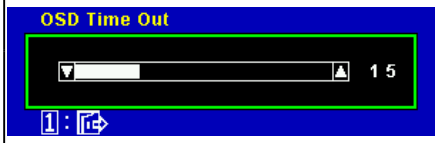
		(faster than level 1)
	Aspect Ratio  1. Show on existing Aspect Ratio setting by red color 2. Key button definition: [1]: Back to previous OSD status [2]: Change to the selected Display Mode setting. [Up]: Scroll up the slider (When push the button on the top position, the slider shall go down to the bottom item) [Dn]: Scroll down the slider (When push the button on the bottom position, the slider shall go up to the top item) 3. Default = full screen **Note : 1.When input signals are wide format, this function is disable.** 2. **When input signals are non-wide format. this function is enable.**	**4:3** Change aspect ratio to 4:3 **Full Screen** Fill screen with panel native aspect ratio.
	Display Mode  1. This function toggles RGB and YUV display mode. 2. Show on existing Display Mode	**RGB Mode** Set color space to RGB mode for PC timing mode **YUV Mode** Set color space to YUV mode for HD timing mode

	setting by red color 3. Key button definition: [1]: Back to previous OSD status [2]: Change to the selected Display Mode setting. [Up]: Scroll up the slider (When push the button on the top position, the slider shall go down to the bottom item) [Dn]: Scroll down the slider (When push the button on the bottom position, the slider shall go up to the top item) 4. Save PC timing and DTV timing setting separately. 5. Default = **RGB** Mode (DVI &VGA) , 6. HDMI is auto detected by Info Frame : , YPbPr -> HD mode, Non-YPbPr -> PC mode. 7. It will recall to default after AC/DC on/off or mode change.	
	ECO Mode  1. This function toggles ECO mode. 2. Show on existing ECO Mode setting by red color 3. Key button definition: [1]: Back to previous OSD status [2]: Change to the selected Display	**Standard** OSD adjust range = 0 to 100 **Optimize** OSD adjust range = 0 to 100 **Conserve** OSD adjust range = 0 to 100

	Mode setting. [Up]: Scroll up the slider (When push the button on the top position, the slider shall go down to the bottom item) [Dn]: Scroll down the slider (When push the button on the bottom position, the slider shall go up to the top item) 4. Default = Standard 5. Under sRGB mode, ECO Mode shall be disabled with gray color. And it should not be selected. **6.** No matter DCR on or off, lamp current will be changed by ECO mode change. **7.** While ECO or DCR setting changed, the lamp current shall be updated to new setting immediately. 8. Do not lock Contrast or Brightness OSD for ECO function **9.** Following is the lamp current chart,	

Setup Menu	Language Select	
 1. Key button definition: [1]: Back to Main Menu OSD [2]: Execute the selected function [Up]: Rolling up the slider (When push the button on the top position, the slider shall go down to the bottom item) [Dn]: Rolling down the slider (When push the button on the bottom position, the slider shall go down to the top item) 2. When Resolution Notice / OSD Background / is selected, the right side description will change to "[2]: ☑/☐"	 1. Show on existing input port by red color 2. Key button definition: [1]: Back to previous OSD status [2]: Change to the selected language setting [Up]: Scroll up the slider (When push the button on the top position, the slider shall go down to the bottom item [Dn]: Scroll down the slider (When push the button on the bottom position, the slider shall go down to the top item	**English** Set OSD language to English and keep in Language Select OSD **French** Set OSD language to French and keep in Language Select OSD **German** Set OSD language to German and keep in Language Select OSD **Spanish** Set OSD language to Spanish and keep in Language Select OSD **Italian** Set OSD language to Italian and keep in Language Select OSD **Finnish** Set OSD language to Finnish and keep in Language Select OSD **Russian** Set OSD language to Russian and keep in Language Select OSD **Japanese** Set OSD language to Japanese and keep in Language Select OSD **Korean** Set OSD language to Korean and keep in Language Select OSD **Simplified Chinese** Set OSD language to Simplified Chinese and keep in Language Select OSD **Traditional Chinese** Set OSD language to Traditional Chinese and keep in Language Select OSD

	Resolution Notice Swap on and off the Resolution Notice function	
	OSD Position Jump to OSD H. Position OSD directly	**OSD H. Position**  1. Adjust range = 0 to 100 2. Default = 50 3. Key button definition: [1]: Back to Setup Menu OSD [2]: Change to OSD V. Position OSD [Up]: Increase the OSD value setting (move OSD right) [Dn]: Decrease the OSD value setting (move OSD left) [Up]+[Dn]: Recall to default value
		OSD V. Position  1. Adjust range = 0 to 100 2. Default = 50 3. Key button definition: [1]: Back to Setup Menu OSD [2]: Change to OSD H. Position OSD [Up]: Increase the OSD value setting (move OSD up) [Dn]: Decrease the OSD value setting (move OSD down) [Up]+[Dn]: Recall to default value

	OSD Time Out  1. Adjust range = 5, 15, 30, 60 2. Default = 15 3. Key button definition: [1]: Back to Setup Menu OSD [Up]: Increase the OSD value setting [Dn]: Decrease the OSD value setting [Up]+[Dn]: Recall to default value	**5** Set OSD Time Out to 5 Seconds **15** Set OSD Time Out to 15 Seconds **30** Set OSD Time Out to 30 Seconds **60** Set OSD Time Out to 60 Seconds
	OSD Background Swap on and off the OSD Background ☑ = Non-transparent ☐ = Transparent	
	Sleep  1. Adjust time range before going to sleep mode. Time range = 30, 45, 60, 120 (Minutes) and Off. 2. Default = Off 3. When Sleep mode is triggered, the power of monitor will be turned off. 4. Only active in HD mode. Only active in HDMI Mode (both in AV&PC) 5. Key button definition: [1]: Back to previous OSD status [2]: Change to the selected sleep time setting [Up]: Rolling up the slider	**30 Minutes** Set time before going to Sleep mode = 30 Minutes **45 Minutes** Set time before going to Sleep mode = 45 Minutes **60 Minutes** Set time before going to Sleep mode = 60 Minutes **120 Minutes** Set time before going to Sleep mode = 120 Minutes **Off** Disable Sleep mode.

	(When push the button on the top position, the slider shall go down to the bottom item [Dn]: Rolling down the slider (When push the button on the bottom position, the slider shall go down to the top item	
Memory Recall  1. Background = blanking 2. Recall white balance to factory setting 3. Recall all the OSD setting to the default. (include the R/G/B in User Color) 4. Show the message OSD position is at the center for 3 seconds. 5. Clean FIFO timing mode buffer 6. Execute Auto Image Adjust Note: Memory Recall should not effect on Language, Power Lock Settings or Input Priority		

3.4 OSD LOCK SHORT CUTS FUNCTION FOR THE BUTTONS

The OSD lock will be activated by pressing the front panel control buttons [1] + [▲] for 10 seconds *1. If the user then tries to access the OSD by pressing any of the buttons, a message will appear on the screen for 3 seconds showing "OSD Locked" *2. The OSD lock will be deactivated by pressing the front panel control buttons [1] + [▲] again for 10 seconds*3.

*1 The OSD Lock message as below,

Range = 0 to 10

*2 The OSD Locked message as below,

*3 The OSD Unlock message as below,

Range = 0 to 10

*4 When the OSD is locked will lock all functions, including “Volume”, “Mute” and others.

*5 Status bar indicating OSD Lock or Unlock is in progress and when complete it will indicate “OSD Locked” or “OSD Unlocked” for 3 seconds as below,

OSD Locked

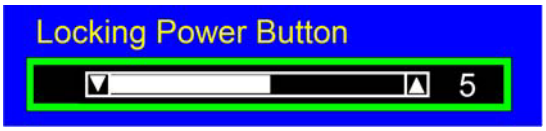
OSD Unlocked

*6 When OSD appears on screen, the OSD Lock/Unlock short cut key will be disabled.

3.5 POWER LOCK SHORT CUTS FUNCTION FOR THE BUTTONS

The Power lock will be activated by pressing the front panel control buttons [1] + [▼] for 10 seconds *1. Locking the power button means that the user won't be able to turn off the LCD while the power button is locked. If the user presses the power button while it is locked, a message will appear on the screen for 3 seconds showing "Power Button Locked" *2. It also means that with the power button locked, the LCD would automatically turn back "On" when power is restored after a power failure. If the power button is not in the locked mode, then power should return to it's previous state when power is restored after a power failure. The Power lock will be deactivated by pressing the front panel control buttons [1] + [▼] again for 10 seconds*3.

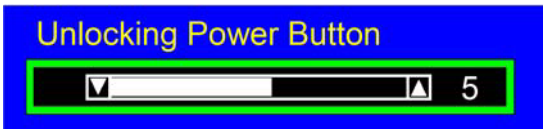
*1 The Locking Power Button message as below,



Range = 0 to 10

*2 The Power Button Locked message as below,

*3 The Unlocking Power Button message as below,



Range = 0 to 10

*4 When the OSD is locked will lock all functions, including “Volume”, “Mute” and others.

*5 Status bar indicating Power Button Lock or Unlock is in progress and when complete it will indicate “Power Button Locked” or “Button Unlocked” for 3 seconds as below,

Power Button Locked

Power Button Unlocked

*6 When OSD appears on screen, the OSD Lock/Unlock short cut key will be disabled

3.6 RESOLUTION NOTICE ACTIONS

1. Resolution Notice OSD should show on screen after changing to non-native mode for 30 sec

2. Key button definition:
   [1]: Turn off the OSD message.
   [2]: Turn off the OSD message and disable Resolution Notice function
3. The OSD should disappear after 10 sec or by pushing button [1] or [2]
4. After the OSD turns off, it will not show on again before next timing change, input change or power off.
5. Resolution Notice function should be disabled when push button [2] under Resolution Notice OSD
6. The “1366x768” will be replaced by actual panel resolution.

3.7 TOUCH™ FUNCTION ACTIONS

1. Execute Auto Image Adjust when new mode detected, and save the settings to buffer for further use

2. It should be reset by Memory Recall function

(Should not reset by power off, power unplug and others)

3.8 OSD AUTO SAVE

The OSD shall save new settings when it is turned off by the user or when it times out. There shall not be a separate save

3.9 OUT OF RANGE

While non-defined timing is detected, following OSD message will keeps showing on,

1. If the timing is over spec (Fh, Fv or dot clock), the image shall be blanking, and OSD background shall be non-transparent.
2. If the timing is inspect but not defined, the image shall be non-blanking.

3.10 NO SIGNAL FOR D-SUB / DVI

While no signal is detected for D-Sub and DVI, the following OSD message shall shows on 3 seconds then go in to power saving.

OSD Background = Non-transparent

Image = Blanking

3.11 ACTORY DEFAULTS

Item	Defaults	Item	Defaults
Contrast	70%	OSD Time Out	15 Sec
Brightness	100%	OSD Background	On
Color Temperature	6500K	Volume	80%
Sharpness	100%	Treble	N/A
OSD H. Position	50%	Bass	N/A
OSD V. Position	50%	Input Priority	Auto Search
720x400/640x400	720x400	Resolution Notice	Enabled

Packing For Shipping And Disassembly Procedure

Packing For Shipping

1. Packing Procedure

   Paste protection film to protect the monitor. (Figure 1)

   Put the monitor in the PE bag and seal the bag with tape. (Figure 2)

Figure 1

Figure 2

Put the cushions on the monitor.

Place the monitor into the carton and then put all the accessories into the carton. At last, close the carton and seal it with tape. (Figure 3)

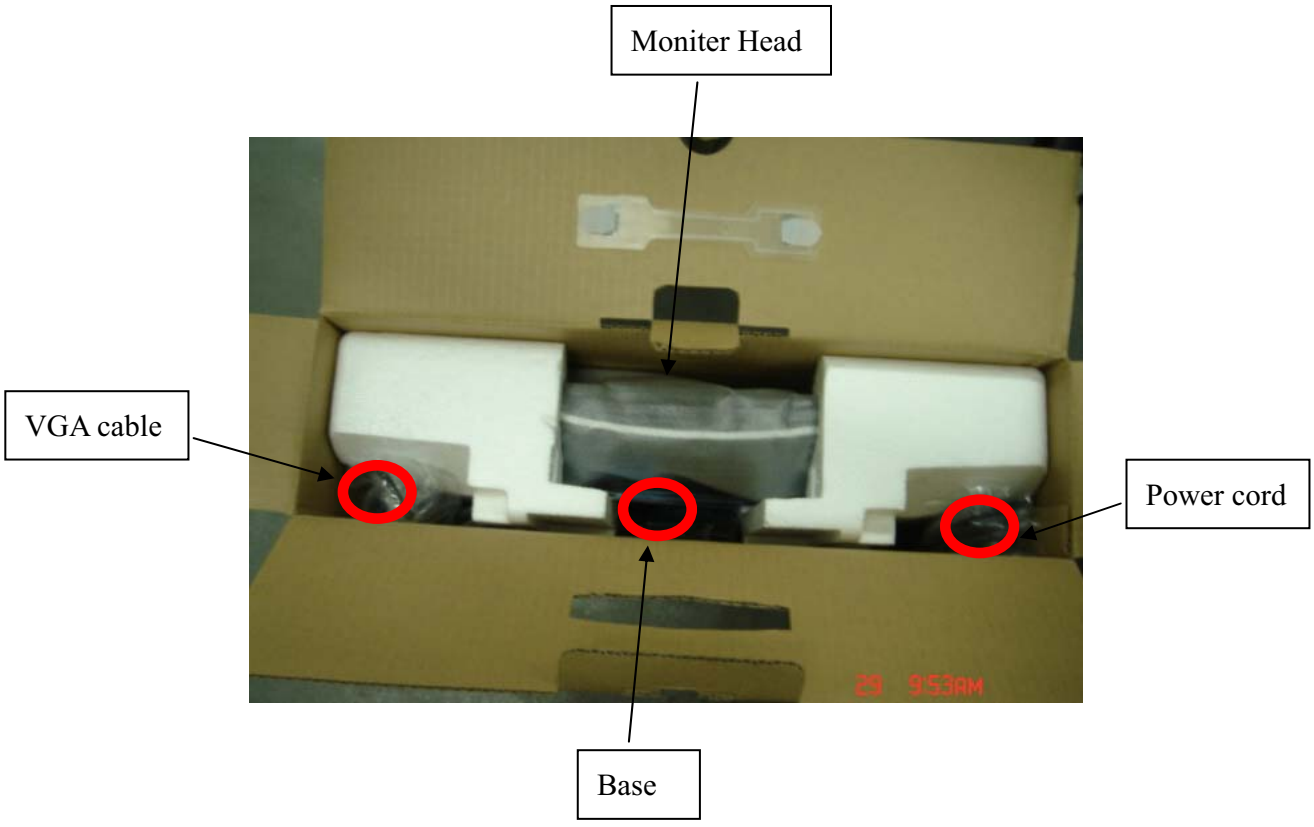


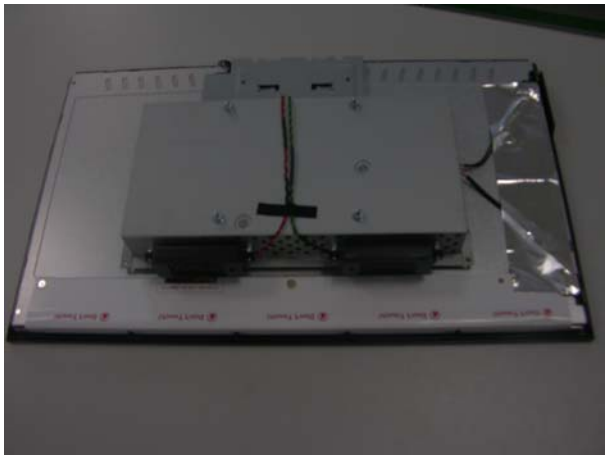
Figure 3

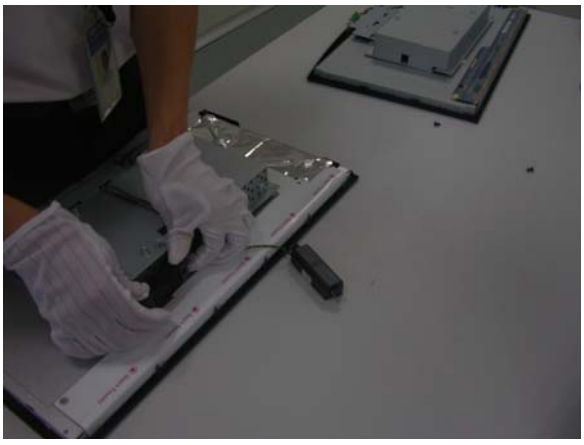
Disassembly Procedure

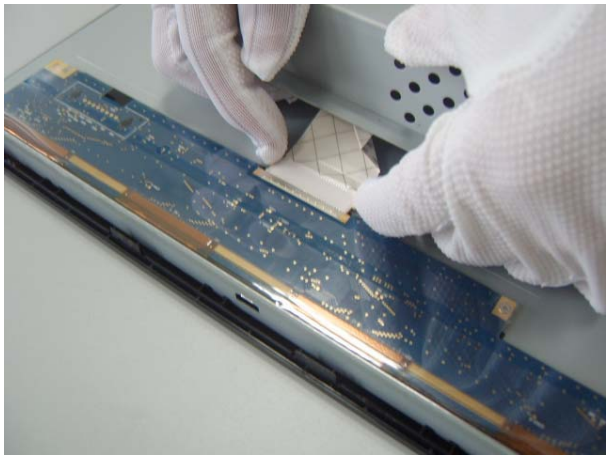
BASE

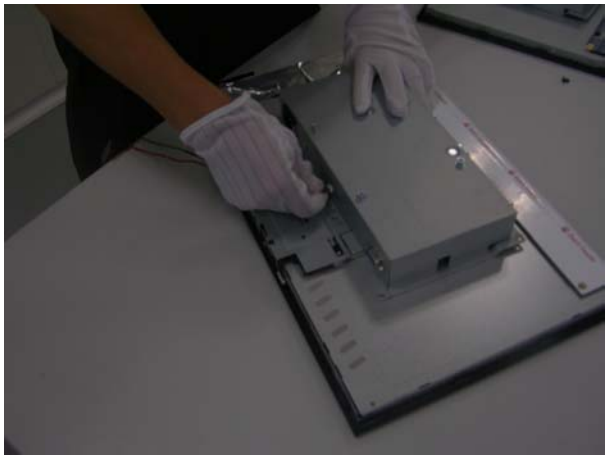
STAND

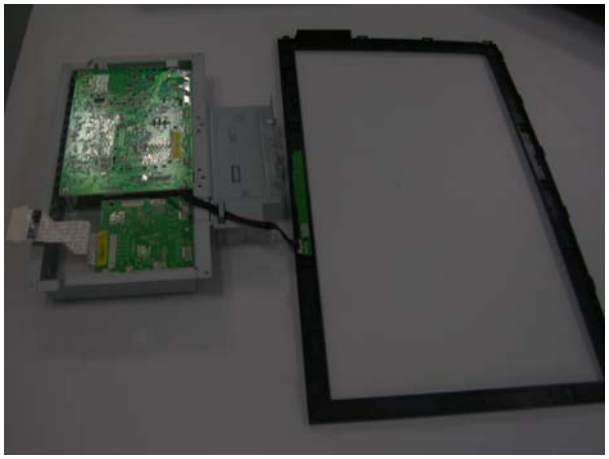
BACKCOVER







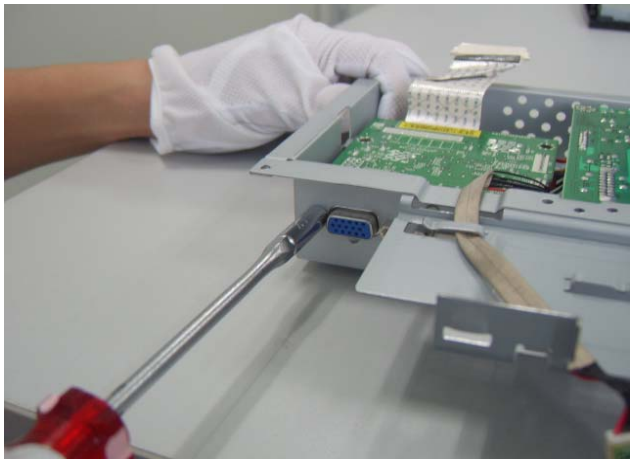





CHUNGHWA
CLAA185WA 02 ZB
FB042KFZ 000
834H3902U 206
E194548
U RoHS
Made in China
GP
>LIGHT GUIDE:PMMA<>MOLD FRAME:PC-FR(76)<
CH8WA020CCLT2WJ388N2172

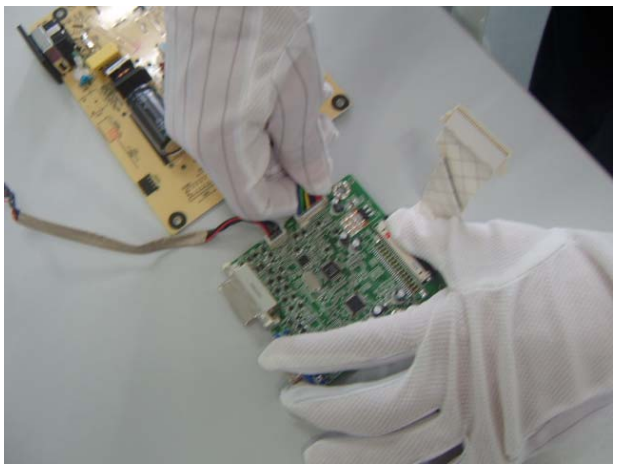
PANEL

BEZEL

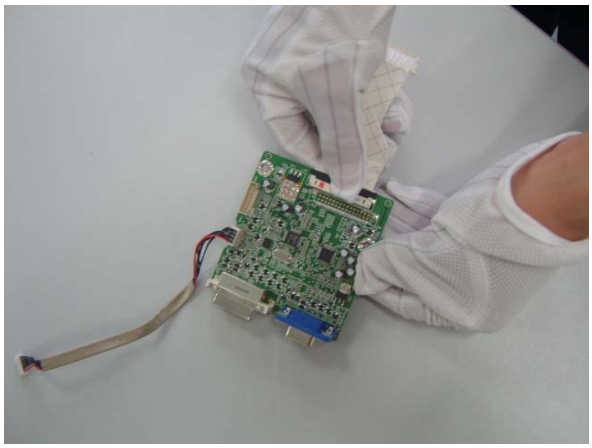


KEYPAD

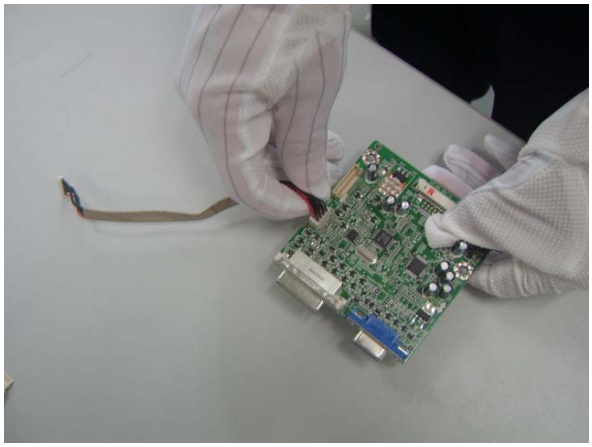
CHASIS



POWER BOARD



LVD CABLE



SHORT KEYPAD-CABLE

IF BOARD

4. Circuit Description

4.1 Switching Mode Power Supply

4.3.1 AC Current Input Circuit

P801 is a connector for connecting AC Power. F801 is a fuse to protect all the circuit. AC input voltage is from 90v to 264V. R801,R831 and R802 joined between two inputting main circuit to prevent man from shock. L801 is used to clear up low frequency wave. C801 and C802 are used to discharge the waves that L801 produced. High frequency waves are damped by C801 and C802. D801 is a rectifier which composed of 4 build-in diodes, it inverts AC to DC.

4.3.2 High Voltage to Low Voltage Control Circuit

C804 is used to smooth the wave from rectifier. IC802 is a highly integrated PWM controller. When rectified DC high voltage is applied to the HV pin during start-up, the MOSFET Q804 is initially off, and the Vcc pin capacitor is charged. When the Vcc pin voltage reaches approximately 10V, the control circuitry is activated and the soft-start begins. The soft-start circuit gradually increases the duty cycle of the MOSFET from zero to the maximum value over approximately 4ms. a stably output voltage Will be increase about 40ms later, and then feedback a continue current through the IC801 which control the output of the PWM IC. If no external feedback/supply current is feed into the FB pin by the end of the soft-start, the current Set point will be above the fault level, FAULT flag is raised, if the FAULT duration exceeds 80ms, the output controller disable

Resistor R808, R809, R810, R811 are for line over voltage shutdown(OVP) and Brown Out Protection (BOP)

When PWM is turned off, the main current flow will be consumed through R804 and D802, This will prevent MOSFET Q804 from being damaged under large current impulse and voltage spike.

