Service Manual

Model Name:HW191A

Model No:HSG1033

19” Color TFT LCD Display

Revision History

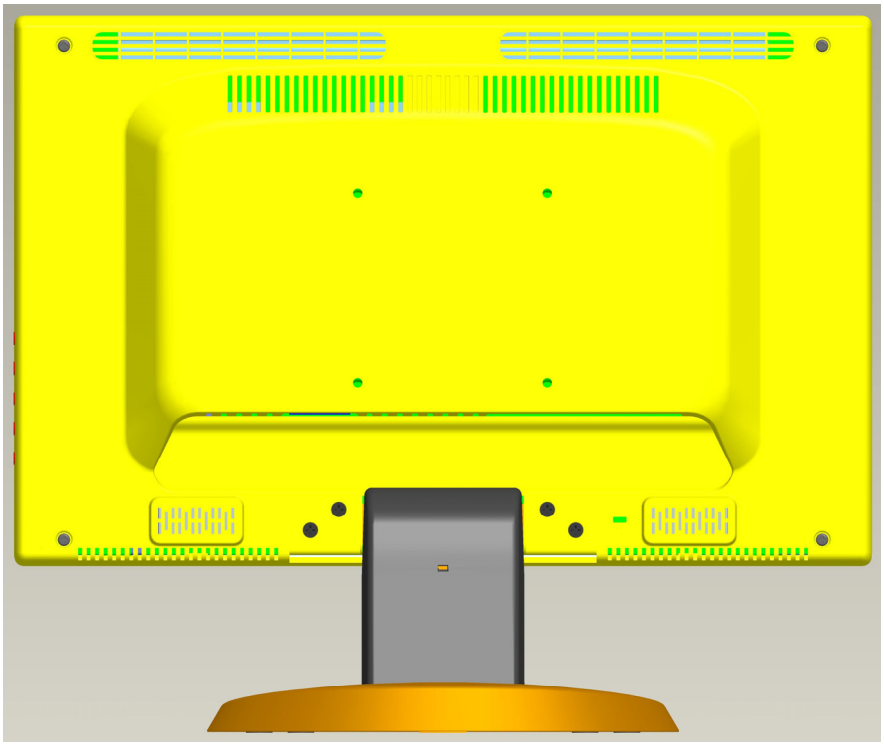
Revision	SM Editing Date	ECR Number	Description of Changes	TPV Model
A00	Oct.-17-08		First Version Release	T98HRDDTWNHZACE
A01	Nov.-04-08		Add New Model In Item 16	T98HRDDBWNZHACE
				T98HRDDYWNHZACE
				T98HRDDKWNHZACE