D803 and C807 to provide internal Auxiliary voltage to Vcc pin during normal operation. Otherwise, error amplifier and feedback current input the FB pin for duty cycle control.

4.3.3 DC_5V and DC_14V Output Circuit

For DC 5V, D805 is used to rectify the inducted current. R828 and C814 are used to store energy when current is reversed. The parts including C818, C822, C820,L803 are used to smooth the current waves.

For DC 14V, D803 is used to rectify the inducted current. R827 and C813 are used to store energy when current is reversed. The parts including C815, C817 and L802 are used to smooth the current waves.

4.3.4 Feedback and OVP Protect Circuit

Pin R of IC803 is supplied 2.5-v stable voltage. It connects to 5V and 14V output through R822, R823 and R824. R822, R823 and R824 are output sampling resistor. When the sampling voltage more than 2.5V or less than 2.5V, current of FB IC802 will change, this can change the voltage from T801.

4.2 Inverter Circuit

1. R503, ZD501, R502, Q501 components convert +14V voltage into +5.0V voltage, and the voltage supply to IC501. The extra PWM pulse signal (BRIGHTNESS signal) input to control IC through R512, R514, C510, The LCT pin is set to a DC voltage of 0.7V by using a resistor divider(R507, R516), change the duty of PWM pulse, will regulate the lamp current. The ON/OFF voltage connect to pin10 of IC501 through D501, R501, A voltage of 2V to pin10 of IC501 enables the IC and activates the striking timer. The SSTCMP pin of IC501 performs the soft function, the C511 set the time of SST. The operation frequency determined by external capacitor C512, C521 and resistor R508 connected at CT pin of IC501. C515 connect the TIMER pin of IC501, the capacitor to set striking time and shunt down delay time. DRV!, DRV2 output for power MOSFET U501, U502.

2. OZ9938 provides two drive signals for U501, U502, and they work in push pull topology driving, two transformers are connected in parallel with each transformer driving two lamps in series. Turning each N-Channel MOSFET “on/off” complementarily, produces an alternating current through the transformer primary and secondary. The “on” duration of the switches determines the amount of energy delivered to the CCFLs. R504, C504, R505, C505, R532, C529, R530, C522 are snubber networks, they suppress Voltage transient spike in drain of power MOSFET.

3. R506, R510, C509, C513, C514, R525, R531, C528, C525, and C527 are connected between high voltage output connector and ground, the divided AC voltage is inverted DC voltage through D502, D503, D508, and D509. The sense voltage feed back to VSEN (pin 6 of IC501) for an over voltage/over current condition during normal operation. R528, R533 are current sense resistor, current sense signal feed back to Isense (pin 5 of IC501) for lamp “ON” detection.

4.3 I/F Board Circuit

4.3.1 Power Input

+5V is from the power board and supply for U101(FSP2160-3.3V)、U105(NT68672UMFG) and panel. +3.3V output is generated from +5V through C102 filtering, and U101 outputs. +3.3V is used for U108 U105 (NT68672UMFG). +1.2V output is generated from +3.3V through U102 outputs. +1.2V is only used for Scaler NT68672..

4.3.2 Scaler(NT68672UMFG)

1.) NT68672: The NT68673UMFG is a highly integrated flat panel display controller that interfaces analog and digital inputs. It combines a triple ADC, a HDMI 1.3 receiver, a high quality zoom and shrink engine, a multi-color on screen display (OSD) controller and many other functions in a single chip. It provides the user with a simple, flexible and cost-effective solution for various flat panel display products.

The NT68673UMFG operates at frequencies up to 205MHz, suitable for LCD monitor up to WUXGA resolution. The NT68673UMFG also has a built-in 2D noise reduction function to provide more stable video quality, spread spectrum to provide low EMI solution, sRGB for video color space convert and post pattern for manufacture test.

The display provided single/double pixel clock LVDS interface.

In addition, NT68673UMFG includes an integrated 8-Bit Microcontroller (MCU). It contains an 8-bit 8031 micro-controller, 5,120-bytes internal data memory, eight 7-bit resolution A/D Converter, 10- channel 8-bit resolution PWM DAC, two16-bit timer/counters, and a UART. Except those, it has two channel hardware DDC solution, and VESA 2Bi/2B+ master/slave I2C bus interface. It can support up to External 512 K Bytes SPI Flash memories for program memory.

2.) EEPROM: We use 24C16 EEPROM to store DDC (Display Data Channel) data. The end-users' setting data is stored in the 24C16 EEPROM. Each timing mode is allocated with 16 bytes of memory space for information such as Sync frequencies, polarities… etc. PC can access the EEPROM data indirectly through the D-sub-SDA and D-sub-SCL channels. (I^2C communication)

4.3.3 VGA Input

Signal R, G, B input through CN102 #1, #2, #3. Signal HSYNC and VSYNC input through CN102 #13 and #14, and C129, R135, C130, R136 filtering. Then the analog signal enters U105, and then U105 deals with it internally. In addition, D104, D105, D102,D103 (the four are BAV99), ZD102, ZD103, ZD104, ZD105, ZD106 (they are constant voltage diode of 6V2) are ESD protector. Signal DDC-SCL inputs via CN102 #15, and then passes through ZD106 for ESD protection, goes into U105 #41. Signal DDC-SDA inputs via CN102 #12, and then passes through ZD105 for ESD protection, goes into U105 #42. CN102 #5 is defined as cable detect pin, this detector realizes via R125,The PC-5V of U105 is supplied by PC via CN102 #9 with D101.

4.3.4 Button Control

Button "Key-Power" is defined as power on/off, which is connected to U105 # 74 through CN104 #8.

Button "Key-2" is defined as two functions of selecting and adjustment, which is connected to U105#113through CN104 #2.

Button "Key-Up" is defined as plus, which is connected to U105 # 112 through CN104 # 4

Button "Key-Down" is defined as minus, which is connected to U105 # 111 through CN104 # 3.

Button "Key-1" is defined as two functions of menu and exit, which is connected to U105 # 47 through CN104 # 1.

LED indicator on the front bezel is defined as follows:

a. When press button "Key-Power", U105 # 74 is pulled high and U105 # 103 is pulled low, so Q107 is conducted and the LED indicator is blue.
b. When in power-saving mode, U105 # 108 is pulled high and U102 # 1 is pulled down, so Q108 is conducted and the LED indicator is orange.

4.4 Power On/Off Sequence

4.4.1 Hardware Power ON

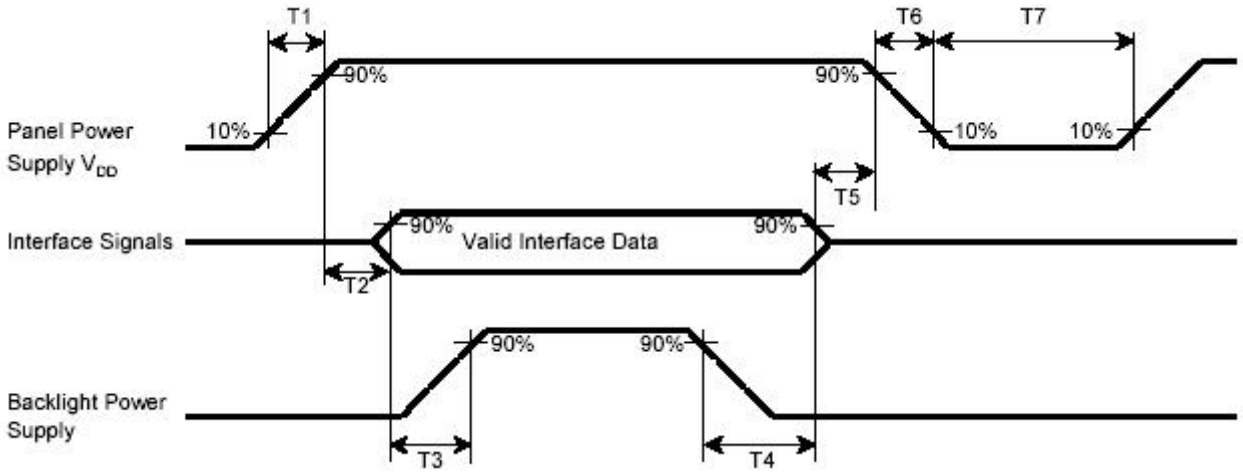
When power cord is plugged into AC socket, SMPS starts work and provides U105 with VCC5V. When VCC5V inputs, U105 resets circuit active, sets U105 all registers to preset modes, and then monitor goes into stand-by mode. That means hardware power on has been completed.

4.4.2 Software Power ON/OFF

When press power key, U105 # 74 recieves low pulse,and then U105 will do the power on/off.

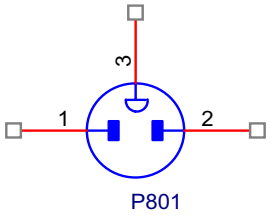
- If Power ON, U108 # 103(LED_Blue) will send out Low potential, and then LED Blue on.
- If Power OFF, U108 # 103(LED_ Blue) will send out High potential, and then LED Off.

The Panel_Vcc, Backlight_En, CLK/DATA output to panel will follow the following sequency.



T1 (ms)	T2 (ms)	T3 (ms)	T4 (ms)	T5 (ms)		T6+T7 (ms)
0.5~10	**0~50**	**≥500**	**≥90**	**0~50**		**≥500**

4.4.3 AC Outlet Pin Assignment



Pin	Symbol	Description
1	L	Live
2	N	Neutral
3	E	GND

4.5 Inner Connector Pin Assignment

4.5.1 CN501, CN502, CN503, CN504 (Connect to Panel Backlight, SM02B-BHSS-1-TB or equivalent)

Pin	Symbol	Description
1	H.V.	High voltage for lamp
2	L.V.	Low voltage for lamp

4.5.2 CN101 (Power BD to Interface BD)

Pin No.	Symbol	Description
1	VCC5V	+5V INPUT
2	VCC5V	+5V INPUT
3	GND	GND
4	GND	GND
5	GND	GND
6	GND	GND
7	Backlight_ON/OFF	CCFL on/off control
8	Adjust_Brightness	Panel luminance control (CCFL brightness)

4.5.3 CN104 (Interface BD to Keypad)

Pin No.	Symbol	Description
1	KEY_Menu	OSD menu and exit
2	KEY_2	Auto adjustment control and selecting.
3	KEY_Minu	OSD "▼" control to adjust value to decrease
4	KEY_Plus	OSD "▲" control to adjust value to increase
5	LED_B	Blue LED lighting control
6	GND	GND
7	LED_O	Orange LED lighting control
8	KEY_POWER	DC power on/off control

4.5.4 CN103 (Connect I/F BD to panel, FI-X30S-H or Equivalent)

Pin No.	Symbol	Function
30	RXO0-	Negative LVDS differential data input.Channel O0(odd)
29	RXO0+	Positive LVDS differential data input.Channel O0(odd)
28	RXO1-	Negative LVDS differential data input.Channel O1(odd)
27	RXO1+	Positive LVDS differential data input.Channel O1(odd)
26	RXO2-	Negative LVDS differential data input.Channel O2(odd)

25	RXO2+	Positive LVDS differential data input.Channel O2(odd)
24	GND	Ground
23	RXOC-	Negative LVDS differential clock input (odd)
22	RXOC+	Positive LVDS differential clock input (odd)
21	RXO3-	Negative LVDS differential data input.Channel O3(odd)
20	RXO3+	Positive LVDS differential data input.Channel O3(odd)
19	RXE0-	Negative LVDS differential data input.Channel E0(even)
18	RXE0+	Positive LVDS differential data input.Channel E0(even)
17	GND	Ground
16	RXE1-	Negative LVDS differential data input.Channel E1(even)
15	RXE1+	Positive LVDS differential data input.Channel E1(even)
14	GND	Ground
13	RXE2-	Negative LVDS differential data input.Channel E2(even)
12	RXE2+	Positive LVDS differential data input.Channel E2(even)
11	RXEC-	Negative LVDS differential clock input (even)
10	RXEC+	Positive LVDS differential clock input (even)
9	RXE3-	Negative LVDS differential data input.Channel E3(even)
8	RXE3+	Positive LVDS differential data input.Channel E3(even)
7	GND	Ground
6	NC	Not connection
5	NC	Not connection.
4	NC	Not connection
3	VCC	Power supply (5.0 V)
2	VCC	Power supply (5.0 V)
1	VCC	Power supply (5.0 V)

4.5.5 CN102 (D-SUB Connector)

	Symbol	Pin	Symbol	Pin	Symbol
1	Red video input	6	Red GND	11	GND
2	Green video input	7	Green GND	12	Serial data line (SDA)
3	Blue video input	8	Blue GND	13	Hsync
4	GND	9	+5V(from PC)	14	Vsync
5	Cable Detect	10	Not Connected	15	Serial clock line (SCL)

4.6 Key Parts Pin Assignment

4.6.1 IC802 (TOP245Y or TOP246Y, Power Control IC)

Pin	Symbol	I/O	Description
1	BO	I	Brown-out and external triggering
2	FB	I	Sets the peak current setpoint
3	CS	I	Current sense input and overpower compensation adjustment
4	GND		IC ground
5	DRV	O	Output driver
6	VCC	I	IC supply
7	NC		
8	HV	I	High-Voltage pin

4.6.2 IC501 (OZ9938GN, CCFL inverter controller IC)

Pin No.	Symbol	I/O	Description
1	OV2	I	Open lamp voltage feedback input 2. Connect a capacitive voltage divider from the hot terminal of the lamp to ground. Connect this pin to the tap on the divider and a bias resistor to VCC. In multi-lamp application, connect a diode from each lamp capacitive voltage divider which is in-phase to each other to this pin. If the peak voltage value at OV2 pin exceeds +13V, the controller will treat this as lamp overvoltage condition. A pulse of current will pull-down on the COMP pin to regulate the lamp voltage. The burst dimming signal will be ignored and the Fault Timer will start ramping up. This signal is also used for short circuit protection. If the voltage at OV2 is always above 4.9V, the controller will treat this as a short circuit condition after a certain delay. The Fault Timer will start ramping up. In single lamp application, connect this pin to OV1 pin.
2	LI1	I	Lamp current feedback 1. Connect this pin to the current sense resistor. In multi-lamp application, connect a diode from this pin to each lamp current sense resistor which is in-phase to each other. These diodes forms an AND gate with an internal 60uA pull up current source. Combined with the lamp current feedback signal from LI2, the signal is fed to the internal error amplifier. Selecting the feedback resistors can easily program the lamp current. The signal is also used for open lamp protection. If the voltage at LI1 is always below 1.15V, the controller will treat this as an open lamp condition after a certain delay. The burst dimming signal will be ignored and the Fault Timer will start ramping up.

			In single lamp application, connect this pin to LI2 pin.
3	LI2	I	Lamp current feedback 2. The function of this pin is same as LI1. In single lamp application, connect this pin to LI1. In multi-lamp application, this pin is used for lamp current feedback which is out-of-phase of LI1.
4	COMP	I	Feedback Compensation Node. Connect a compensation capacitor from this pin to GND. This pin is also used for IC enable control. A logic low (below 0.5V) input turns off the IC. The enable logic input signal should have open collector (OC) structure.
5	FT	I	Fault Indicator. Connect a capacitor from this pin to GND to program the open lamp and short lamp protection delay time. When the voltage on this pin reaches 1.2V, the IC will shutdown until it is enabled again.
6	FSET	I	Switching Frequency Set. Connect a resistor from this pin to GND. This resistor sets the operating frequency of the MP1009.
7	BOSC	I	Burst Repetition Rate Setting. Connect a resistor and a capacitor from this pin to GND. If the burst dimming is to be controlled by an external logic signal, connect BOSC to VCC and apply the logic signal to the DBRT pin.
8	DBRT	I	Burst-Mode (Digital) Brightness Control Input. The voltage range of 0V to 1.2V at DBRT linearly sets the burst-mode duty cycle from minimum to 100%. The minimum burst dimming duty can be programmed by BOSC resistor and capacitor. If burst dimming is not used, connect DBRT to VCC.
9	VIN	I	Input Power Rail. Decouple this pin to GND with >1μF ceramic capacitor. It is desirable to add a 10Ω resistor between VIN pin and the input bus.
10	BT	O	Output Bootstrap. BT provides gate driver bias for the high-side MOSFET. Connect a capacitor from BT to SW.
11	TG	O	High-Side MOSFET Gate Output. Connect TG to the gate of the high-side, external power MOSFET.
12	SW	O	Bridge Output. Connect SW to the source of the high-side MOSFET and the drain of the low-side MOSFET.
13	VCC	O	Voltage Rail Output. VCC provides power supply for the low-side gate driver and the internal control circuitry. Bypass VCC to GND with a ceramic capacitor.
14	BG	O	Low-Side MOSFET Gate Output. Connect BG to the gate of the low-side MOSFET.
15	GND		IC ground
16	OV1	I	Open lamp voltage feedback input. The function of this pin is same as OV2

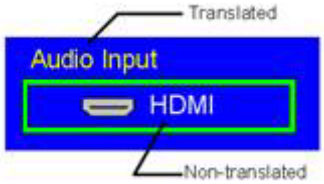
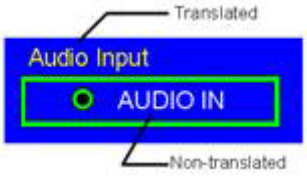
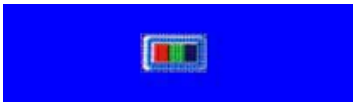
5. Adjustment Procedure

5.1 Key Function Description

Power Switch	AC Power Switch on the back cover Soft Power Switch on the front bezel
Power LED (Front Head)	Blue – ON Amber – Active Off Dark = Soft Power Switch OFF
Front Panel Controls (Head) [1] [2] [⏻] [▲] [▼]	[⏻] Power [1] Button 1 [2] Button 2 [▲] Up arrow button [▼] Down arrow button Note: Power Button, Button 1 and Button 2 must be one-shot logic operation. (i.e. there should be no cycling)
Reaction Time	OSD must fully appear within 0.5s after pushing Button 1

5.2 Hot Key Operation

[1]	Main Menu (refer to segment 4-6-3)
[2]	Input toggle (Analog or DVI or HDMI; refer to Appendix D)
[▼]	To immediately activate Audio menu.
[▲]	To immediately activate Contrast menu. It should be change to Brightness OSD by push button [2] (refer to the Contrast OSD in segment 4-5-3) *1 refer to the Brightness OSD in segment 4-5-3 *2 Under sRGB or DCR mode, this function is disable.
[▼] (Keep pushing 5 sec)	Under HDMI mode, toggle audio source between HDMI and jack plug

	When switch to HDMI  When switch to AUDIO IN (earphone jack) 
[▼]+ [▲]	1. In the CR/ BT menu, Recall Contrast or Brightness to default in its menu without OSD message. 2. In the Audio menu, Recall both of audio volume and mute to default without OSD message. * While OSD menu off, recall CR/ BT/ Audio volume and mute to default without OSD message.
[1] + [2]	Toggle 720x400 and 640x400 mode when input 720x400 or 640x400 mode * Default = 720 x 400
[1] + [▼] + [▲] (Keep pushing 5 sec)	White Balance 1. It will not shown on user's guide 2. OSD message as below,  (Image = no blanking) 3. Recommend environment 3.1. Optical (Best) input timing = 640 x 480 @ 60Hz; Following timing modes also recommended, 800 x 600 @ 60 Hz 1024 X 768 @ 60 Hz 3.2. Pattern as below, 

[1] + [▲]	OSD Lock / Unlock (refer to segment 4-6-4)
[1] + [▼]	Power Lock / Unlock (refer to segment 4-6-5)
[2] + [▼]	Toggle DDC/CI and DDC/2B (DDC/CI enable/disable) and show following message for 3 seconds, When switch to DDC/CI  When switch to DDC/2B  Default = DDC/CI
Signal + [2] + [⏻]	Factory Mode
Remark : All the short cuts function are only available while OSD off	

5.3 OSD Control

5.3.1 OSD table

The OSD lock will be activated by pressing the front panel control buttons [1] + [▲] for 10 seconds [*1]. If the user then tries to access the OSD by pressing any of the buttons, a message will appear on the screen for 3 seconds showing "OSD Locked" [*2]. The OSD lock will be deactivated by pressing the front panel control buttons [1] + [▲] again for 10 seconds[*3].

*1 The OSD Lock message as below,

Range = 0 to 10

*2 The OSD Locked message as below,

*3 The OSD Unlock message as below,

Range = 0 to 10

*4 When the OSD is locked will lock all functions, including “Volume”, “Mute” and others.

*5 Status bar indicating OSD Lock or Unlock is in progress and when complete it will indicate “OSD Locked” or “OSD Unlocked” for 3 seconds as below,

OSD Locked

OSD Unlocked

*6 When OSD appears on screen, the OSD Lock/Unlock short cut key will be disabled.

5.3.2 Power lock Menu function

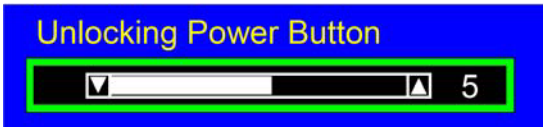
The Power lock will be activated by pressing the front panel control buttons [1] + [▼] for 10 seconds [*1]. Locking the power button means that the user won't be able to turn off the LCD while the power button is locked. If the user presses the power button while it is locked, a message will appear on the screen for 3 seconds showing "Power Button Locked" [*2]. It also means that with the power button locked, the LCD would automatically turn back "On" when power is restored after a power failure. If the power button is not in the locked mode, then power should return to it's previous state when power is restored after a power failure. The Power lock will be deactivated by pressing the front panel control buttons [1] + [▼] again for 10 seconds[*3].

*1 The Locking Power Button message as below,

Range = 0 to 10

*2 The Power Button Locked message as below,

*3 The Unlocking Power Button message as below,



Range = 0 to 10

*5 Status bar indicating Power Button Lock or Unlock is in progress and when complete it will indicate “Power Button Locked” or “Button Unlocked” for 3 seconds as below,

Power Button Locked

Button Unlocked

*6 When OSD appears on screen, the OSD Lock/Unlock short cut key will be disabled.

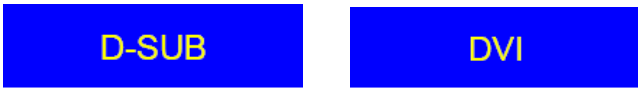
5.4 Factory Defaults

Item	Defaults	Item	Defaults
Contrast	70%	OSD Time Out	15 Sec
Brightness	100%	OSD Background	On
Color Temperature	6500K	Volume	80%
Sharpness	100%	Treble	N/A
OSD H. Position	50%	Bass	N/A
OSD V. Position	50%	Input Priority	Auto Search
720x400/640x400	720x400	Resolution Notice	Enabled

5.5 Function description:

Input Signal Notice Actions

1. The Input Signal Notice OSD appears 1 second when power turns on or change input signal.
2. The Input Signal Notice OSD position is on the right-top side of image.
3. The OSD message as below,



Resolution Notice Actions

7. Resolution Notice OSD should show on screen after changing to non-native mode for 30 sec.

8. Key button definition:
   [1]: Turn off the OSD message.
   [2]: Turn off the OSD message and disable Resolution Notice function
9. The OSD should disappear after 10 sec or by pushing button [1] or [2]
10. After the OSD turns off, it will not show on again before next timing change, input change or power off.
11. Resolution Notice function should be disabled when push button [2] under Resolution Notice OSD
12. The “1366x768” will be replaced by actual panel resolution.

0-Touch™ Function Actions

1. Execute Auto Image Adjust when new mode detected, and save the settings to buffer for further use

2. It should be reset by Memory Recall function
(Should not reset by power off, power unplug and others)

OSD Auto Save

The OSD shall save new settings when it is turned off by the user or when it times out. There shall not be a separate save

Out of range

While non-defined timing is detected, following OSD message will keeps showing on,

1. If the timing is over spec (Fh, Fv or dot clock), the image shall be blanking, and OSD background shall be non-transparent.
2. If the timing is inspect but not defined, the image shall be non-blanking.

No signal for D-sub / DVI

While no signal is detected for D-Sub and DVI, the following OSD message shall shows on 3 seconds then go in to power saving.

OSD Background = Non-transparent
Image = Blanking

No signal for HDMI

While no HDMI signal is detected, the entire screen background will display blue image, as shown below:

R=24, G=78, B=232 (R=0x18, G=0x4E, B=0xE8)

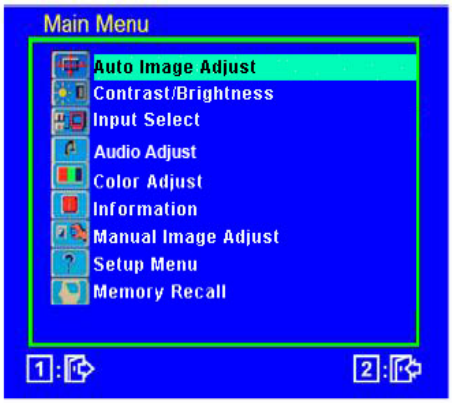
The background color will persist without power saving until HDMI input is re-connected or other input has been selected.

The following OSD message will display for 3 seconds and then disappear.

OSD Background = Non-transparent
Image = Blanking

5.6 OSD Structure

Main Menu



1. Key button definition:

[1]: OSD off

[2]: Execute the selected function

[Up]: **Under Landscape mode:** Scroll up the slider

(When push the button on the top position, the slider shall go down to the bottom item)

Under Landscape mode: Scroll down the slider

(When push the button on the bottom position, the slider shall go back to the top item)

[Dn]: **Under Landscape mode:** Scroll down the slider

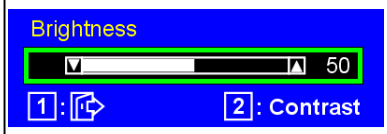
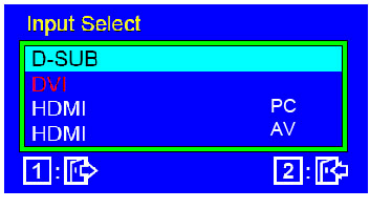
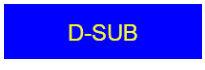
(When push the button on the bottom position, the slider shall go back to the top item)

Under Landscape mode: Scroll up the slider

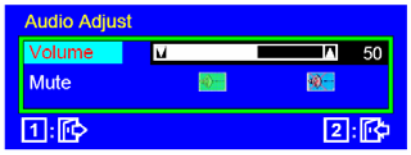
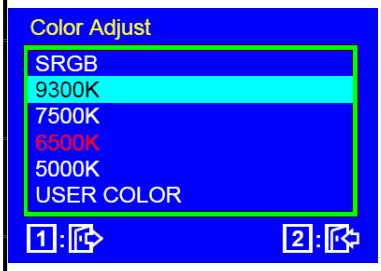
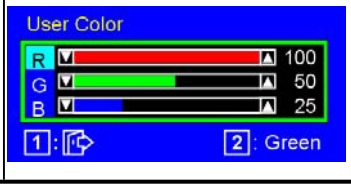
(When push the button on the top position, the slider shall go down to the bottom item)

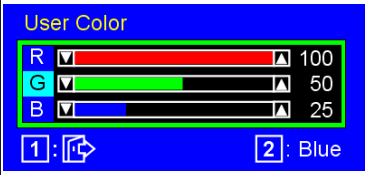
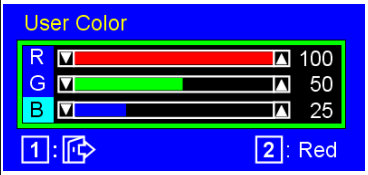
2. Under sRGB or DCR mode, the Contrast/Brightness shall be disabled with gray color. And it should not be selected.

Level 1	Level 2	Level 3
Auto Image Adjust Auto Image Adjust 1. Background = blanking 2. The message OSD position is at the center. 3. After auto tune, OSD shall be off 4. Only for analog mode		
Contrast/Brightness Jump to Contrast OSD directly	**Contrast** Contrast 50 1: 2: Brightness 1. Adjust range = 0 to 100 2. Default = 70	

	3. Key button definition: [1] = Back to Main Menu or OSD off (depend on previous status) [2] = Change to Brightness OSD [Up] = Increase the OSD value setting [Dn] = Decrease the OSD value [Up]+[Dn]: Recall to default	
	Brightness  1. Adjust range = 0 to 100 2. Default = 100 3. Key button definition: [1] = Back to Main Menu or OSD off (depend on previous status) [2]: Change to Contrast OSD [Up]: Increase the OSD value setting [Dn]: Decrease the OSD value [Up]+[Dn]: Recall to default	
Input Select  1. Show on existing input port by red color 2. Key button definition: [1]: Back to previous OSD status [2]: Change to the selected input port	**D-SUB** Step 1: Turn off OSD. Step 2: 1. Target video input port = Analog 2. If signal detected from target port, change to target port. 3. If no signal detected from target port, keep existing input port. Step 3: Show on Input Message OSD at the right-top corner of screen for 1 second.  	

[Up]: Move up the slider [Dn]: Move down the slider	**DVI** Step 1: Turn off OSD. Step 2: 1. Target video input port = Digital 2. If signal detected from target port, change to target port. 3. If no signal detected from target port, keep existing input port. Step 3: Show on Input Message OSD at the right-top corner of screen for 1 second. 	
	HDMI PC Step 1: Turn off OSD. Step 2: 1. Target video input port = HDMI PC 2. If signal detected from target port, change to target port. 3. If no signal detected from target port, keep existing input port. Step 3: Show on Input Message OSD at the right-top corner of screen for 1 second. 	
	HDMI AV Step 1: Turn off OSD. Step 2: 1. Target video input port = HDMI AV 2. If signal detected from target port, change to target port. 3. If no signal detected from target port, keep existing input port. 4. When HDMI input and color space is YUV, it will first detect HDMI AV Step 3: Show on Input Message OSD at the	

	right-top corner of screen for 1 second. 	
Audio Adjust  1. The selected icon in Mute will be highlighted 2. Key button definition: [1]: Back to previous OSD status [2]: Change to Volume or Mute the selected audio setting [Up]: Increase the volume settingMove up the slider or Toggle audio to Mute or Audible icon [Dn]: Decrease the volume settingMove down the slider or Toggle audio to Mute or Audible icon 3. No signal, no output 4. This function must memorize its status after DC/AC Off to On	**Volume** 1. Adjust range = 0 to 100 2. Default =50 3. Key button definition: [1]: Back to Audio Adjust OSD [Up]: Increase the volume setting [Dn]: Decrease the volume setting	
	Mute 1. Default = Off 2. Key button definition: [1]: Back to Audio Adjust OSD [2]: Switch to Volume adjustment [Up],[Dn]: Toggle audio to Mute or Audible iconToggle audio to Mute or Audible icon 3. When Mute function is selected, any change in Volume will disable Mute and toggle to Audible icon.	
Color Adjust  1. Show on existing input port by red color 2. Default = 6500K 3. Key button definition: [1]: Back to previous OSD status	**sRGB** Change Color setting to sRGB	
	9300K Change Color setting to 9300K	
	7500K Change Color setting to 7500K	
	6500K Change Color setting to 6500K	
	5000K Change Color setting to 5000K	
	User Color Jump to Red OSD directly	**Red** 

[2]: Change to the selected color setting [Up]: Move up the slider [Dn]: Move down the slider 4. Under DCR mode (Dynamic Contrast = On), SRGB shall be disabled with gray color. And it should not be selected.		1. Adjust range = 0 to 100 2. Default = 100 3. Key button definition: [1]: Back to Color Adjust OSD [2]: Jump to Green OSD [Up]: Increase the OSD value setting [Dn]: decrease the OSD value setting
		Green  1. Adjust range = 0 to 100 2. Default = 100 3. Key button definition: [1]: Back to Color Adjust OSD [2]: Jump to Blue OSD [Up]: Increase the OSD value setting [Dn]: decrease the OSD value setting
		Blue  1. Adjust range = 0 to 100 2. Default = 100 3. Key button definition: [1]: Back to Color Adjust OSD [2]: Jump to Red OSD [Up]: Increase the OSD value setting [Dn]: decrease the OSD value setting

Information

PC timing – Display Resolution

Video timing – Display Video Format

Key button definition:

[1]: Back to Main Menu OSD

Manual Image Adjust

1. Key button definition:

[1]: Back to previous OSD status

[2]: Execute the selected function

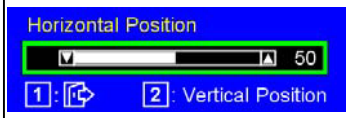
[Up]: scroll up the slider

(When push the button on the top position, the slider shall go down to the bottom item

H/V Position

Jump to Horizontal Position OSD directly

Horizontal Position



1. Adjust range = 0 to 100

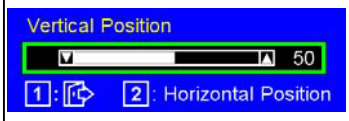
2. Key button definition:

[1]: Back to Manual Image Adjust OSD

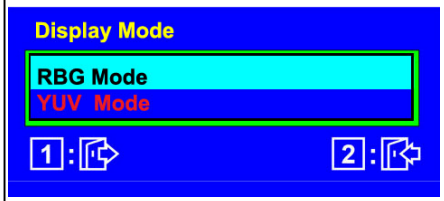
[2]: Change to Vertical Position OSD

[Up]: Increase the OSD value setting

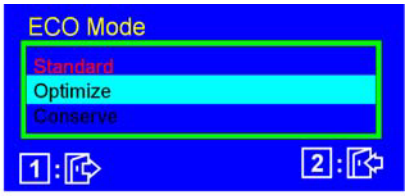
[Dn]: Decrease the OSD value

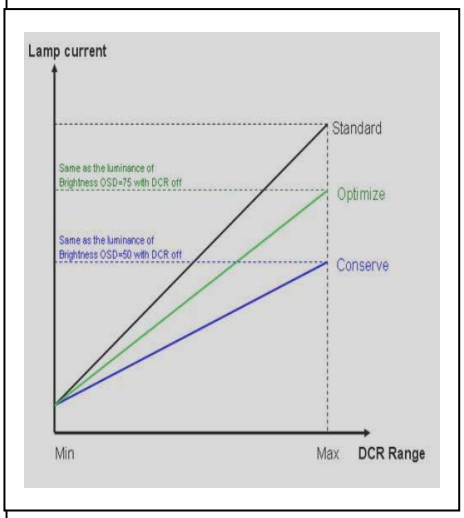
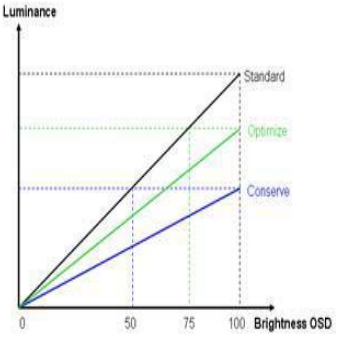
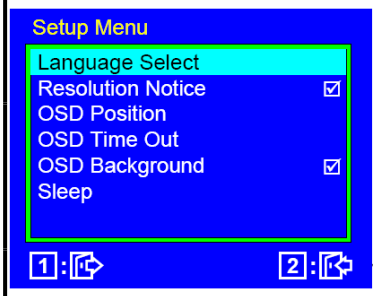
[Dn]: Scroll down the slider (When push the button on the bottom position, the slider shall go down to the top item 2. Under Digital mode, all the H./V. Position, Horizontal Size and Fine Tune shall be disabled with gray color. And it should not be selected. 3. Under native mode, Sharpness shall be disabled with gray color. And it should not be selected. 4. Under SRGB mode, Dynamic Contrast shall be disabled with gray color. And it should not be selected. 5. When move to Dynamic Contrast, the right-bottom side icon will change to "[2]: ☑/☐"		**Vertical Position**  1. Adjust range = 0 to 100 2. Key button definition: [1]: Back to Manual Image Adjust OSD [2]: Change to Horizontal Position OSD [Up]: Increase the OSD value setting [Dn]: Decrease the OSD value
	Horizontal Size  1. Adjust range = 0 to 100 2. Key button definition: [1]: Back to Manual Image Adjust OSD [Up]: Increase the OSD value setting [Dn]: Decrease the OSD value	
	Fine Tune  1. Adjust range = 0 to 100 2. Key button definition: [1]: Back to Manual Image Adjust OSD [Up]: Increase the OSD value setting [Dn]: Decrease the OSD value	
	Sharpness  	

	1. Adjust range ={0,25,50,75,100} 2. Default = 50 3. Key button definition: [1]: Back to Manual Image Adjust OSD [Up]: Increase the OSD value setting [Dn]: Decrease the OSD value	
	Dynamic Contrast Swap on and off the Dynamic Contrast function Default = Off When Dynamic Contrast is on, below functions will be disabled: 5. Brightness/Contrast menu 6. SRGB selection in Color Adjust 7. White balance hot key 8. DDC/CI BR/CT adjustment	
	Response Time  1. Show on existing Response Time setting by red color 2. Key button definition: [1]: Back to previous OSD status [2]: Change to the selected Response Time setting. [Up]: Scroll up the slider (When push the button on the top position, the slider shall go down to the bottom item) [Dn]: Scroll down the slider (When push the button on the bottom position, the slider shall go up to the top item) 3. Default = Advanced	**Standard** Over Drive = off **Advanced** Over Drive = Level 1 (best quality with over drive) **Ultra Fast** Over Drive = Level 2 (faster than level 1)

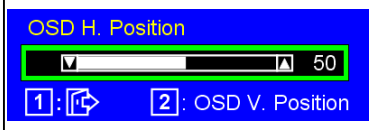
	Aspect Ratio  3. Show on existing Aspect Ratio setting by red color 2. Key button definition: [1]: Back to previous OSD status [2]: Change to the selected Display Mode setting. [Up]: Scroll up the slider (When push the button on the top position, the slider shall go down to the bottom item) [Dn]: Scroll down the slider (When push the button on the bottom position, the slider shall go up to the top item) 3. Default = full screen **Note : 1.When input signals are wide format, this function is disable.** **2.When input signals are non-wide format. this function is enable.**	**4:3** Change aspect ratio to 4:3 **Full Screen** Fill screen with panel native aspect ratio.
	Display Mode  1. This function toggles RGB and YUV	**RGB Mode** Set color space to RGB for PC timing mode

	display mode. 2. Show on existing Display Mode setting by red color 3. Key button definition: [1]: Back to previous OSD status [2]: Change to the selected Display Mode setting. [Up]: Scroll up the slider (When push the button on the top position, the slider shall go down to the bottom item) [Dn]: Scroll down the slider (When push the button on the bottom position, the slider shall go up to the top item) 4. Save PC timing and DTV timing setting separately. 5. Default = RGB Mode(VGA&DVI) HDMI is auto detected by Info Frame : YPbPr -> YUV mode, Non-YPbPr -> RGB mode. 7. It will recall to default after AC/DC on/off or mode change.	**YUV Mode** Set color space to YUV for HD timing mode

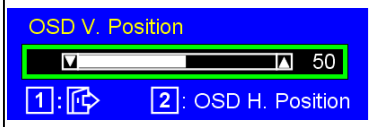
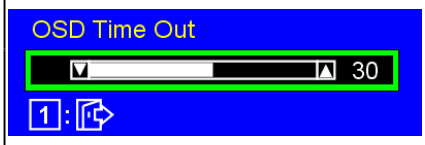
	ECO Mode  1. This function toggles ECO mode. 2. Show on existing ECO Mode setting by red color 3. Key button definition: [1]: Back to previous OSD status [2]: Change to the selected Display Mode setting. [Up]: Scroll up the slider (When push the button on the top position, the slider shall go down to the bottom item) [Dn]: Scroll down the slider (When push the button on the bottom position, the slider shall go up to the top item) 4. Default = Standard **5.** No matter DCR on or off, lamp current will be changed by ECO mode change. **6.** While ECO or DCR setting changed, the lamp current shall be updated to new setting immediately. **7.** Following is the lamp current chart, 8. Under SRGB mode, ECO Mode shall be disabled with gray color. And it should not be selected.	**Standard** **Optimize** **conserve**

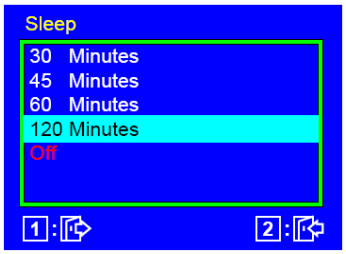
	9.under ECO mode, SRGB could be select and save the contrast and brightness of ECO 10.when adjust brightness and contrast value in current ECO mode , then change ECO mode and return current ECO mode ,the brightness and contrast value will be save 	
Setup Menu  1. Key button definition: [1]: Back to Main Menu OSD [2]: Execute the selected function [Up]: Scroll up the slider (When push the button on the top position, the slider shall go down to the bottom item) [Dn]: Scroll down the slider (When push the button on the bottom position, the slider shall go down to the top item)	**Language Select**  1. Show on existing input port by red color 2. Key button definition: [1]: Back to previous OSD status [2]: Change to the selected language setting [Up]: Scroll up the slider (When push the button on the top position, the slider shall go down to the bottom item	**English** Set OSD language to English and keep in Language Select OSD **French** Set OSD language to French and keep in Language Select OSD **German** Set OSD language to German and keep in Language Select OSD **Spanish** Set OSD language to Spanish and keep in Language Select OSD **Italian** Set OSD language to Italian and keep in Language Select OSD **Finnish** Set OSD language to Finnish and keep in Language Select OSD

<table>
<tr>
<td rowspan="7">2. When move to Resolution Notice / OSD Background / OSD Pivot, the right-bottom side icon will change to “[2]: ☑/☐”</td>
<td rowspan="6">[Dn]: Scroll down the slider
(When push the button on the bottom position, the slider shall go down to the top item</td>
<td>Russian
Set OSD language to Russian and keep in Language Select OSD</td>
</tr>
<tr>
<td>Japanese
Set OSD language to Japanese and keep in Language Select OSD</td>
</tr>
<tr>
<td>Korean
Set OSD language to Korean and keep in Language Select OSD</td>
</tr>
<tr>
<td>Traditional Chinese
Set OSD language to Simplified Chinese and keep in Language Select OSD</td>
</tr>
<tr>
<td>Simplified Chinese
Set OSD language to Traditional Chinese and keep in Language Select OSD</td>
</tr>
<tr>
<td>Resolution Notice
Swap on and off the Resolution Notice function</td>
<td></td>
</tr>
<tr>
<td>OSD Position

Jump to OSD H. Position OSD directly</td>
<td>OSD H. Position
 

1. Adjust range = 0 to 100
2. Default = 50
3. Key button definition:
[1]: Back to Setup Menu OSD
[2]: Change to OSD V. Position OSD
[Up]: Increase the OSD value setting (move OSD right)
[Dn]: Decrease the OSD value setting (move OSD left)
[Up]+[Dn]: Recall to default value</td>
</tr>
</table>

		OSD V. Position  1. Adjust range = 0 to 100 2. Default = 50 3. Key button definition: [1]: Back to Setup Menu OSD [2]: Change to OSD H. Position OSD [Up]: Increase the OSD value setting (move OSD up) [Dn]: Decrease the OSD value setting (move OSD down) [Up]+[Dn]: Recall to default value
	OSD Time Out  1. Adjust range = 5, 15, 30, 60 2. Default = 15 3. Key button definition: [1]: Back to Setup Menu OSD [Up]: Increase the OSD value setting [Dn]: Decrease the OSD value setting [Up]+[Dn]: Recall to default value	**5** Set OSD Time Out to 5 Seconds **15** Set OSD Time Out to 15 Seconds **30** Set OSD Time Out to 30 Seconds **60** Set OSD Time Out to 60 Seconds
	OSD Background Swap on and off the OSD Background ☑ = Non-transparent ☐ = Transparent	

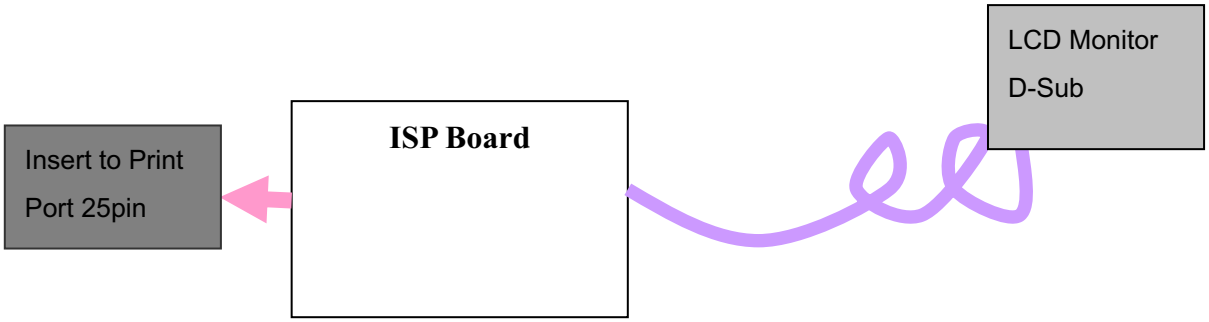
	Sleep  6. Adjust time range before going to sleep mode. Time range = 30, 45, 60, 120 (Minutes) and Off. 7. Default = Off 8. When Sleep mode is triggered, the power of monitor will be turned off. 9. Only active in HDMI Mode (both in AV&PC) 10.when selected item of Sleep，make monitor AC/DC OFF/ON,it will reset to off 11.Key button definition: [1]: Back to previous OSD status [2]: Change to the selected sleep time setting [Up]: Rolling up the slider (When push the button on the top position, the slider shall go down to the bottom item [Dn]: Rolling down the slider (When push the button on the bottom position, the slider shall go down to the top item	**30 Minutes** Set time before going to Sleep mode = 30 Minutes **45 Minutes** Set time before going to Sleep mode = 45 Minutes **60 Minutes** Set time before going to Sleep mode = 60 Minutes **120 Minutes** Set time before going to Sleep mode = 120 Minutes **Off** Disable Sleep mode.
Memory Recall  1. Background = blanking 2. Recall white balance to factory setting 3. Recall all the OSD setting to the default. (include the R/G/B in User Color) 4. Show the message OSD position is		

at the center for 3 seconds. 5. Clean FIFO timing mode buffer 6. Execute Auto Image Adjust Note: Memory Recall should not effect on Language, Power Lock Settings or Input Priority		

The On-Screen Display (OSD) shall be an easy to use icon based menu through keypad OSD buttons or remote control unit. The unit shall leave the factory with all OSD controls set to their default values.

5.7 Upload firmware to MCU via VGA Cable

5.7.1 Connect ISP board between monitor and PC as below configure

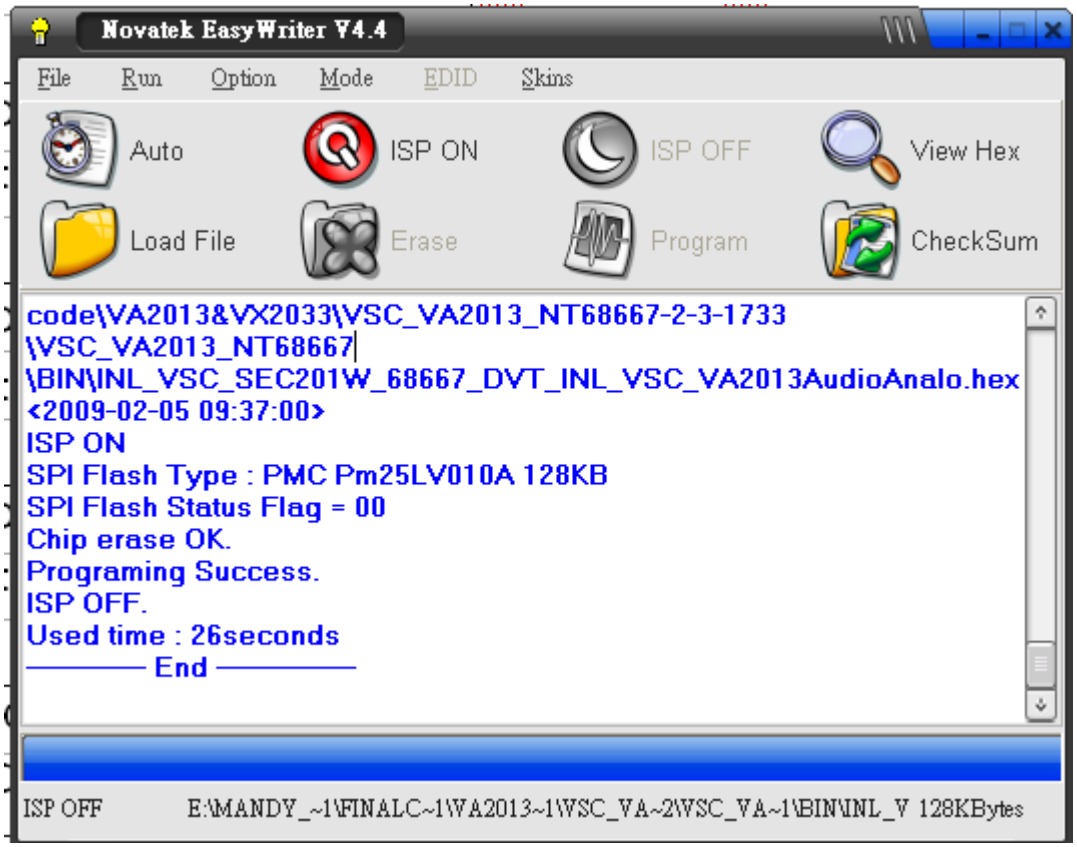


5.7.2 Using Novatek ISP Tool Update FW:

(1).Select “ISP”, Choose the corresponding firmware, load to MCU.