TABLE OF CONTENTS

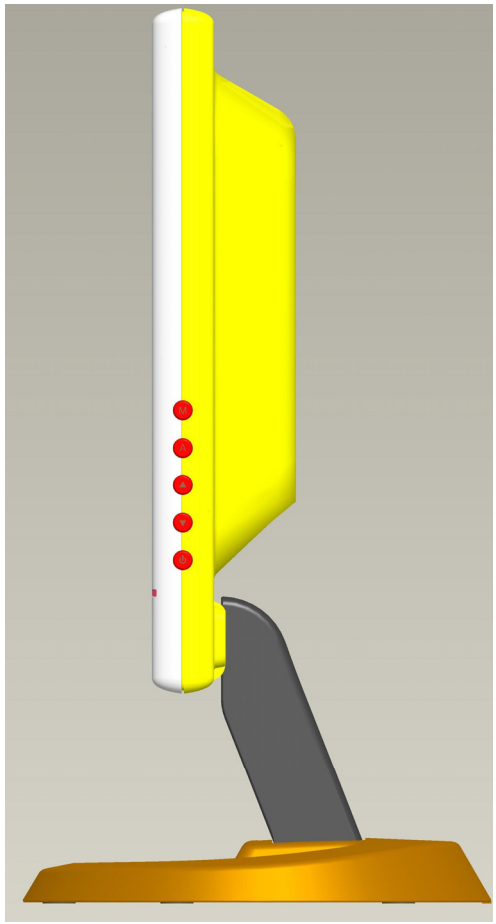
1. Dimensions

1.1 Front View

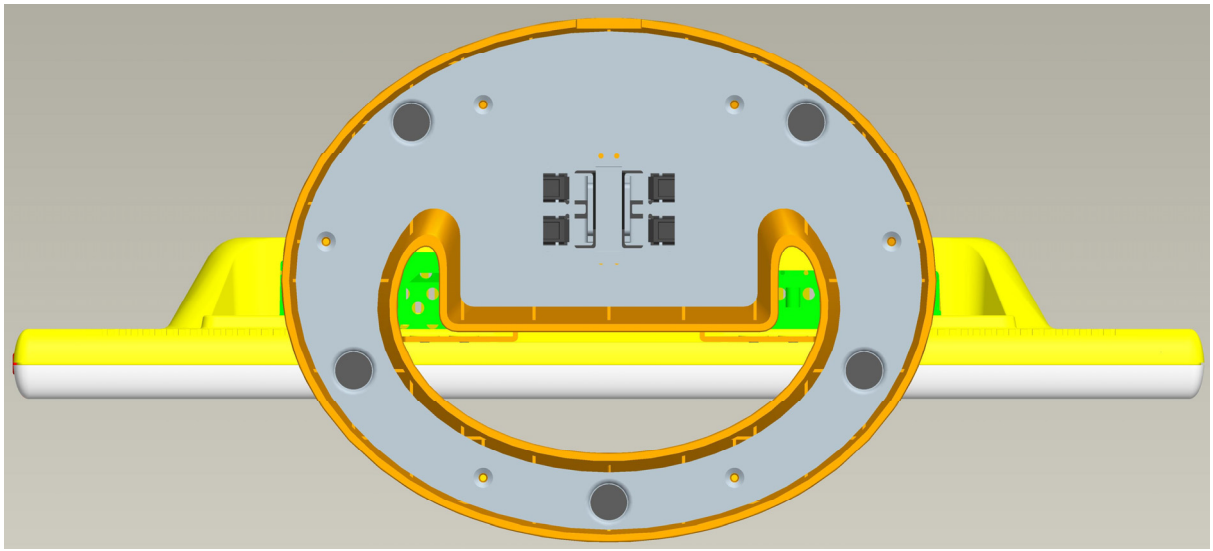
1.2 Back View



1.3 Side View



1.4 Bottom View



2. Precautions and Safety Notices

Proper service and repair is important to the safe, reliable operation of all AOC Company Equipment. The service procedures recommended by AOC and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It is also important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. AOC could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, AOC has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by AOC must first satisfy himself thoroughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.
Hereafter throughout this manual, AOC Company will be referred to as AOC.

WARNING
Use of substitute replacement parts, which do not have the same, specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from AOC. AOC assumes no liability, express or implied, arising out of any unauthorized modification of design.
Servicer assumes all liability.

FOR PRODUCTS CONTAINING LASER:
DANGER-Invisible laser radiation when open AVOID DIRECT EXPOSURE TO BEAM.
CAUTION-Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
CAUTION -The use of optical instruments with this product will increase eye hazard.

TO ENSURE THE CONTINUED RELIABILITY OF THIS PRODUCT, USE ONLY ORIGINAL MANUFACTURER'S REPLACEMENT PARTS, WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THIS SERVICE MANUAL.
Take care during handling the LCD module with backlight unit.
-Must mount the module using mounting holes arranged in four corners.
-Do not press on the panel, edge of the frame strongly or electric shock as this will result in damage to the screen.
-Do not scratch or press on the panel with any sharp objects, such as pencil or pen as this may result in damage to the panel.
-Protect the module from the ESD as it may damage the electronic circuit (C-MOS).
-Make certain that treatment person’s body is grounded through wristband.
-Do not leave the module in high temperature and in areas of high humidity for a long time.
-Avoid contact with water as it may a short circuit within the module.
-If the surface of panel becomes dirty, please wipe it off with a soft material. (Cleaning with a dirty or rough cloth may damage the panel.)

3. Monitor Specifications

LCD Panel	Driving system	TFT Color LCD
	Size	19.0"
	Pixel pitch	0.283mm(H) x 0.283mm(V)
Video	H-Frequency	30KHz – 80KHz
	V-Frequency	50Hz– 75Hz
Display Colors		16.7M Colors
Max. Resolution		WXGA+ 1440 x 900 @75Hz
Plug & Play		VESA DDC2B™
EPA ENERGY STAR®	ON Mode	≤37W
	Power Saving Mode	≤2W
	OFF Mode	≤1W
Audio output		Rated Power 1.0 W rms (Per channel)
Input Terminal		VGA DVI-D (Dual-Input Model)
Maximum Screen Size		Hor. : 408.24mm Ver. : 255.15mm
Power Source		100-240VAC±10%, 50±3Hz, 60±3Hz
Environmental Considerations		Operating Temp: 5° to 40°C Storage Temp.: -20° to 60°C Operating Humidity: 10% to 85%
Dimensions		452.7(W)×380.3(H)×198.5(D) mm 17.82”(W)×14.97”(H)×7.81”(D)
Weight (NW)		4.45kg (9.8 lb)