(2).Choose the corresponding firmware, load to MCU, Select “Run”, start ISP.

(3).When the picture show “End”, ISP finished.

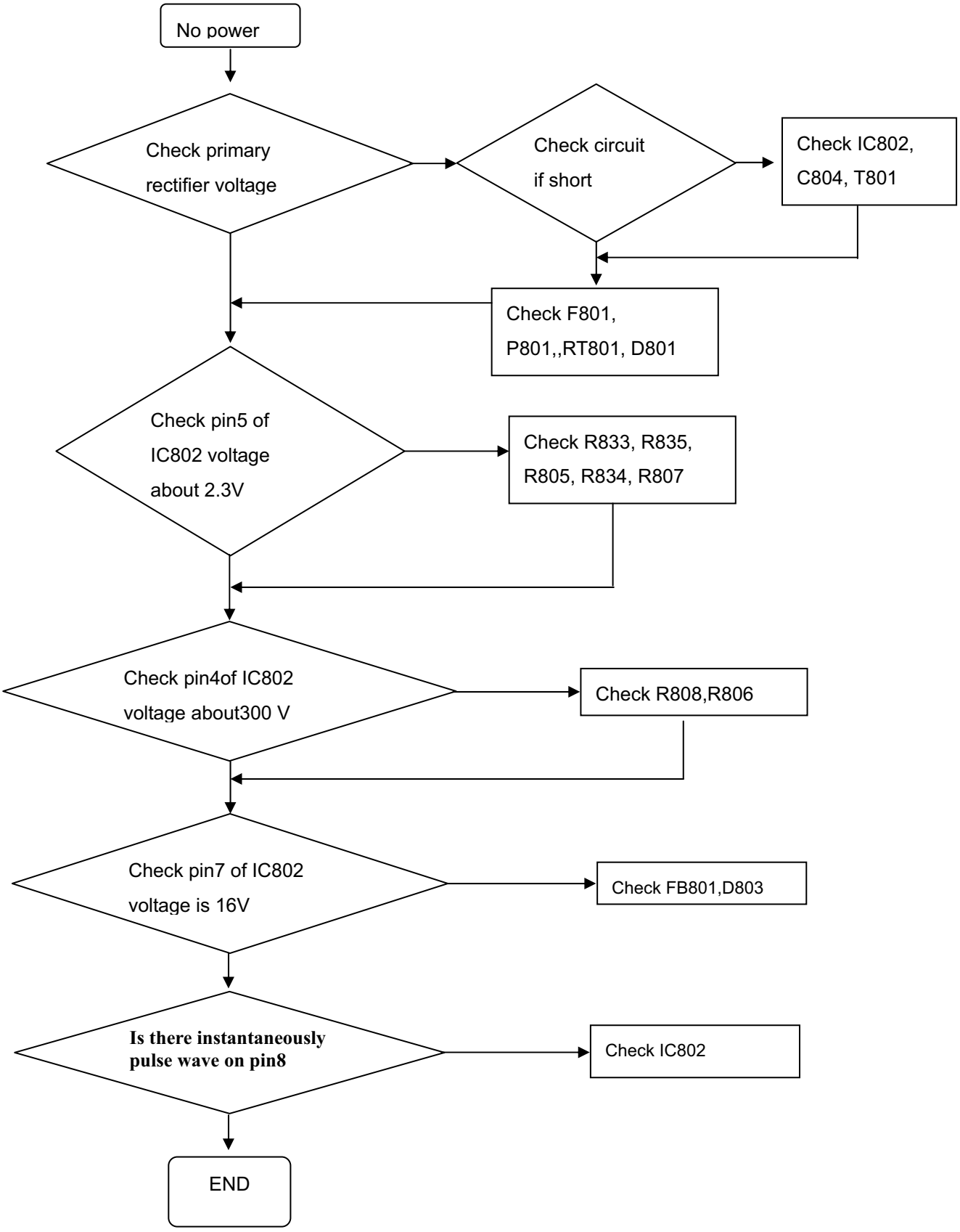


6. Troubleshooting Flow Chart

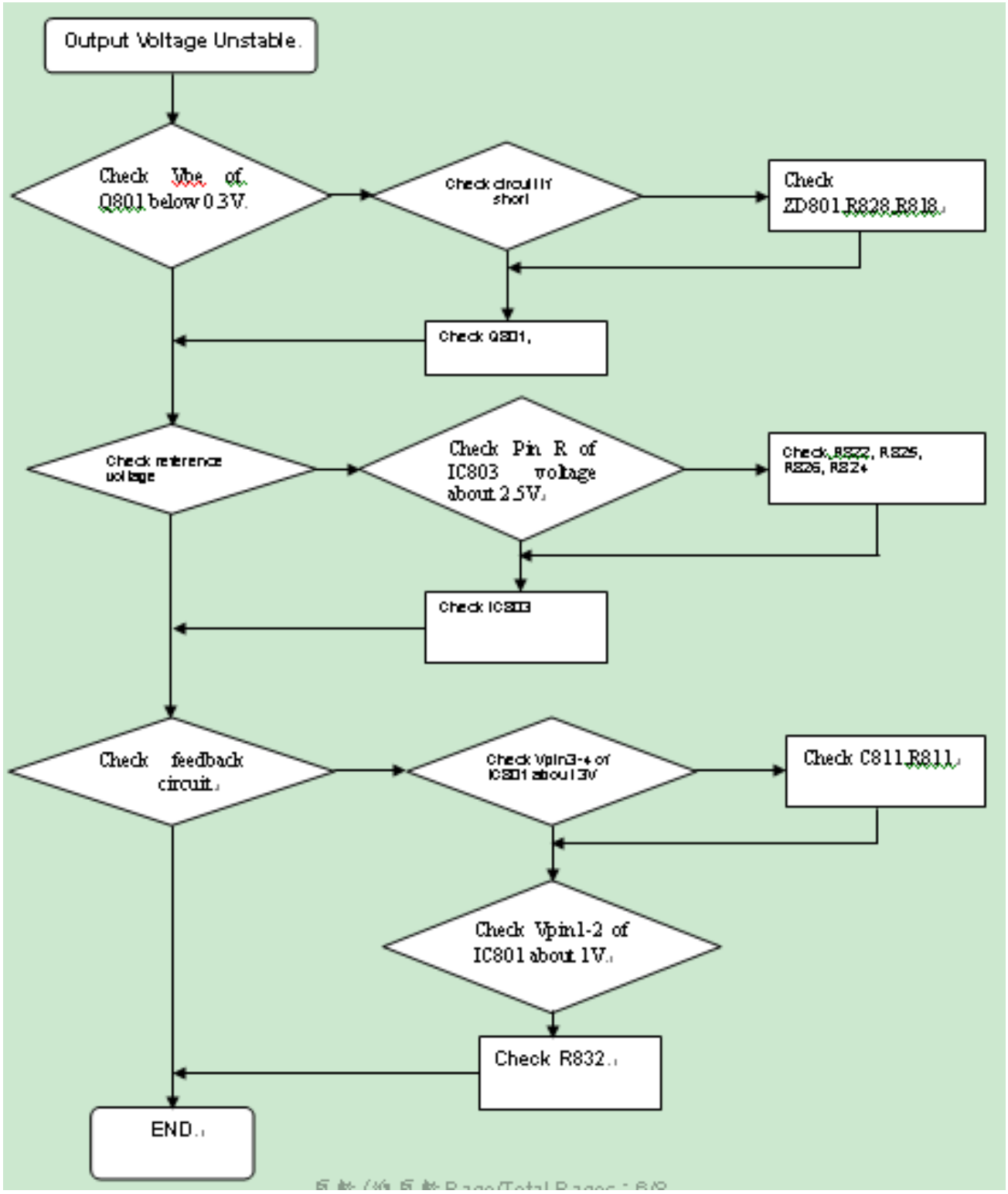
6.1 Common Acknowledge

- If you change the interface board, be sure that the U101, U103, U104 and U105 these four components also changed to the new I/F board because there was program inside. If not, please re-write EDID and upload firmware into U101 via VGA Cable.
- If you adjust clock and phase, please do it at the condition of Windows shut down pattern.
- If you confirm the R.G.B. color is normal or not, please do it under 16-grey scalar pattern.
- This LCM is analog interface. So if the entire screen is an abnormal color that means the problem happen in the analog circuit part, if only some scale appears abnormal color that stand the problem happen in the digital circuit part.
- If you check the H/V position, please use the crosshatch pattern.
- This LCM support more than 30 timing modes, if the input timing mode is out of specification, the picture may appears abnormally.
- If brightness uneven, repairs Inverter circuit or change a new panel.
- If you find the vertical line or horizontal line lost on the screen, please change panel.
- If you find the speaker don't working, please don't plug in audio cable, unless change new speaker.

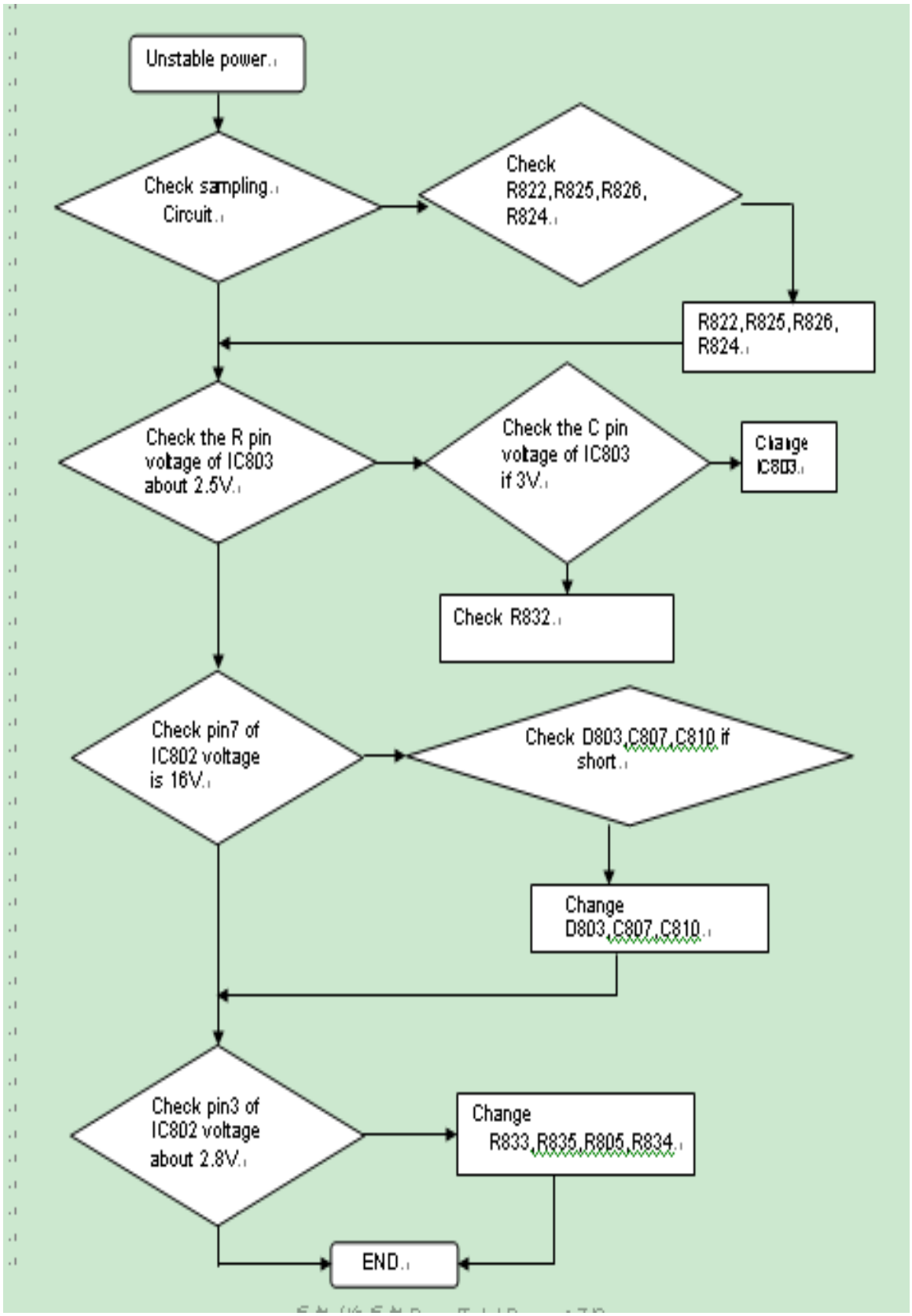
6.2 No Power & Power LED Off



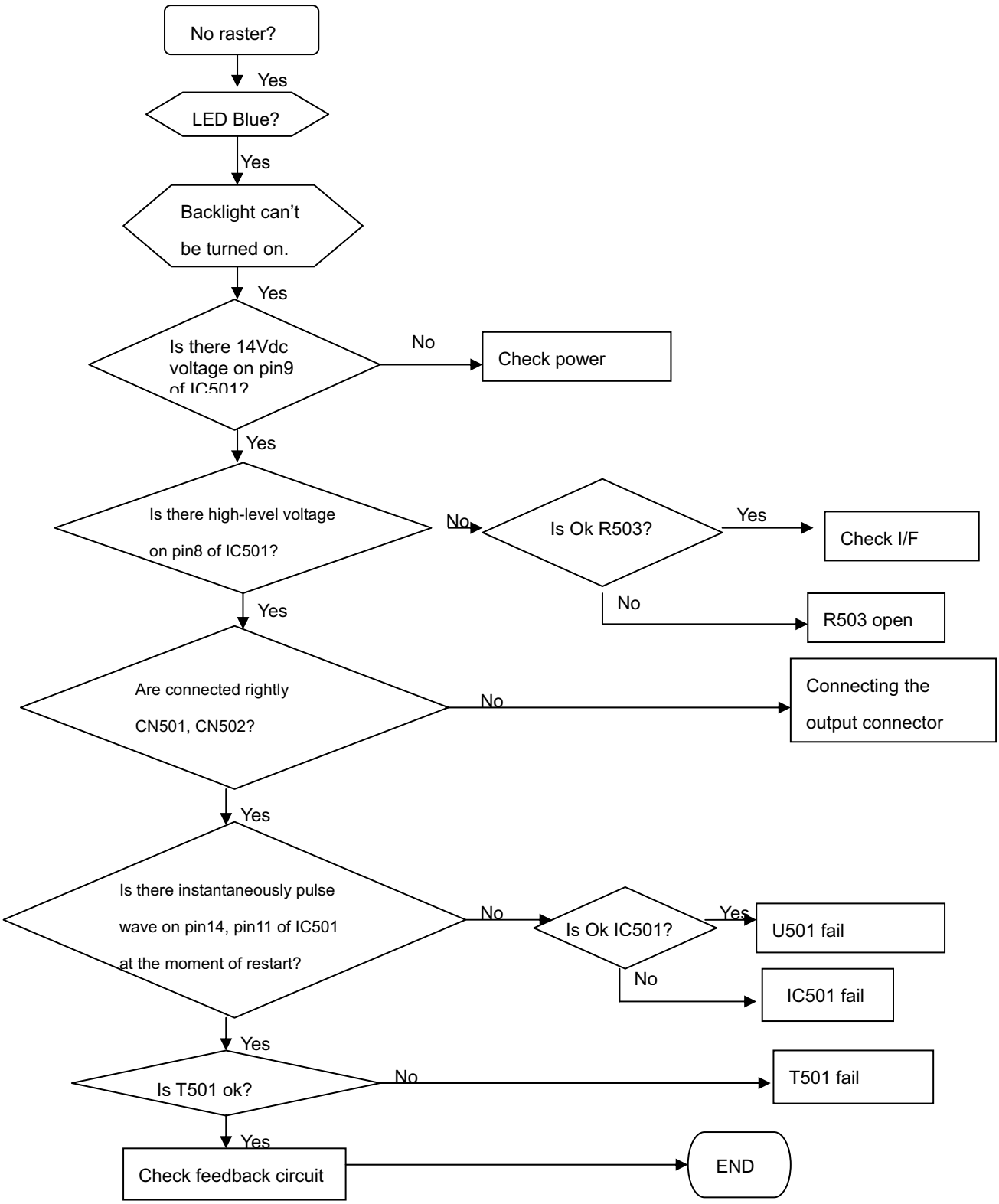
6.3 DC output voltage is unstable



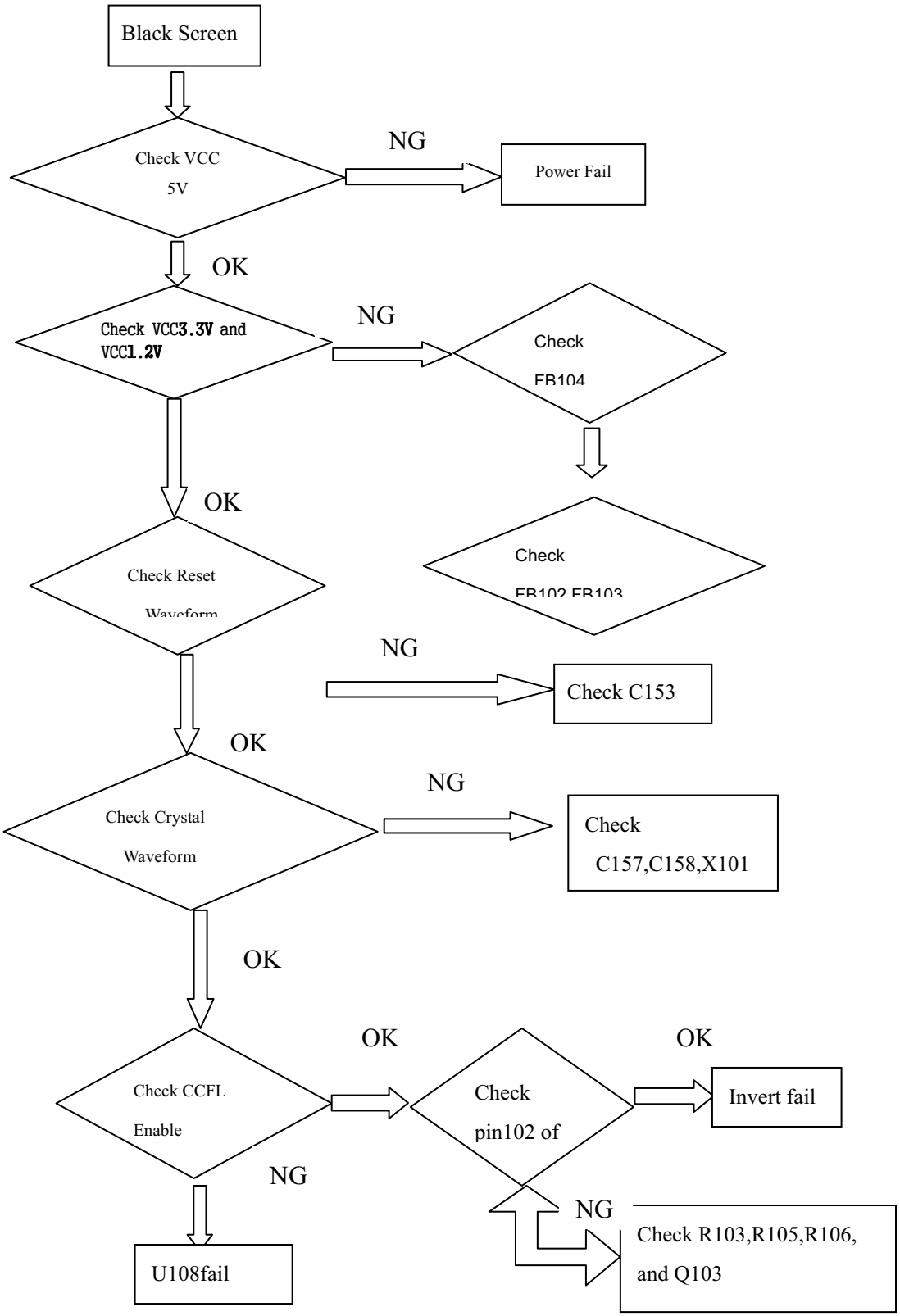
6.4 Output power is unstable



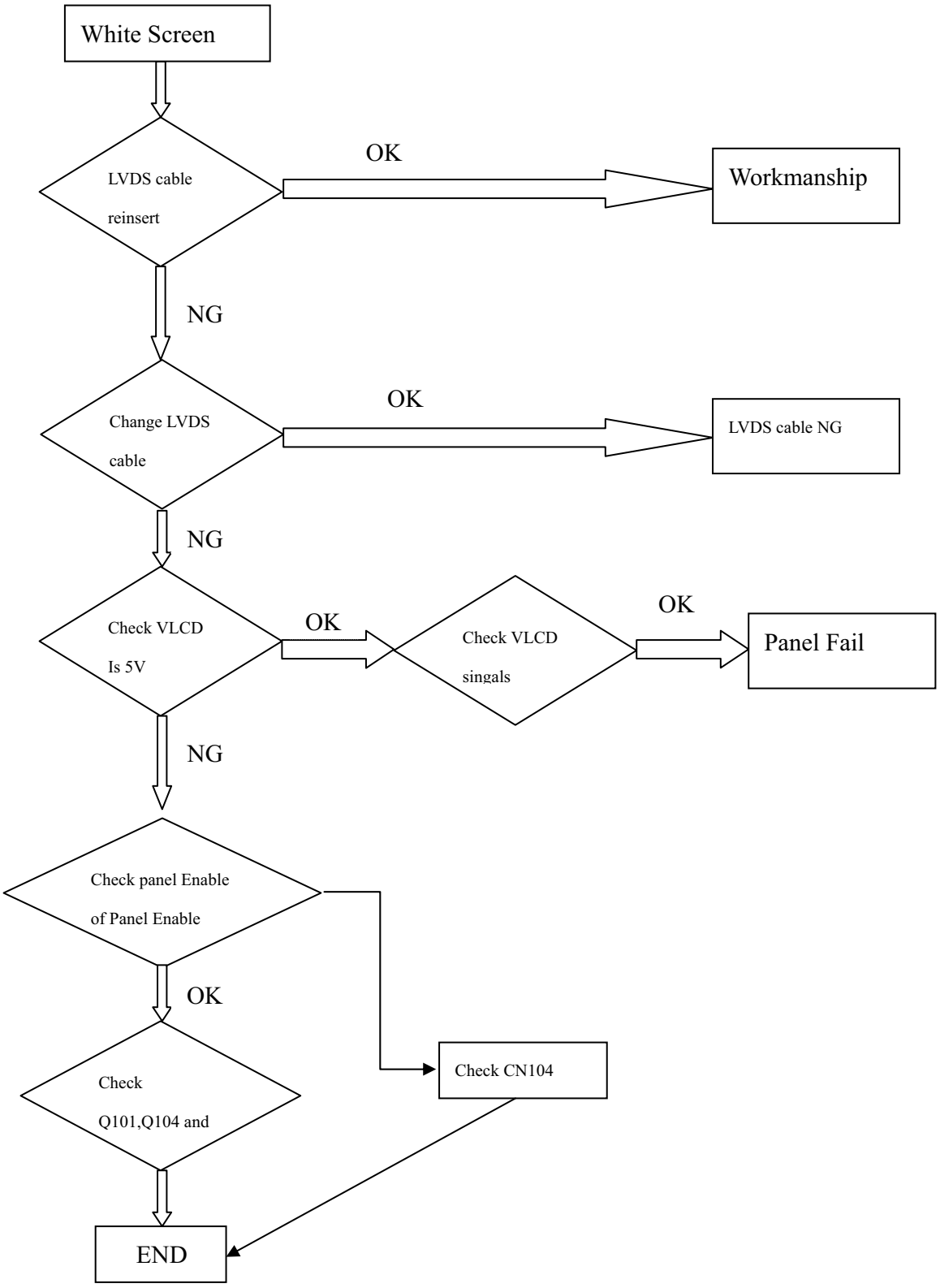
6.5 Backlight can't be turned on



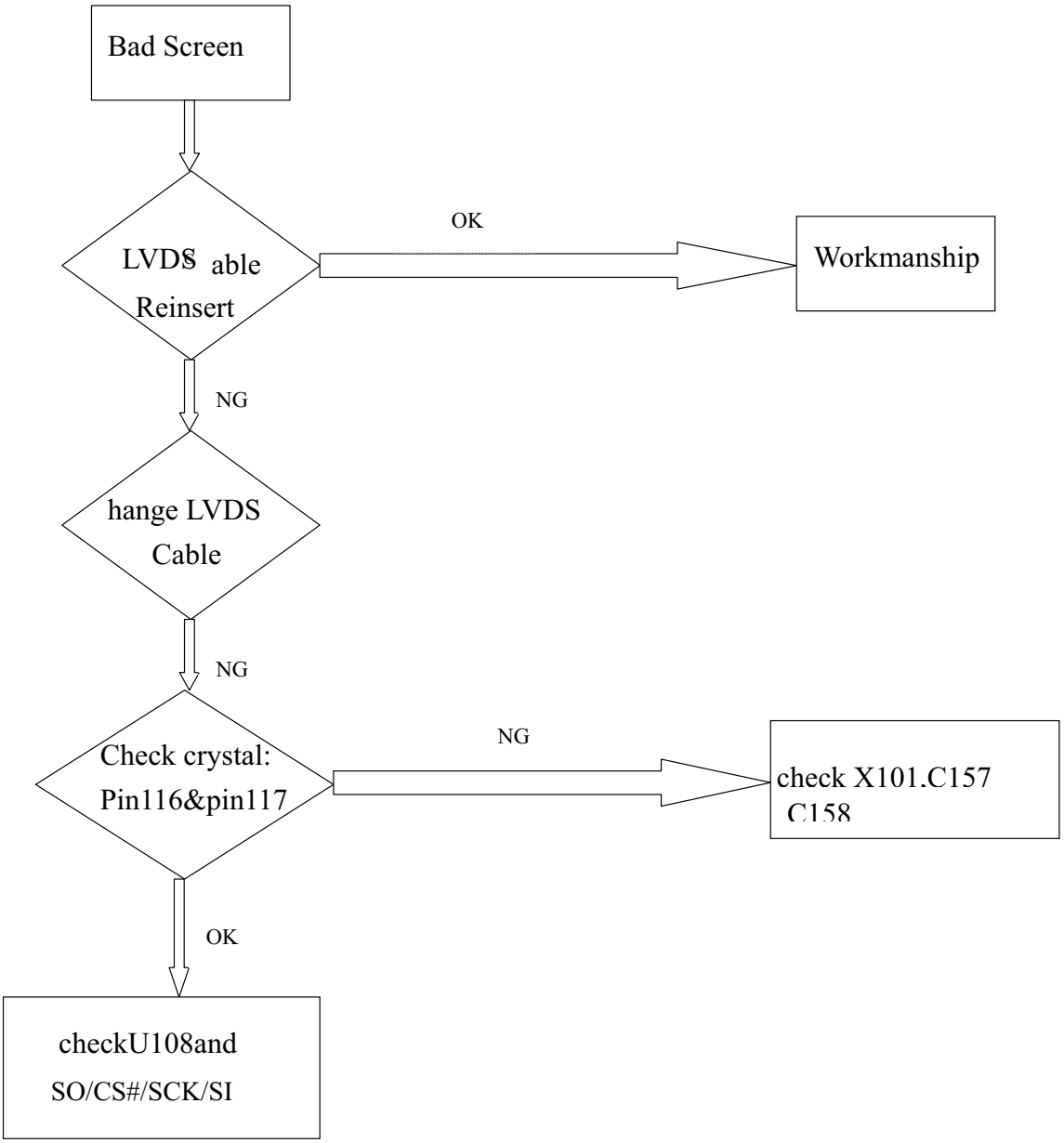
6.6 Black Screen and backlight turn on



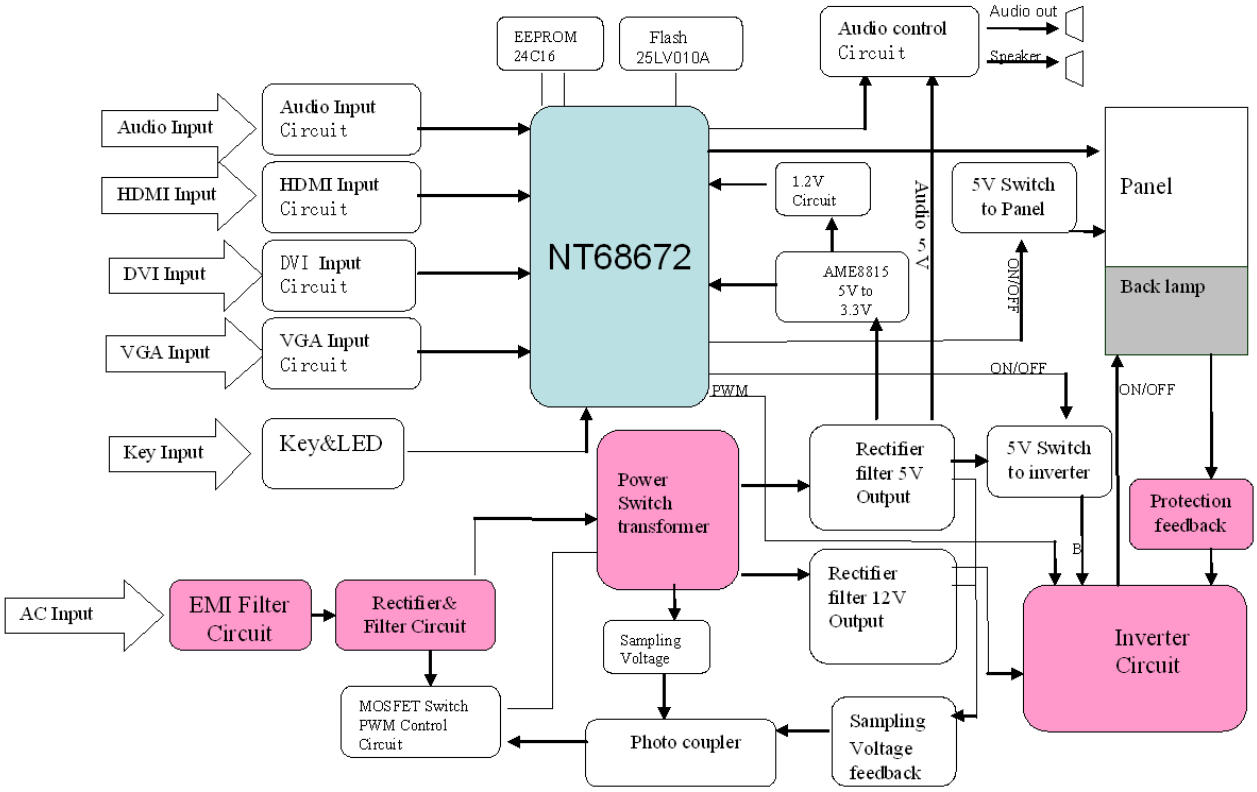
6.7 White Screen



6.8 Bad Screen

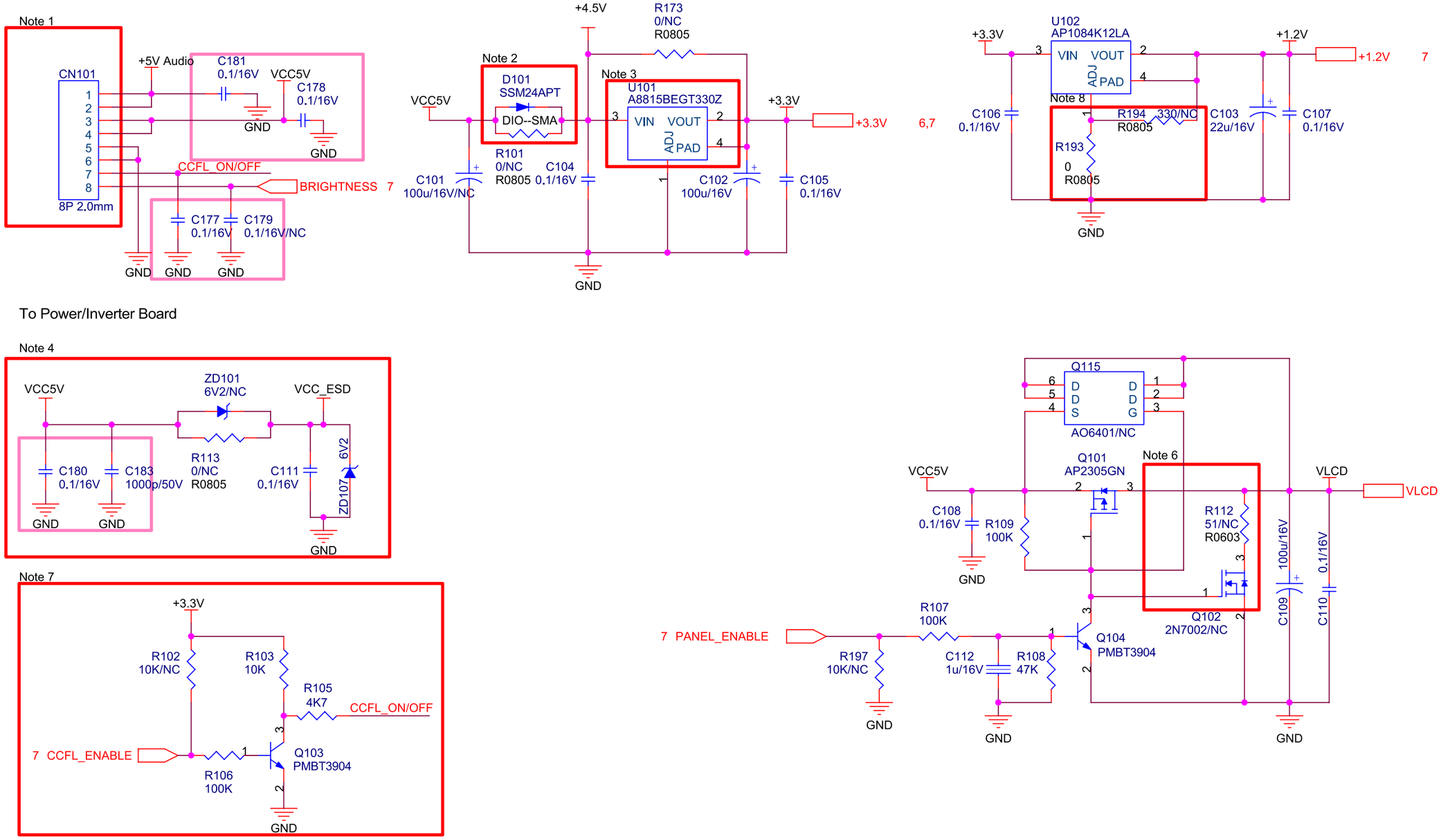


7. Block Diagram



8. Schematic Diagrams

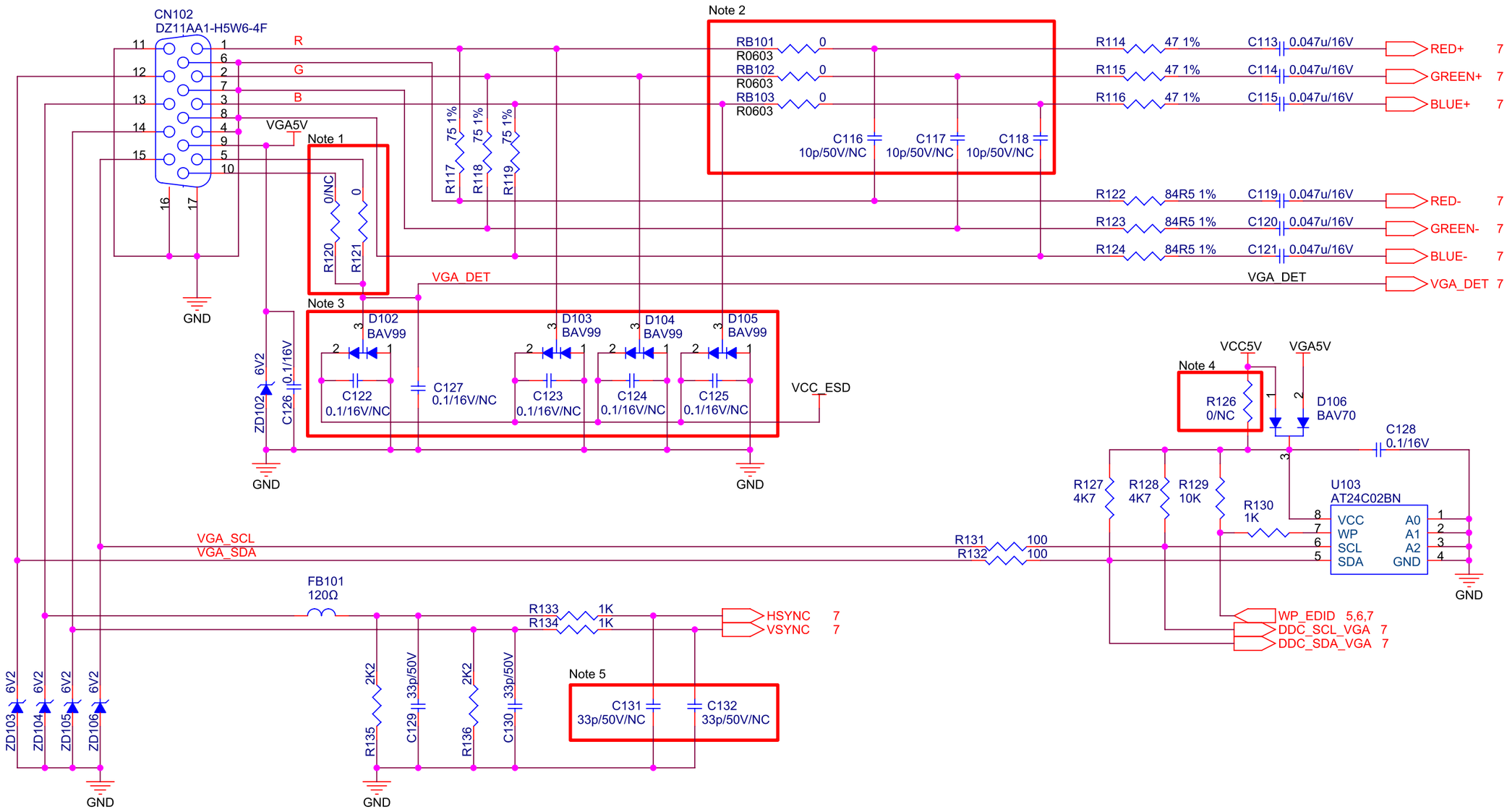
POWER (DC TO DC)



Note:

1. CN101 is no locked packgae for normal model.CN101 is locked packgae for special model(Dell).
2. D101 must be co-layed with R101
3. U101 must contain TO263, TO252 and SOT223 package
4. ZD101 must be co-layed with R113. ZD101 is used for ESD back drive.Reserved C111 for EMI issue. ZD107 must be builded in BOM For ESD Protect.
5. Be reserved for internal EDID solution option.
6. For some one panel.
7. For P/I board backlight high Enable
8. For 1.35V DFR, R193=37

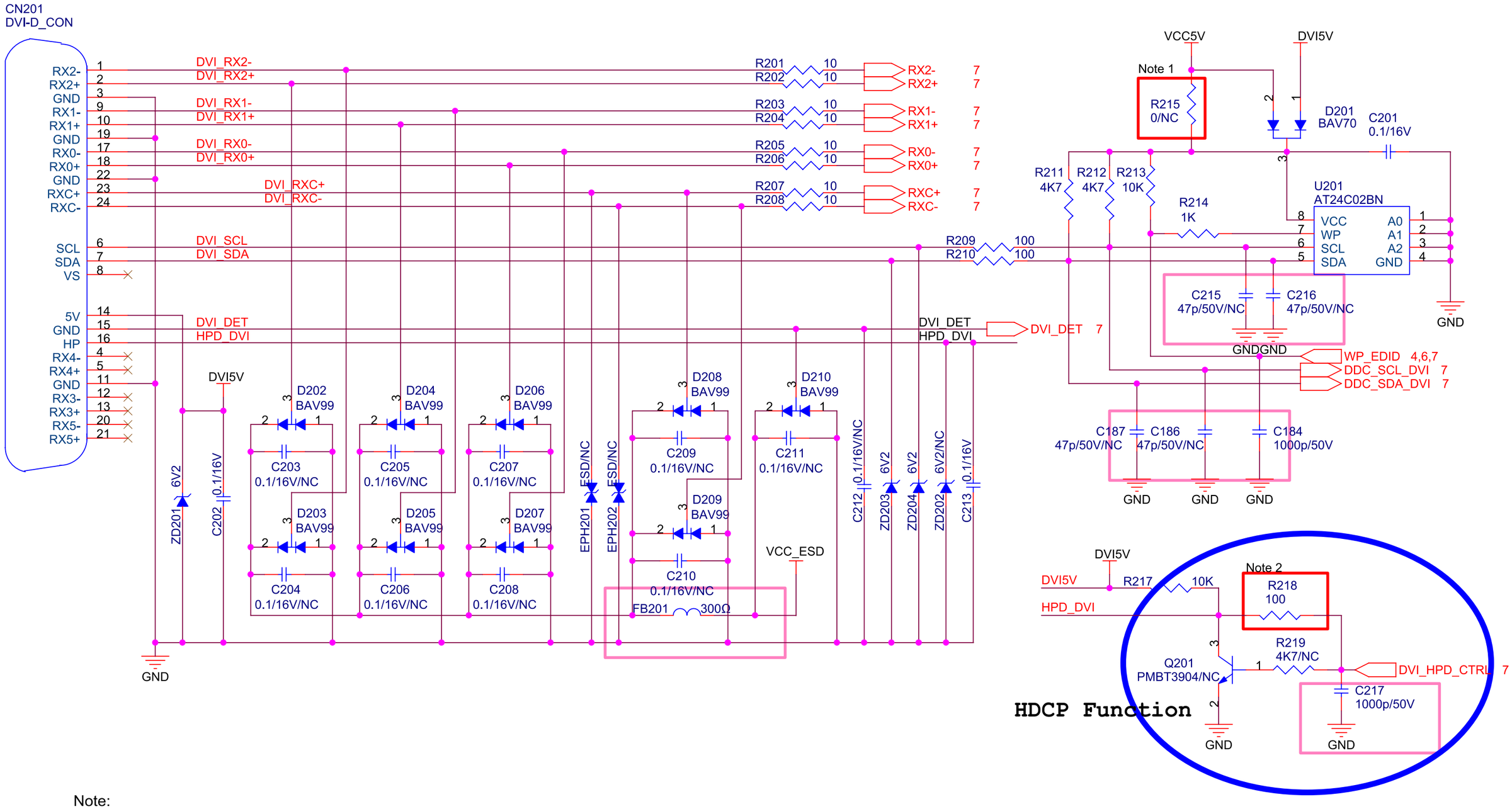
VGA-INPUT



Note:

1. R120 is reserved for Samsung model.
2. R0603 package for Bead. C116,C117,C118 are reserved for EMI or performance issue.
3. C122,C123,C124,C125 are reserved for ESD or EMI issue.
4. R126 is reserved for Samsung model.
5. C131,C132 are reserved for tuning performance issue.

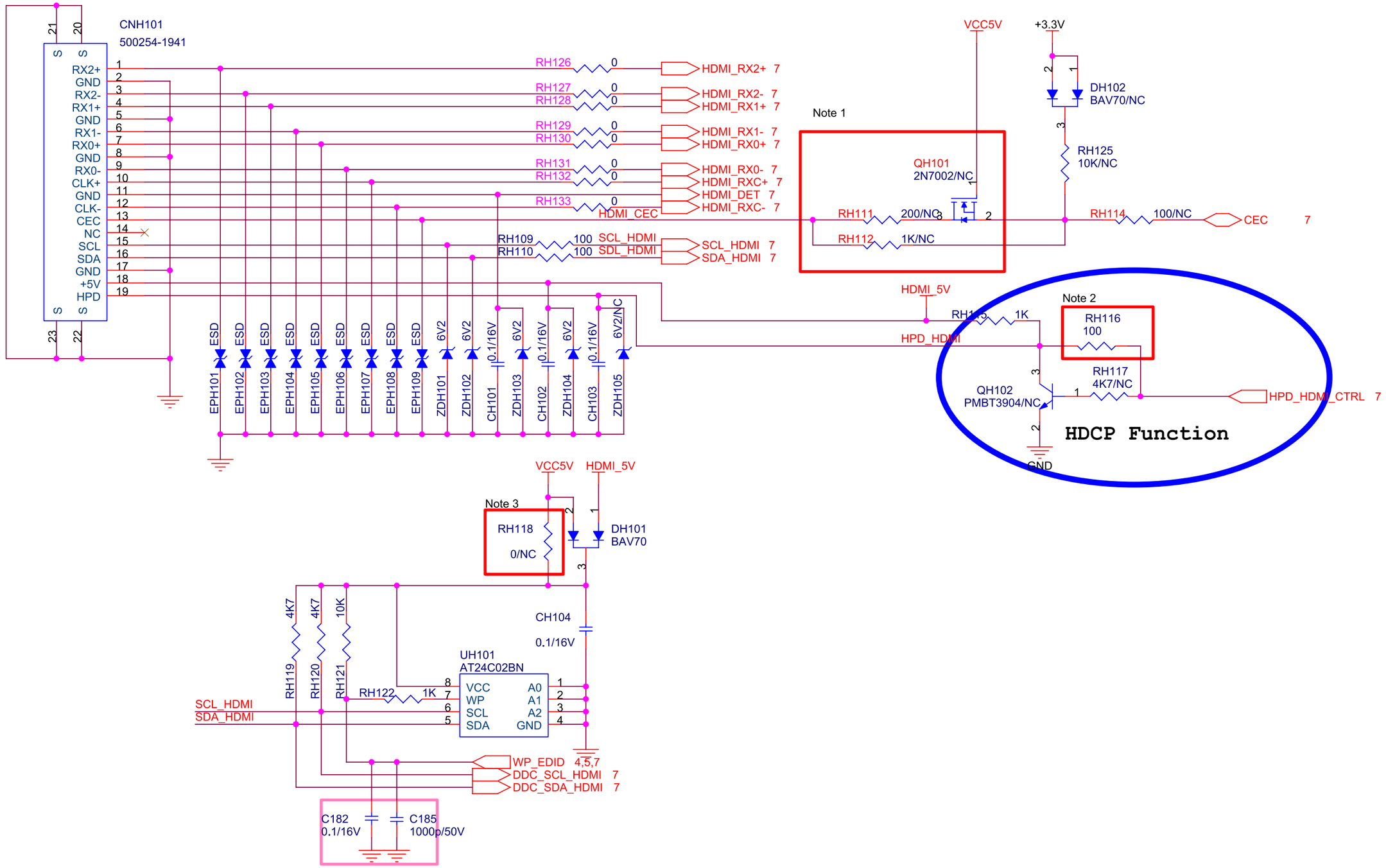
DVI-INPUT



Note:

1. R215 is reserved for Samsung model.
2. R218 is reserved for some model.

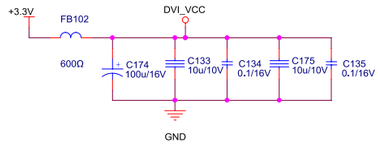
HDMI-INPUT

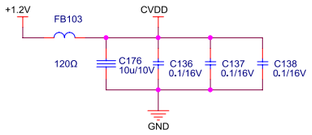


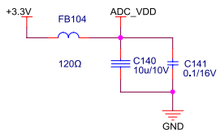
Note:

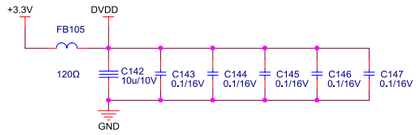
1. RH111 is reserved for CEC current leakage.
2. RH116 is reserved for some model.
3. RH118 is reserved for Samsung model.

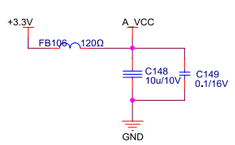
SCALER

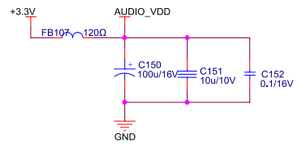

+3.3V
FB102
DVI_VCC
600Ω
C174 100u/16V
C133 10u/10V
C134 0.1/16V
C175 10u/10V
C135 0.1/16V
GND

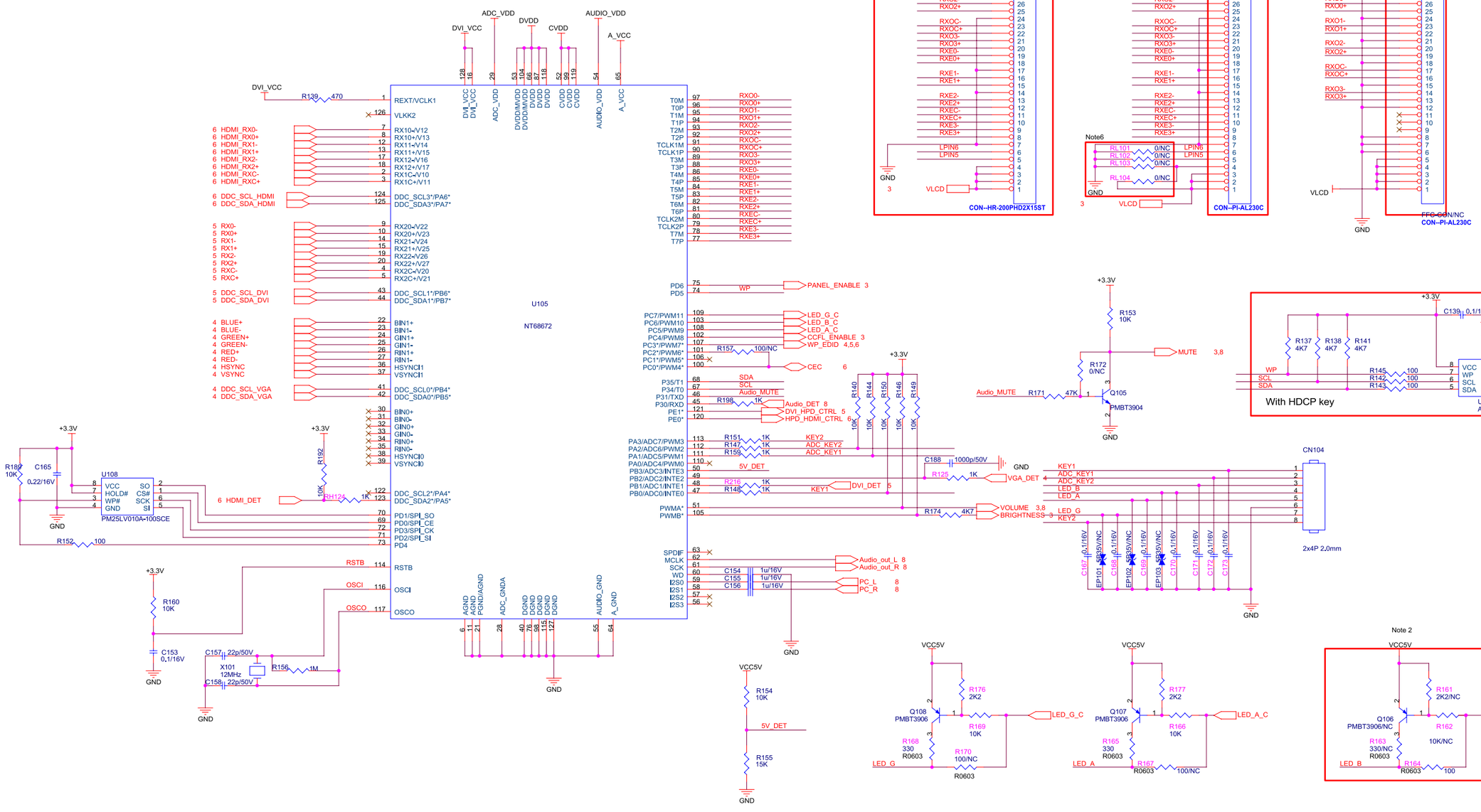

+1.2V
FB103
CVDD
120Ω
C176 10u/10V
C136 0.1/16V
C137 0.1/16V
C138 0.1/16V
GND


+3.3V
FB104
ADC_VDD
120Ω
C140 10u/10V
C141 0.1/16V
GND

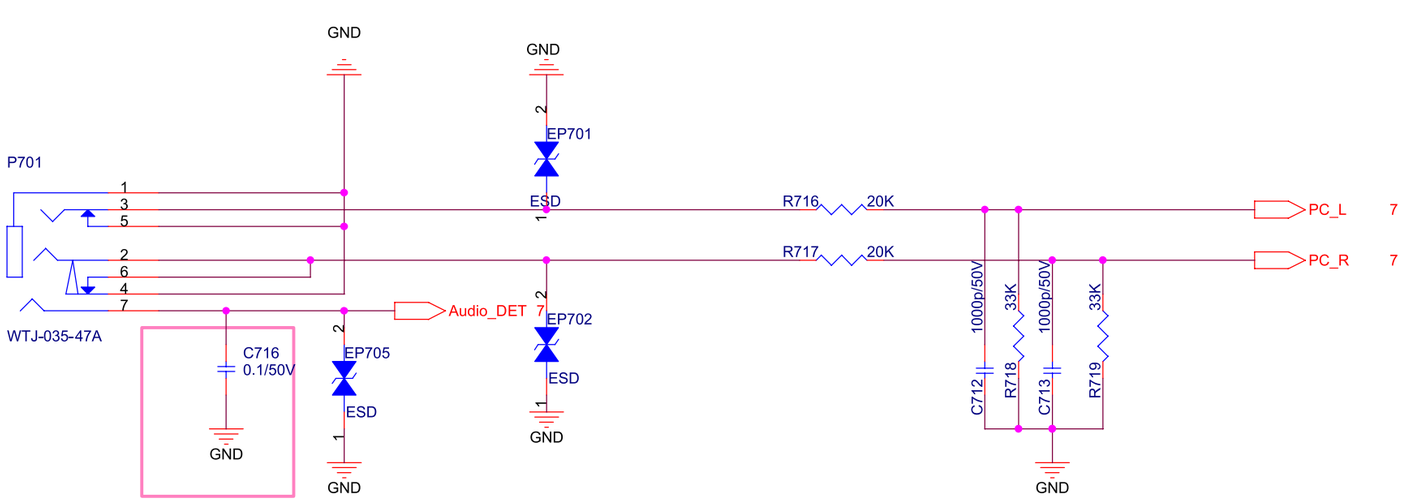

+3.3V
FB105
DVDD
120Ω
C142 10u/10V
C143 0.1/16V
C144 0.1/16V
C145 0.1/16V
C146 0.1/16V
C147 0.1/16V
GND

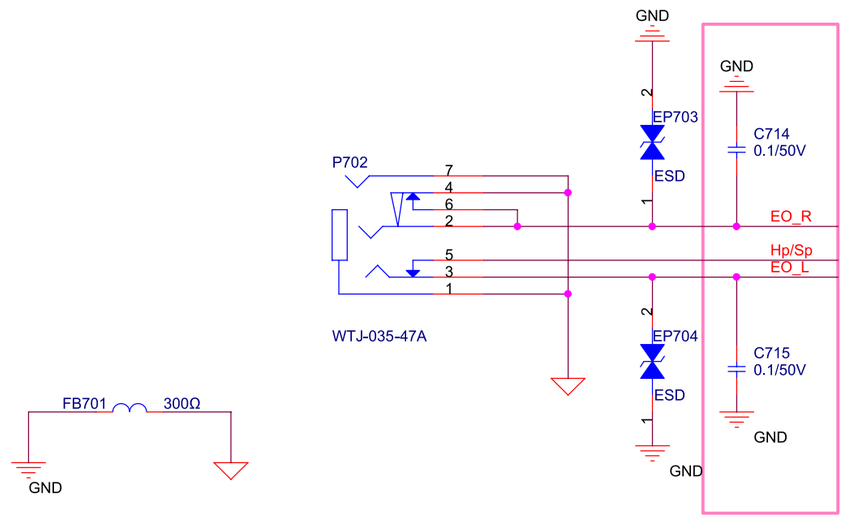

+3.3V
FB106 120Ω
A_VCC
C148 10u/10V
C149 0.1/16V
GND


+3.3V
FB107 120Ω
AUDIO_VDD
C150 100u/16V
C151 10u/10V
C152 0.1/16V
GND

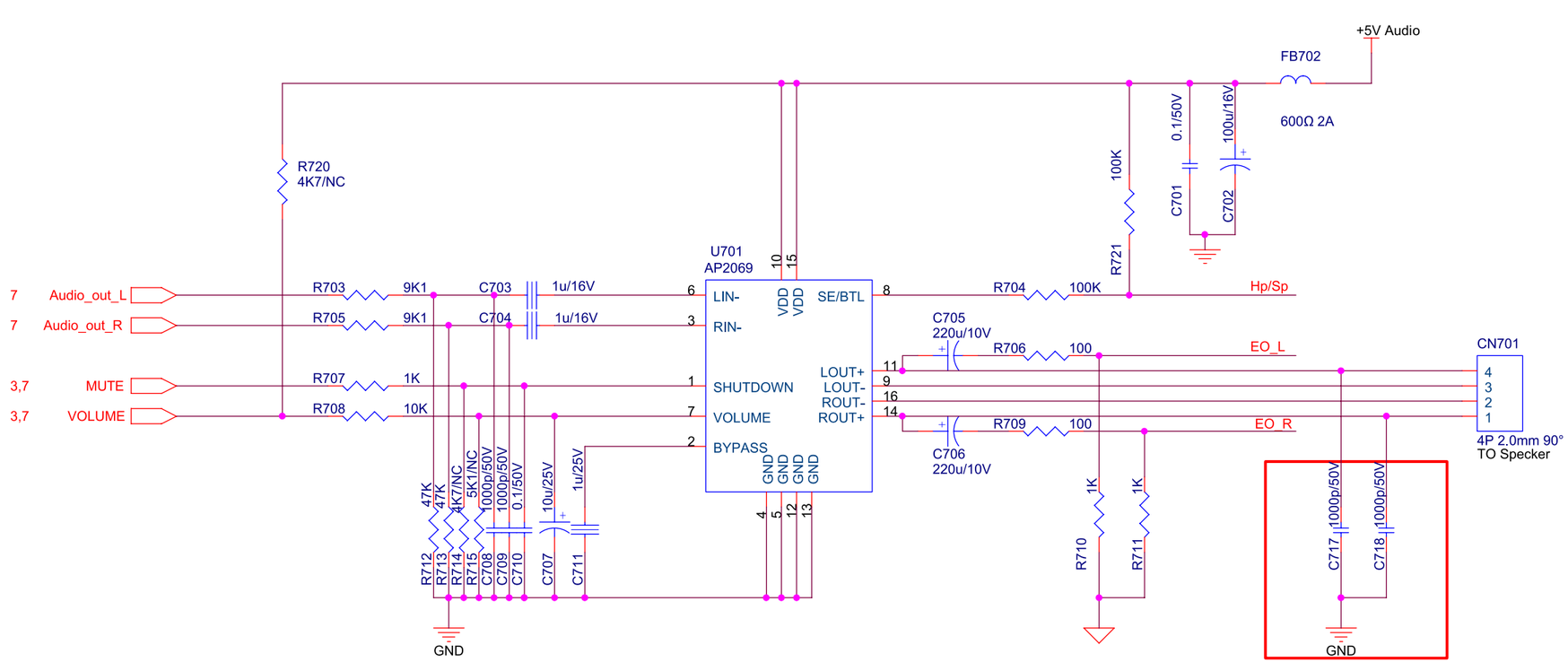

For 24" or 26" Model.
CN107
FFC-CON/NC
CON-HR-200PHD2X15ST
Note8
CN103
FFC-CON
CON-PI-AL230C
Note6
For 18.5" Model.
CN105
FFC-CON/NC
CON-PI-AL230C
U105
NT68672
ADC_VDD
DVDD
CVDD
AUDIO_VDD
DVI_VCC
A_VCC
REXT/VCLK1
VLKK2
RX10-/V12
RX10+/V13
RX11-/V14
RX11+/V15
RX12-/V16
RX12+/V17
RX1C-/V10
RX1C+/V11
DDC_SCL3*/PA6*
DDC_SDA3*/PA7*
RX20-/V22
RX20+/V23
RX21-/V24
RX21+/V25
RX22-/V26
RX22+/V27
RX2C-/V20
RX2C+/V21
DDC_SCL1*/PB6*
DDC_SDA1*/PB7*
BIN1+
BIN1-
GIN1+
GIN1-
RIN1+
RIN1-
HSYNCI1
VSYNCI1
DDC_SCL0*/PB4*
DDC_SDA0*/PB5*
BIN0+
BIN0-
GIN0+
GIN0-
RIN0+
RIN0-
HSYNCI0
VSYNCI0
DDC_SCL2*/PA4*
DDC_SDA2*/PA5*
PD1/SPI_SO
PD0/SPI_CE
PD3/SPI_CK
PD2/SPI_SI
PD4
RSTB
OSCI
OSCO
T0M
T0P
T1M
T1P
T2M
T2P
TCLK1M
TCLK1P
T3M
T3P
T4M
T4P
T5M
T5P
T6M
T6P
TCLK2M
TCLK2P
T7M
T7P
RXO0-
RXO0+
RXO1-
RXO1+
RXO2-
RXO2+
RXOC-
RXOC+
RXO3-
RXO3+
RXE0-
RXE0+
RXE1-
RXE1+
RXE2-
RXE2+
RXEC-
RXEC+
RXE3-
RXE3+
PD6
PD5
WP
PANEL_ENABLE
PC7/PWM11
PC6/PWM10
PC5/PWM9
PC4/PWM8
PC3*/PWM7*
PC2*/PWM6*
PC1*/PWM5*
PC0*/PWM4*
LED_G_C
LED_B_C
LED_A_C
CCFL_ENABLE
WP_EDID
CEC
P35/T1
P34/T0
P31/TXD
P30/RXD
PE1*
PE0*
SDA
SCL
Audio_MUTE
Audio_DET
DVI_HPD_CTRL
HPD_HDMI_CTRL
PA3/ADC7/PWM3
PA2/ADC6/PWM2
PA1/ADC5/PWM1
PA0/ADC4/PWM0
PB3/ADC3/INTE3
PB2/ADC2/INTE2
PB1/ADC1/INTE1
PB0/ADC0/INTE0
KEY2
ADC_KEY2
ADC_KEY1
KEY1
DVI_DET
5V_DET
PWMA*
PWMB*
VOLUME
BRIGHTNESS
VGA_DET
SPDIF
MCLK
SCK
WD
I2S0
I2S1
I2S2
I2S3
Audio_out_L
Audio_out_R
PC_L
PC_R
AGND
PGND/AGND
ADC_GNDA
DGND
AUDIO_GND
A_GND
U108
PM25LV010A-100SCE
HDMI_DET
X101
12MHz
MUTE
Q105
PMBT3904
Audio_MUTE
With HDCP key
U106
AT24C16AN
CN104
2x4P 2.0mm
Q108
PMBT3906
LED_G
Q107
PMBT3906
LED_A
Q106
PMBT3906/NC
LED_B
VCC5V
GND
VLCD

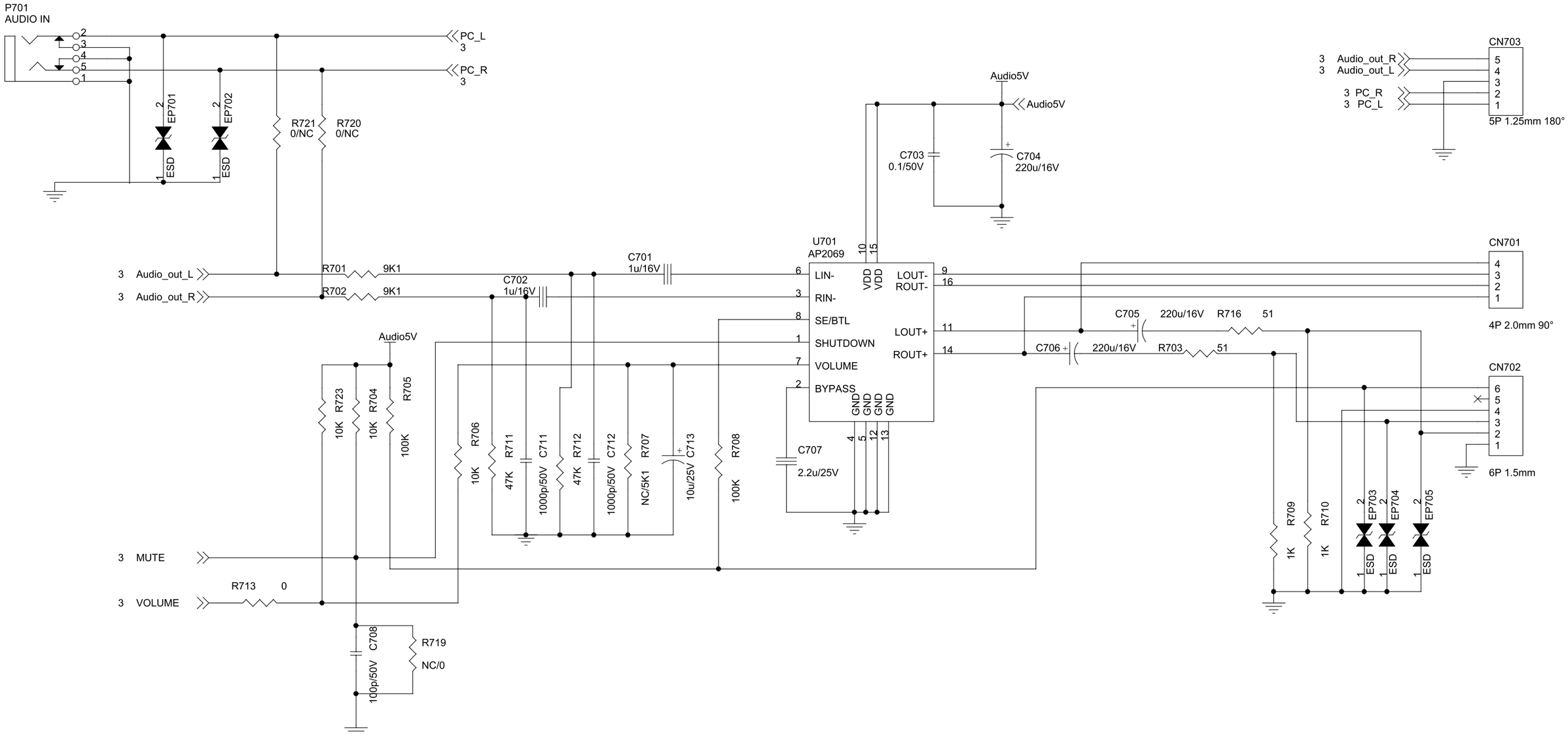
AUDIO


P701
WTJ-035-47A
GND
C716
0.1/50V
EP705
ESD
EP701
EP702
Audio_DET 7
R716 20K
R717 20K
PC_L 7
PC_R 7
1000p/50V
33K
C712
R718
C713
R719

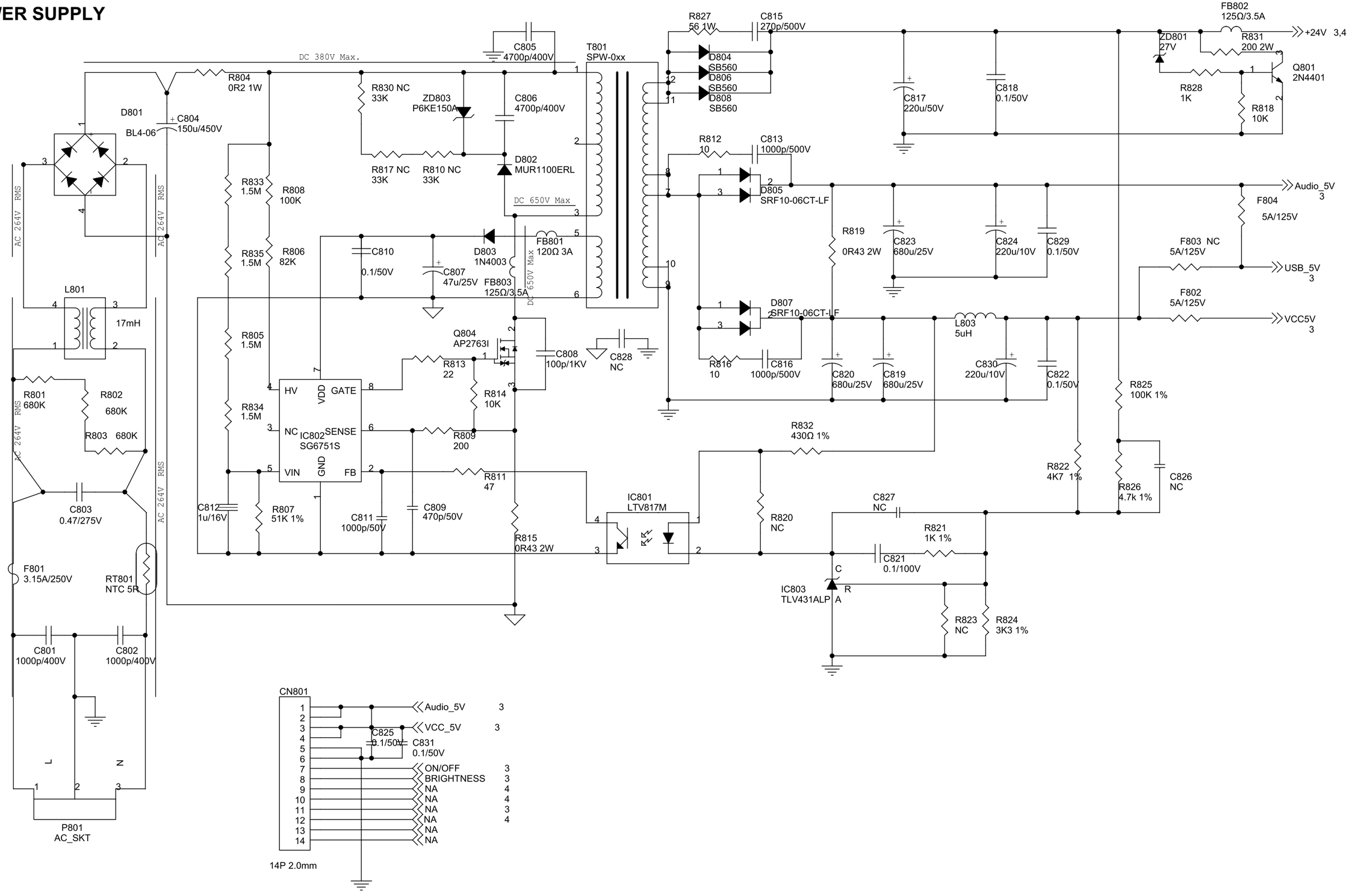

P702
WTJ-035-47A
EP703
EP704
ESD
C714
0.1/50V
C715
0.1/50V
EO_R
Hp/Sp
EO_L

FB701
300Ω
GND

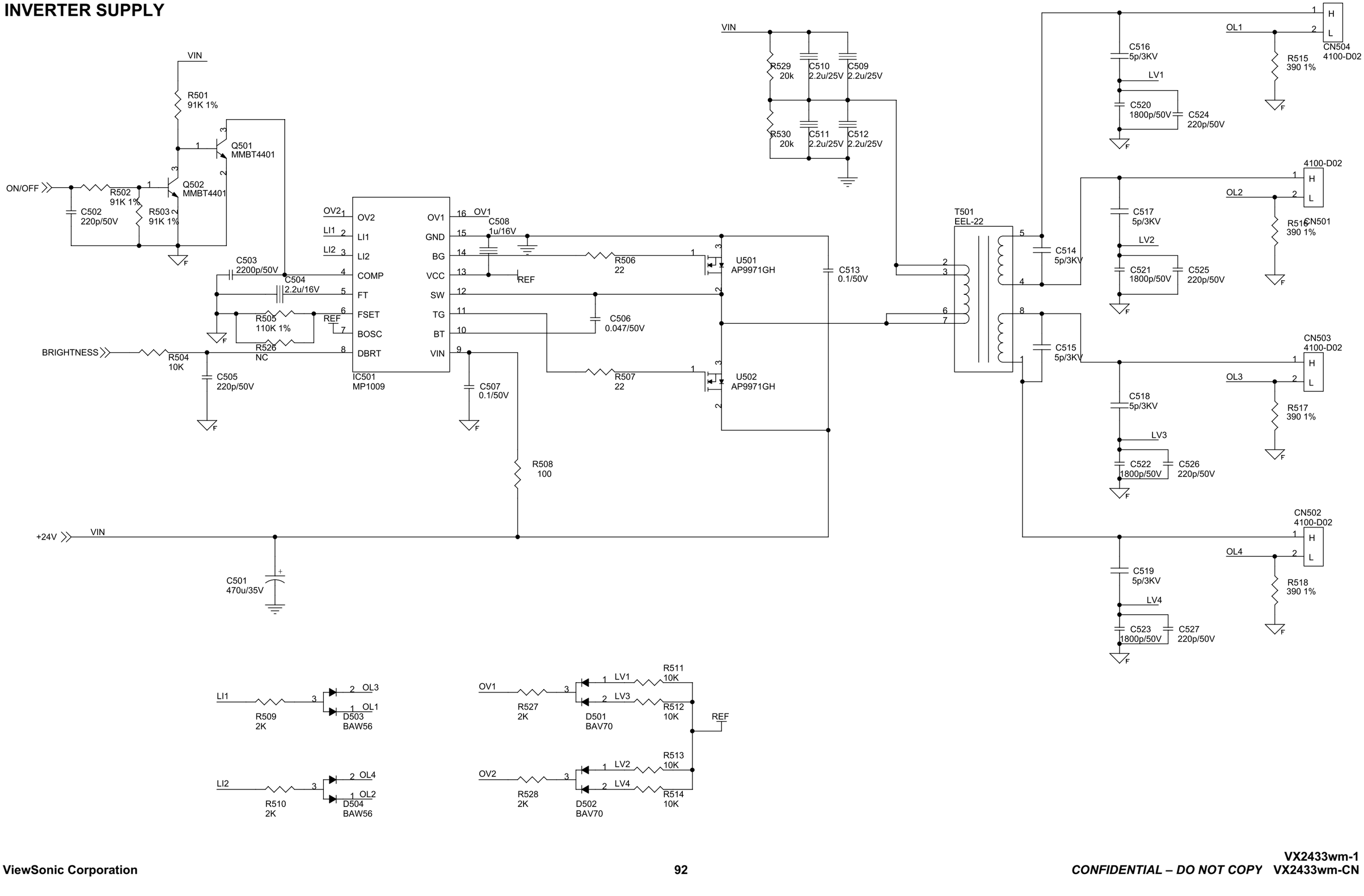

+5V Audio
FB702
600Ω 2A
R720
4K7/NC
U701
AP2069
LIN-
RIN-
SHUTDOWN
VOLUME
BYPASS
SE/BTL
LOUT+
LOUT-
ROUT-
ROUT+
VDD
GND
7 Audio_out_L
7 Audio_out_R
3,7 MUTE
3,7 VOLUME
R703 9K1
R705 9K1
R707 1K
R708 10K
C703 1u/16V
C704 1u/16V
R704 100K
R721 100K
C701 0.1/50V
C702 100u/16V
C705 220u/10V
C706 220u/10V
R706 100
R709 100
EO_L
EO_R
Hp/Sp
CN701
4P 2.0mm 90°
TO Specker
R710 1K
R711 1K
C717 1000p/50V
C718 1000p/50V
R712 47K
R713 47K
R714 4K7/NC
R715 5K1/NC
C708 1000p/50V
C709 1000p/50V
C710 0.1/50V
C707 10u/25V
C711 1u/25V


P701
AUDIO IN
PC_L
PC_R
EP701
EP702
ESD
R721 0/NC
R720 0/NC
Audio5V
C703 0.1/50V
C704 220u/16V
CN703
Audio_out_R
Audio_out_L
PC_R
PC_L
5P 1.25mm 180°
U701
AP2069
VDD
LOUT-
ROUT-
LOUT+
ROUT+
LIN-
RIN-
SE/BTL
SHUTDOWN
VOLUME
BYPASS
GND
C701 1u/16V
C702 1u/16V
R701 9K1
R702 9K1
C705 220u/16V
R716 51
C706 220u/16V
R703 51
CN701
4P 2.0mm 90°
CN702
6P 1.5mm
R723 10K
R704 10K
R705 100K
R706 10K
R711 47K
C711 1000p/50V
R712 47K
C712 1000p/50V
R707 NC/5K1
C713 10u/25V
R708 100K
C707 2.2u/25V
R709 1K
R710 1K
EP703
EP704
EP705
MUTE
VOLUME
R713 0
C708 100p/50V
R719 NC/0

POWER SUPPLY



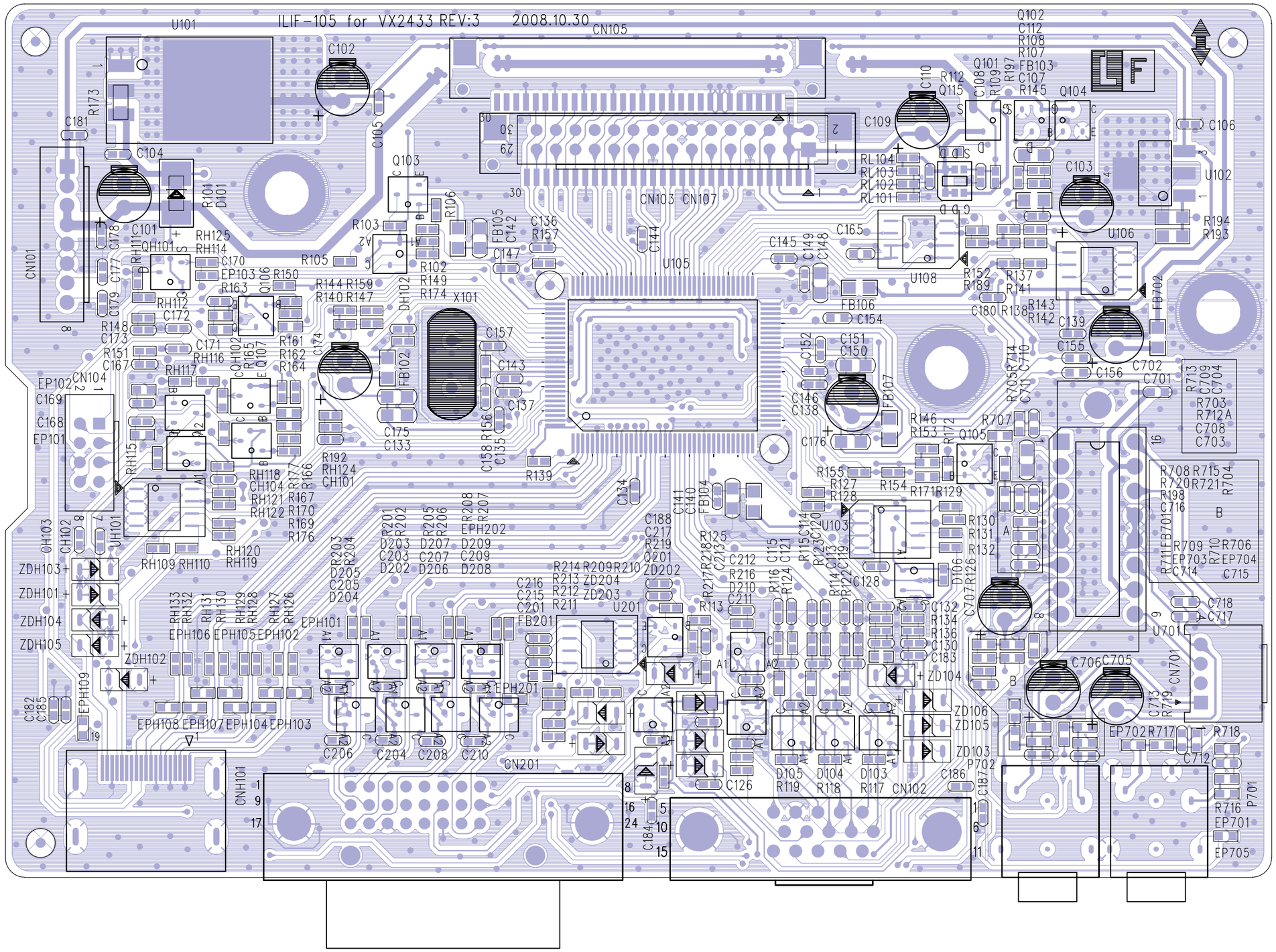
INVERTER SUPPLY



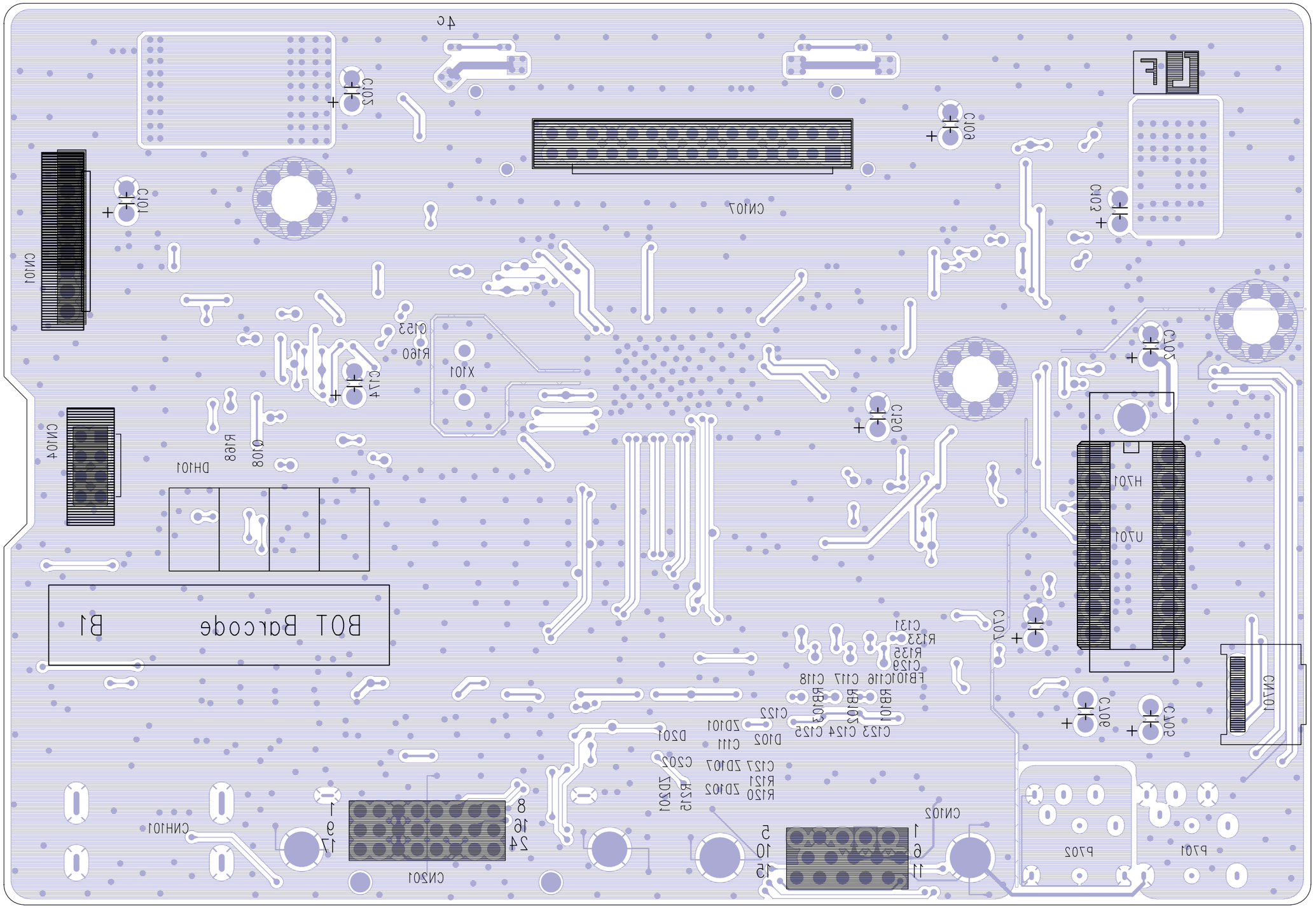
9. PCB Layout Diagrams

MAIN BOARD - SILKSCREEN TOP

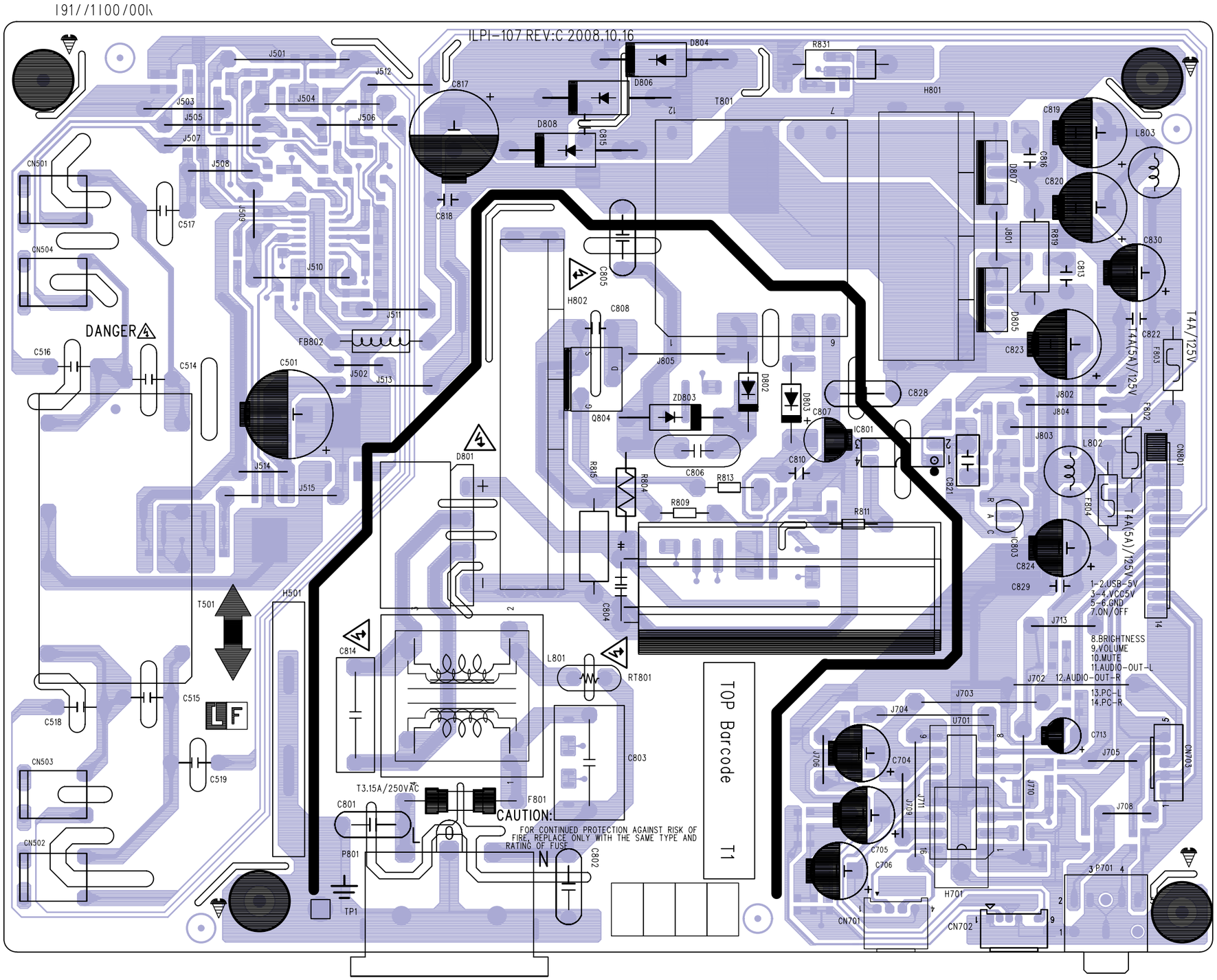
492311300100R



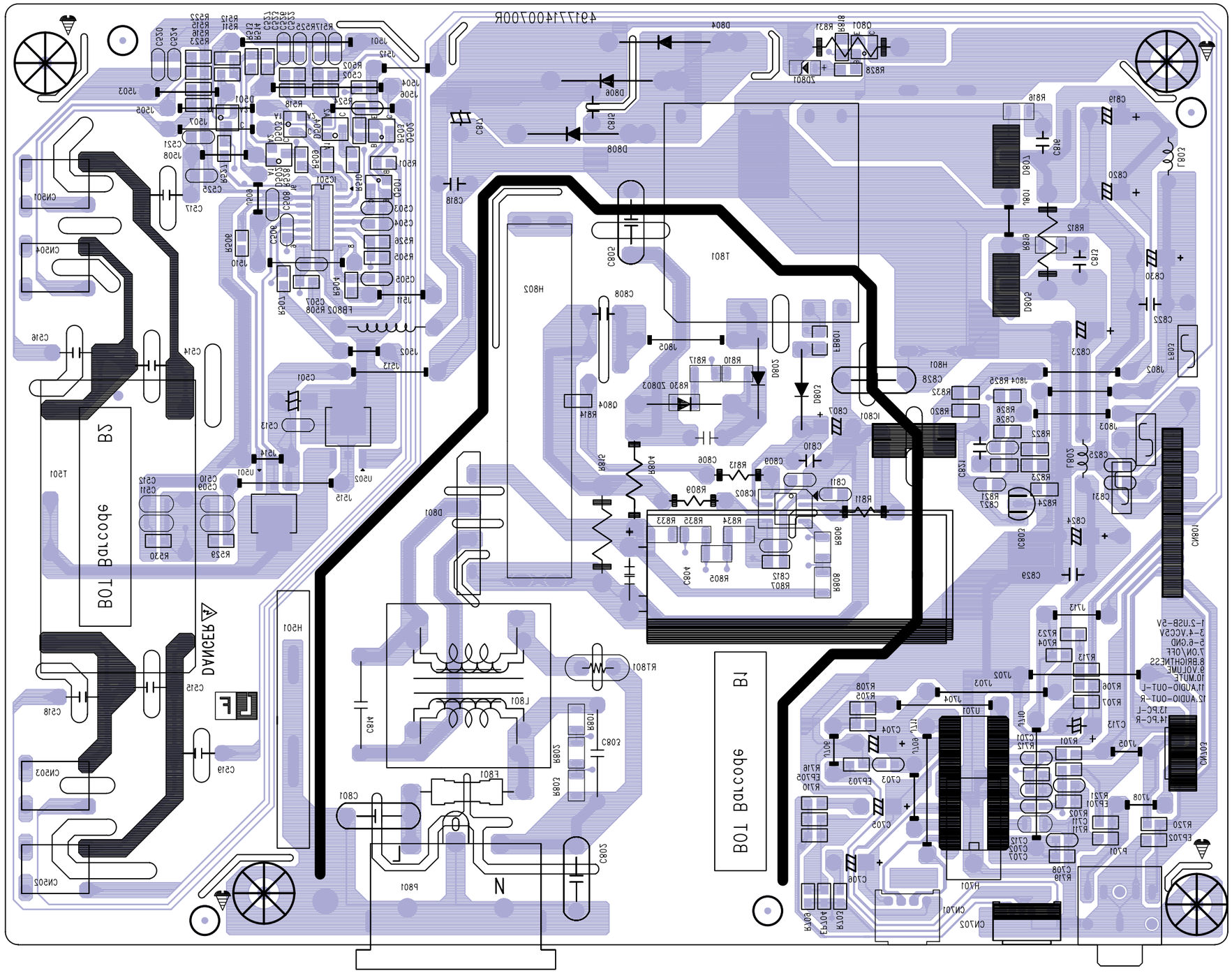
MAIN BOARD - SILKCREEN BOTTOM



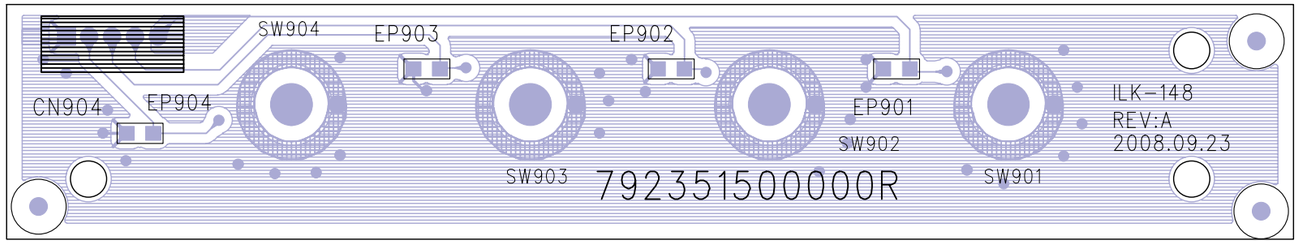
POWER BOARD - SILKSCREEN TOP



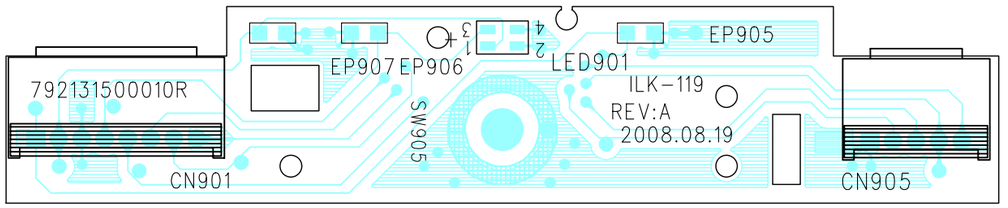
POWER BOARD - SILKSCREEN BOTTOM



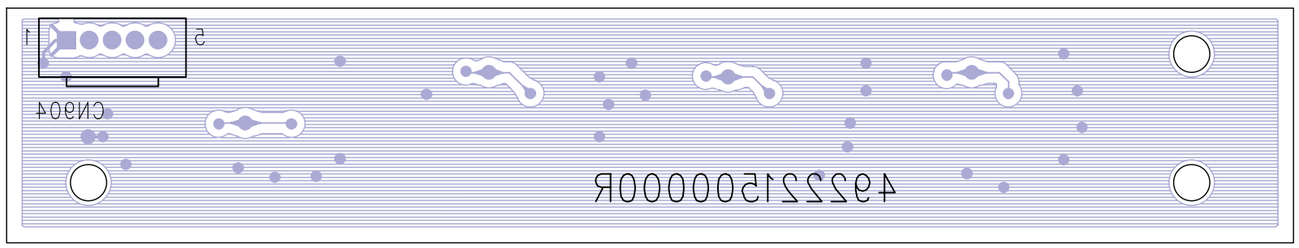
KEYPAD FOR FUNCTION - SILKSCREEN TOP



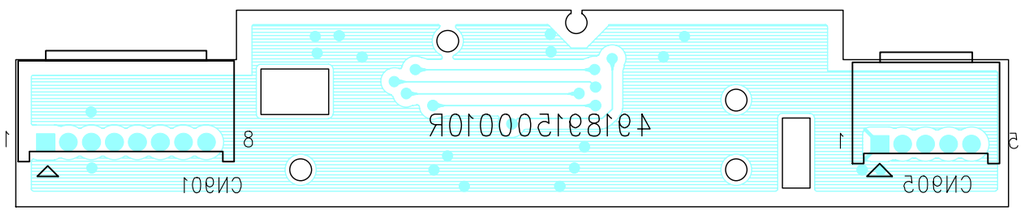
KEYPAD FOR POWER - SILKSCREEN TOP



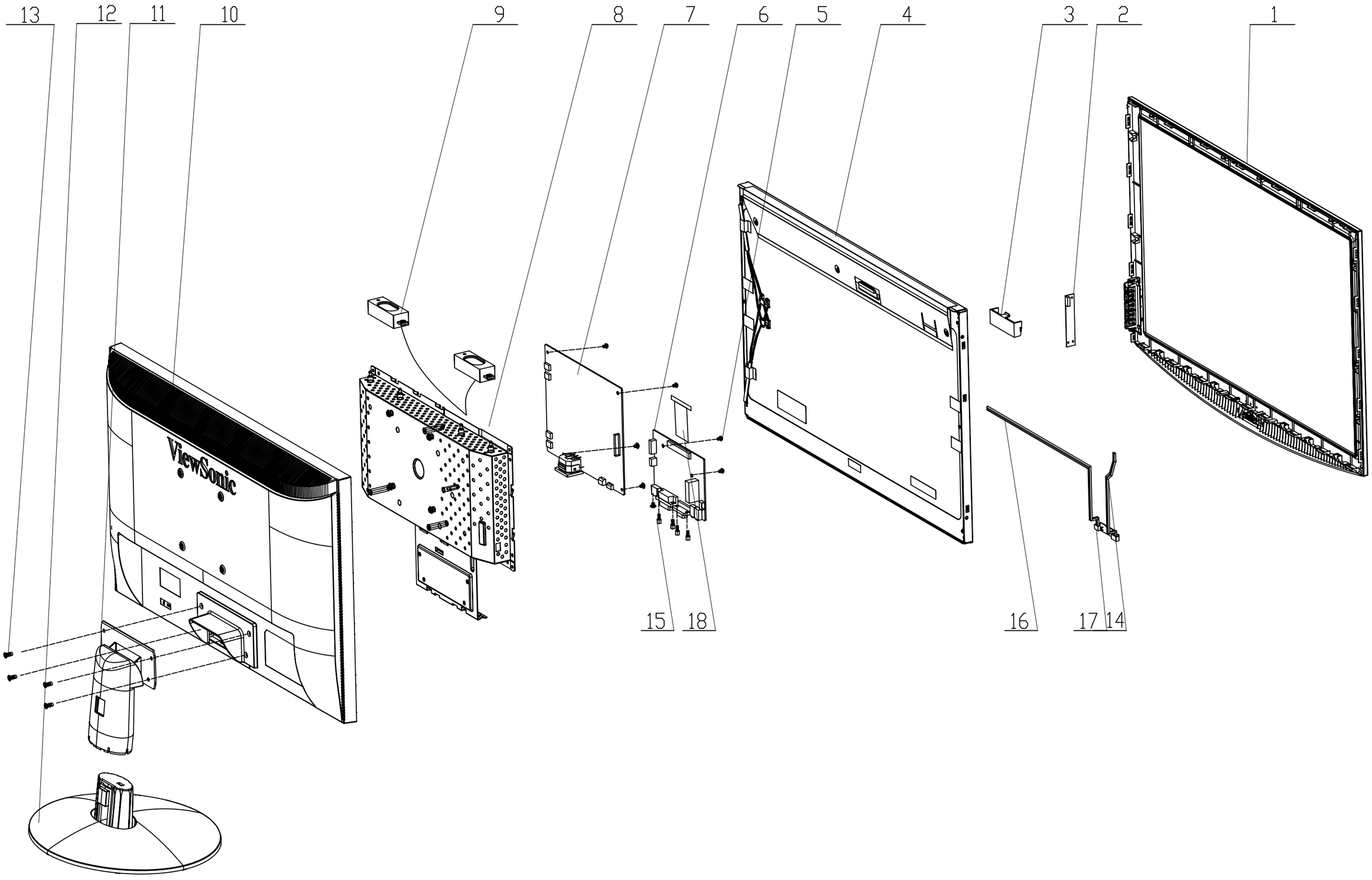
KEYPAD FOR FUNCTION - SILKSCREEN BOTTOM



KEYPAD FOR POWER - SILKSCREEN BOTTOM



10. Exploded Diagram and Exploded Parts List



EXPLODED PARTS LIST (VX2433wm-1/VX2433wm-CN)

ViewSonic Model Number: VS12324

Rev: 1a

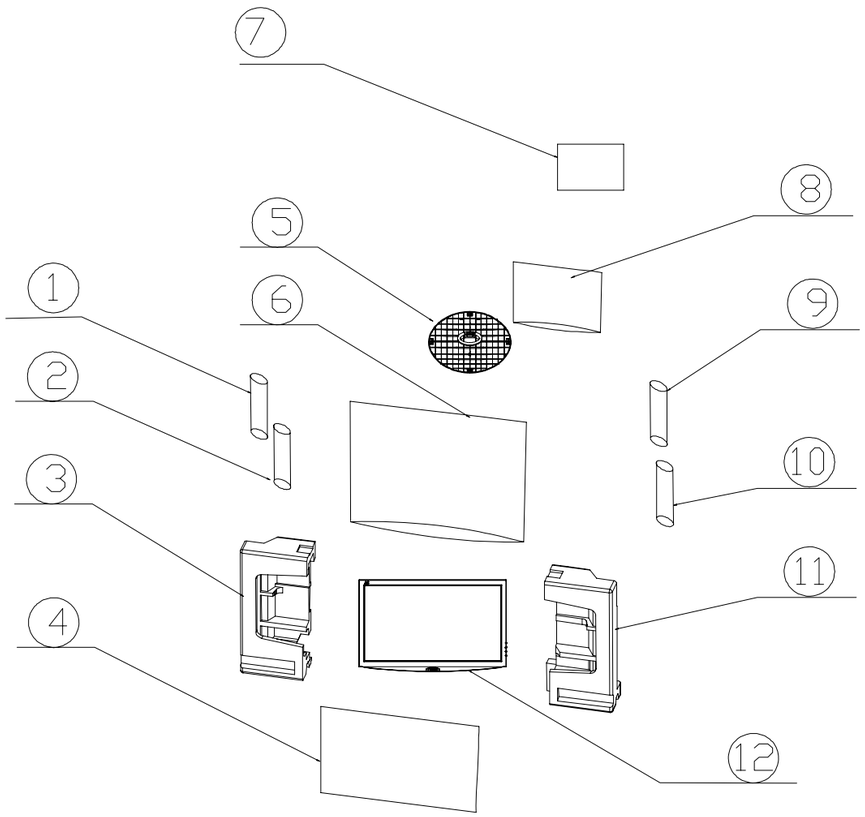
ITEM	ViewSonic P/N	Ref.PN	DESCREPTION	Q'TY
1	C-00009284	714030024100R	ASSY,FRONT,BEZEL,LP2447	1
2	B-00009290	792131500020R	function-KEYPAD	1
3	NA	501020230300R	key cover,,LP2447	1
4	E-00009253	631102240160R	PANEL236" W (CMO901)	1
5	NA	509146306200R	SCREW,P,CROSS,W/WAS,M3*6,Zn-Cc	7
6	B-00009424	792641300500R	IF BOARD (W/DVI)	1
7	B-00009425	792641400500R	POWER BOARD	1
8	NA	701000014600R	ASSY,CHASSIS,W/ DVI,LP2447	1
9	E-00009255	618100200500R	speaker	1
10	C-00009287	714050022600R	ASSY,COVER,BACK,W/ DVI,LP2447	1
11	C-00009285	714011206600R	ASSY,STAND,LP2447	1
12	C-00009286	714020019100R	ASSY,BASE,LP2447	1
13	NA	509216610110R	SCREW,F,CROSS,M4*10,BLK-NL (NYLOK)	4
14	CB-00008927	430300802770R	power key pad line	1
15	NA	509000000700R	BOLT,#4-40*11.8,Ni	4
16	NA	430300500530R	IF key pad line	1
17	B-00009289	792131500010R	power key pad	1
18	CB-00008926	430303002350R	LVDS CABLE	1

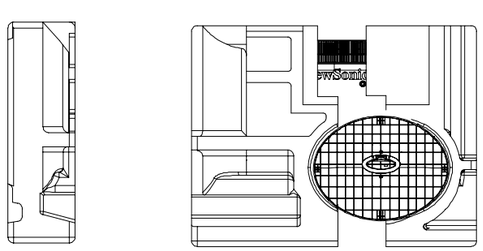
PACKING PART LIST (VX2433wm/VX2433wm-CN)

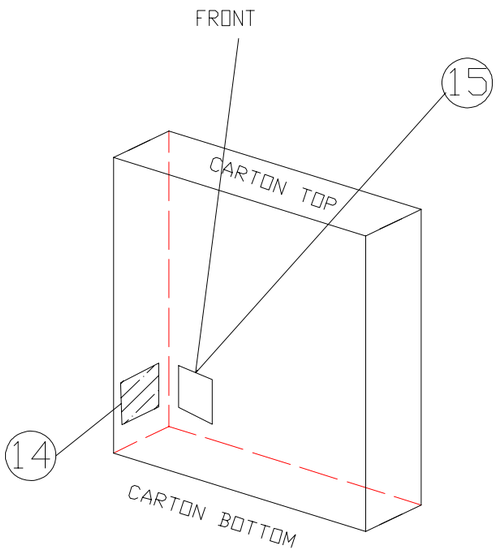
ViewSonic Model Number: VS12324

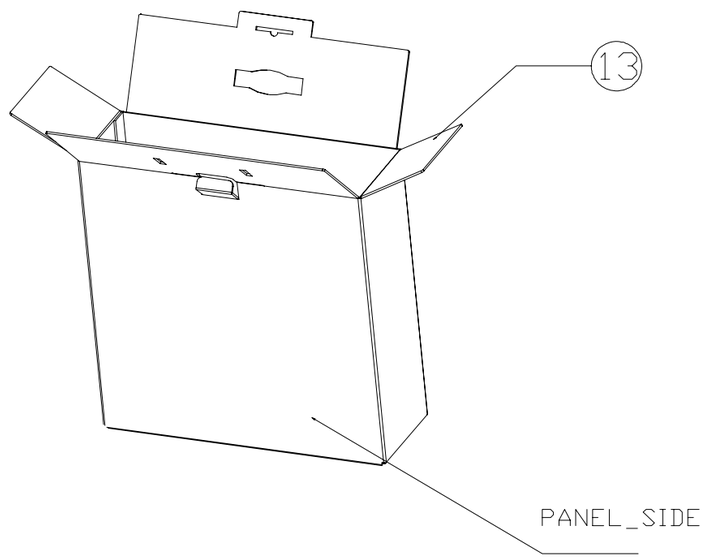
Rev: 1a

Item	ViewSonic P/N	Ref. P/N	Description	Q'ty
1	CB-00008002	453030300120R	AUDIO CABLE	1
2	A-00008111	453070800150R	POWER CABLE	1
3	P-00009398	506060016710R	CUSHION LEFT,LP2447	1
4	NA	506431008200R	FILM PROTECTION PE	1
5	NA	714020018300R	ASSY BASE VX2433wm	1
6	P-00009399	506120010900R	BAG,PLASTIC，EPE+PE,L500xW670xT0.55mm,LP2447	1
7	A-00008411	703500009900R	KIT ACCESSORY VX2433wm	1
8	P-00009400	506120010901R	BAG,PLASTIC,L380xW330xT0.05mm,LP2447	1
9	CB-00008190	453030300370R	DVI CABLE	1
10	CB-00008437	453010100380R	VGA CABLE	1
11	P-00009397	506060016700R	CUSHION RIGHT,LP2447	1
12	NA	N/A	MONITOR	1
13	P-00009396	506020029600R	CARTON	1
14	NA	506440002300R	CARTON LABEL	1
15	NA	506091000700R	WARRANTY LABEL FOR CHINA	1









11. Recommended Spare Parts List

RECOMMENDED SPARE PARTS LIST (VX2433wm-1/VX2433wm-CN)

ViewSonic Model Number: VS12324
Serial No. Prefix: VX2433wm-1 - R4F
Serial No. Prefix: VX2433wm-CN - R8W
Rev: 1a

Item	Category	Part Name	Description	ECR/ECN	ViewSonic P/N	Ref. P/N	Ref. NO	Compatibility	Location	Universal number#	Remark
1	**Accessories:**	Adapter	KIT ACCESSORY VX2433 LP2447		A-00008411	703500009900R	VSA,VSI,VSCN		Main Source		
2	**[Adapter, Remote**	Power Cord	PWR CORD 10A/125V BLK 6FT UL/CSA SVT 3Cx(USA)		A-00008111	453070800150R			Main Source		
3	**Controller, Power**	Power Cord	PWRCORD 7A/125V BLK 6FT CNS VCTF 3Gx0.75(TWN)		A-00006733	453070800480R			Main Source		
4	**Cord, External**	Power Cord	PWR CORD 16A/250V BLK 6FT VDE,H05VV-F 3G(Europe)		A-00008279	453070801190R			Main Source		
5	**Cables]**	Power Cord	PWRCORD 10A/250V BLACK 6FT SAA,H05W-F/3G(Australia)		A-00003671	453070800420R			Main Source		
6		Power Cord	PWRCORD 16A/250V BLK 6FT KTL,H05VV-F 3Gx(Korea)		A-00006734	453070800500R			Main Source		
7		Power Cord	PWRCORD 10A/250V BLK 6FT CHINA.RVV 3Gx0.(China)		A-00005255	453070800170R			Main Source		
8		Power Cord	PWRCORD 5A/250V BLK 6FT UK3Gx.75mm(SP60/(Singapore)		A-00003675	453070800230R			Main Source		
9		Audio Cable	CABLE AUDIO 1P 6FT BLACK/GREEN CP03B06P0		CB-00008002	453030300120R	VSA,VSI,VSCN		Main Source		
10		Signal Cable	CABLE,D-SUB 15P MALE 6FT BLACK/BLUE, ROH(New		CB-00008437	453010100380R	VSA,VSI,VSCN		Main Source		
11		Signal Cable	CABLE,DVI-D 18+1P MALE 6FT BLACK , ROHS		CB-00008190	453030300370R	VSA,VSI,VSCN		Main Source		
12	**PC Board**	Main Board	PCBA,I/F BOARD,W/SPK,LP2347-527 ROHS		B-00009424	792641300500R	VSA,VSI,VSCN	6	1,2		
13	**Assembly: [All**	Power Board	PCBA,P/I BOARD,W/SPK,LP2347-527 ROHS		B-00009425	792641400500R	VSA,VSI,VSCN	7	1,2		
14	**PCBA]**	Key Pad	PCBA,POWER KEYPAD/B LE18L3-722 ROHS		B-00009289	792131500010R	VSA,VSI,VSCN	17	1,2		
15		Key Pad	PCBA,FUNTION KEYPAD/B,LE18L3-722 ROHS		B-00009290	792131500020R	VSA,VSI,VSCN	2	1,2		
16	**Cabinets: [Front**	Front Bezel	ASSY,FRONT,BEZEL,LP2447		C-00009284	714030024100R	VSA,VSI,VSCN	1	Main Source		
17	**Bezel, All Covers,**	Stand Assembly	ASSY,STAND,LP2447		C-00009285	714011206600R	VSA,VSI,VSCN	11	Main Source		
18	**Base Assembly]**	Base Assembly	ASSY,BASE,LP2447		C-00009286	714020019100R	VSA,VSI,VSCN	12	Main Source		
19		Back Cover	ASSY,COVER,BACK,W/ DVI,LP2447		C-00009287	714050022600R	VSA,VSI,VSCN	10	Main Source		
20		Hinge Cover	ASSY,HINGE,LP2447		C-00009288	714000006000R	VSA,VSI,VSCN		Main Source		
21	**Cables: [All**	Flat Cable	HRN LVDS FFC 30P 185mm W/TASTE&CORE&LOCK		CB-00008926	430303002350R	VSA,VSI,VSCN	18	Main Source		
22	**internal**	Wire	HRN ASS'Y 2*4P TO 1*8P 197mm UL1571#28		CB-00008927	430300802770R	VSA,VSI,VSCN	14	Main Source		
23	**Electronic**	Panel	LCP 23.6"M236H1-L01-901(A)(CMO) ROHS		E-00009253	631102240160R	VSA,VSI,VSCN	4	1		
24	**Components:**	Panel	LCP 23.6"M236H1-L01-902(A)(CMO) ROHS		E-00009254	631102240170R	VSA,VSI,VSCN		2		
25	**[LCD Panel,**	Speaker	SPEAKER 2W 4Ω 170&395mm R/G/B W/CASE		E-00009255	618100200500R	VSA,VSI,VSCN	9	Main Source		
26	**Packing Material:**	Carton	CARTON VX2433 LP2447		P-00009396	506020029600R	VSA,VSI,VSCN		Main Source		
27	**[Box, Foam, Bags]**	Cushion	CUSHION,RIGHT,LP2447		P-00009397	506060016700R	VSA,VSI,VSCN		Main Source		
28		Cushion	CUSHION,LEFT,LP2447		P-00009398	506060016710R	VSA,VSI,VSCN		Main Source		
29		PE Bag	BAG,PLASTIC，EPE+PE,L500xW670xT0.55mm,LP		P-00009399	506120010900R	VSA,VSI,VSCN		Main Source		
30		PLASTIC	BAG,PLASTIC,L380xW330xT0.05mm,LP2447		P-00009400	506120010901R	VSA,VSI,VSCN		Main Source		

Remark 1: Base on CMO 24" panel

BOM LIST (VX2433wm-1/VX2433wm-CN)

ViewSonic Model Number: VS12324

Rev: 1a

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
1	A-00008111	453070800150R	PWR CORD 10A/125V BLK 6FT UL/CSA SVT 3Cx			100
2	CB-00008437	453010100380R	CABLE,D-SUB 15P MALE 6FT BLACK/BLUE, ROH			100
3	CB-00008002	453030300120R	CABLE AUDIO 1P 6FT BLACK/GREEN CP03B06P0			100
4	CB-00008190	453030300370R	CABLE,DVI-D 18+1P MALE 6FT BLACK , ROHS			100
5	NA	453030300371R	CABLE,DVI-D 18+1P MALE 6FT BLACK			100
6	NA	713100009800R	ASSY,PACKAGE,PACK,VSA,VX2433(LP2447)			100
7	NA	506431008200R	FILM,PROTECTION,UNPRINTED,555x327x0.1mm,			100
8	P-00009397	506060016700R	CUSHION,RIGHT,LP2447			100
9	P-00009398	506060016710R	CUSHION,LEFT,LP2447			100
10	P-00009399	506120010900R	BAG,PLASTIC，EPE+PE,L500xW670xT0.55mm,LP			100
11	P-00009400	506120010901R	BAG,PLASTIC,L380xW330xT0.05mm,LP2447			100
12	P-00009396	506020029600R	CARTON VX2433 LP2447			100
13	NA	506250027600R	LBL AGENCY VX2433 LP2447			100
14	NA	506440002300R	LABEL,BLANK,76.2x76.2mm,LE1709(UPC)			100
15	NA	506440005200R	LABEL,BLANK 49.5*24.5 BLANK LE2082(VA2			100
16	NA	506440002600R	LABEL,BLANK,210x65mm,LE1709(PALLET)			4.2
17	NA	506250028000R	LABEL POP feature VX2260wm(LP2137)			100
18	A-00008411	703500009900R	KIT ACCESSORY VX2433 LP2447			100
19	NA	506070120900R	MNL USER'S(CD), VX2433w(LP2447)			100
20	NA	506280302901R	QSG VX2433w(LP2447)			100
21	NA	506420405200R	INSERT SHEET, 1920*1080,LE21N1			100
22	NA	506180003000R	BASE ATTCHMENT VX1933w(LE18L3)			100
23	NA	506030200901R	SRS CARD FOR ViewSonic			100
24	NA	713010005500R	ASSY, PACK,SEA, 20&40STD, VX2433(LP2447)			100
25	NA	506150006100R	PALLET L1270*W1016*H130MM LE1939			2.1
26	NA	506039010460R	CORNER PAPER1850x40x40xT5mm			8.3
27	NA	506039007200R	CORNER PAPER 1200x50x50xT5mm LE1729			4.2
28	NA	506039007600R	CORNER PAPER,900x50x50xT5mm,			4.2
29	NA	506038003500R	CARDBOARD L1270xW1016xT4mm LE1939			2.1
30	NA	506036005900R	CARDBOARD,L1190*W950*T7			2.1
31	NA	506431000300R	FILM,PE 500mmx900M ROHS			0.2
32	NA	506380002100R	TAPE WRAPPING TYPE(VIEWSONIC) 50mmx75M L			0.7
33	NA	506120100500R	SEALED BAG ADHESIVE 330x230mm LE1918			2.1
34	NA	713010005501R	ASSY, PACK,AIR, 20&40STD, VX2433(LP2447)			100
35	NA	506150006100R	PALLET L1270*W1016*H130MM LE1939			4.2
36	NA	506039007200R	CORNER PAPER 1200x50x50xT5mm LE1729			8.3
37	NA	506039007600R	CORNER PAPER,900x50x50xT5mm,			25
38	NA	506038003500R	CARDBOARD L1270xW1016xT4mm LE1939			4.2
39	NA	506036005900R	CARDBOARD,L1190*W950*T7			4.2
40	NA	506431000300R	FILM,PE 500mmx900M ROHS			0.1
41	NA	506380002100R	TAPE WRAPPING TYPE(VIEWSONIC) 50mmx75M L			0.4
42	NA	506120100500R	SEALED BAG ADHESIVE 330x230mm LE1918			4.2
43	NA	714076650000R	ASSY,FINAL(B,A)W/SPK,LP2347-527(USA/VX24			100
44	C-00009284	714030024100R	ASSY,FRONT,BEZEL,LP2447			100
45	NA	750010203200R	SUB-ASSY,FRONT,BEZEL,PRINTING,LP2447			100
46	NA	501010224900R	FRONT,BEZEL,LP2447			100
47	NA	501120110700R	LENS,LP2447			100
48	NA	501030212200R	FUNCTION VA1933			100
49	NA	501030212201R	POWER KEY VA1933			100
50	NA	506102000300R	LOGO PLATE VIEWSONIC LE1709			100
51	C-00009287	714050022600R	ASSY,COVER,BACK,W/ DVI,LP2447			100
52	NA	501020230301R	COVER,BACK,W/ DVI,LP2447			100
53	NA	502020301400R	BRACKET VESA LE1729 ROHS			400
54	C-00009285	714011206600R	ASSY,STAND,LP2447			100
55	NA	501260211700R	STAND,LP2447			100
56	C-00009288	714000006000R	ASSY,HINGE,LP2447			100
57	NA	509412610500R	SCREW,B,CROSS,T.T-4*10,BLK ,ROHS			300

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
58	C-00009286	714020019100R	ASSY,BASE,LP2447			100
59	NA	501240214600R	BASE,LP2447			100
60	NA	503020006300R	RUBBER FOOT L14.8*W9.6*T3.5mm ,LE19E3			600
61	NA	501020230300R	key cover,,LP2447			100
62	NA	509216610510R	SCREW,F,CROSS,M4*10,BLK-NL(NYLOK)			400
63	NA	714086650000R	ASSY,PANEL(A)W/SPK,LP2347-527(VX2433WM)			100
64	NA	511150102610R	FOIL,AL.,DOUBLE COND.,RIGHT,LE2239			100
65	NA	511150102600R	FOIL,AL.,DOUBLE COND.LEFT,LE2239			100
66	NA	511150101800R	FOIL,AL.,DOUBLE COND.,60x35xT0.07mm, LE2			100
67	NA	506381000700R	TAPE,ACE,45mmx30M(PC=10x45mm),LE1709 ROH			200
68	NA	509146306200R	SCREW,P,CROSS,W/WAS,M3*6,Zn-Cc			700
69	NA	509000000700R	BOLT,#4-40x11.8,Ni FOR D-SUB/DVI CONN.RO			400
70	NA	701000014600R	ASSY,CHASSIS,W/ DVI,LP2447			100
71	NA	502090103400R	CHASSIS,W/ DVI,LP2447			100
72	NA	502020100600R	BRACKET,HINGE,LP2447			100
73	NA	505040209000R	INSULATOR,MYLAR,L21*W18*T0.5,LE19F6			100
74	B-00009424	792641300500R	PCBA,I/F BOARD,W/SPK,LP2347-527 ROHS			100
75	B-00009425	792641400500R	PCBA,P/I BOARD,W/SPK,LP2347-527 ROHS			100
76	B-00009290	792131500020R	PCBA,FUNTION KEYPAD/B,LE18L3-722 ROHS			100
77	B-00009289	792131500010R	PCBA,POWER KEYPAD/B LE18L3-722 ROHS			100
78	E-00009253	631102240160R	LCP 23.6"M236H1-L01-901(A)(CMO) ROHS			100
79	E-00009254	631102240170R	LCP 23.6"M236H1-L01-902(A)(CMO) ROHS			100
80	CB-00008926	430303002350R	HRN LVDS FFC 30P 185mm W/TASTE&CORE&LOCK			100
81	NA	503110000300R	RUBBER SILICON THERMAL CONDUCT 28X20XT7			100
82	NA	430300500530R	HRN ASS'Y 5P 360mm UL1571#28			100
83	CB-00008927	430300802770R	HRN ASS'Y 2*4P TO 1*8P 197mm UL1571#28			100
84	E-00009255	618100200500R	SPEAKER 2.5W 4Ω 170＆395mm R/G/B W/CASE			100

* Reader's Response*

Dear Readers:

Thank you in advance for your feedback on our Service Manual, which allows continuous improvement of our products. We would appreciate your completion of the Assessment Matrix below, for return to ViewSonic Corporation.

Assessment

A. What do you think about the content of this Service Manual?

Unit	*Excellent*	*Good*	*Fair*	*Bad*
1. Precautions and Safety Notices				
2. Specification				
3. Front Panel Function Control Description				
4. Circuit Description				
5. Adjustment Procedure				
6. Troubleshooting Flow Chart				
7. Block Diagrams				
8. Schematic Diagrams				
9.PCB Layout Diagrams				
10. Exploded Diagram and Exploded Parts List				
11. Recommended Spare Parts List				

B. Are you satisfied with this Service Manual?

Item	*Excellent*	*Good*	*Fair*	*Bad*
1. Service Manual Content				
2. Service Manual Layout				
3. The form and listing				

C. Do you have any other opinions or suggestions regarding this service manual?

Reader's basic dada:

Name:		**Title:**	
Company:			
Add:			
Tel:		**Fax:**	
E-mail:			

After completing this form, please return it to ViewSonic Quality Assurance in the USA at facsimile 1-909-839-7943. You may also e-mail any suggestions to the Director, Quality Systems & Processes (marc.maupin@viewsonic.com)