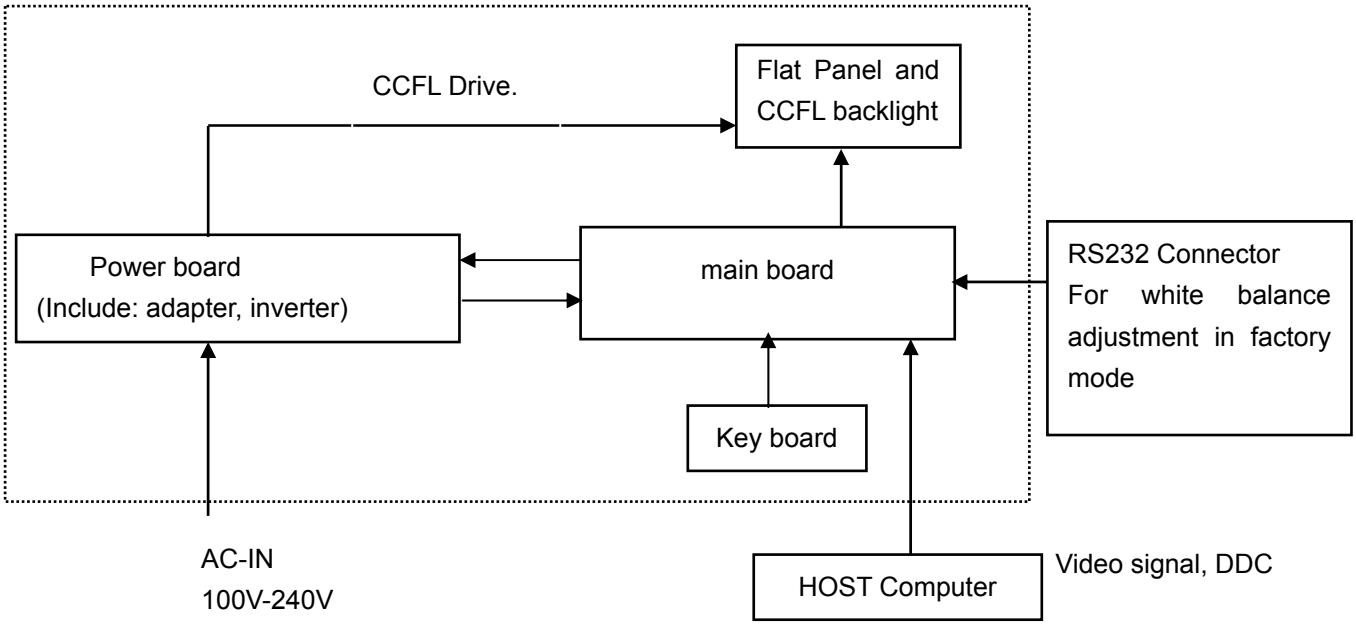
4. LCD Monitor Description

Assembly Description

The LCD MONITOR will contain a main board, a power board, and a key board which house the flat panel control logic, brightness control logic and DDC.

The power board will provide AC to DC Inverter voltage to drive the backlight of panel and the main board chips each voltage.

Monitor Block Diagram



5. Operating Instructions

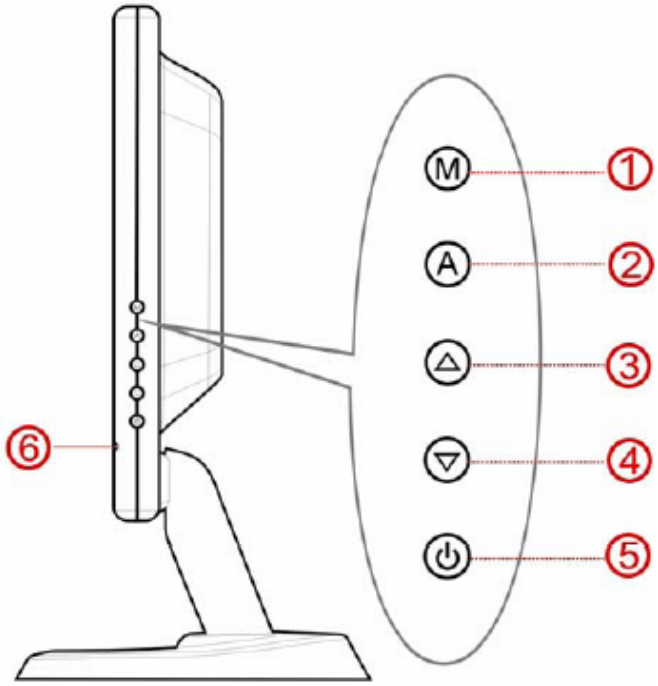
5.1 General Instructions

Press the power button to turn the monitor on or off. The control buttons are located in the front of the monitor.

By changing these settings, the picture can be adjusted to your personal preferences.

- The power cord should be connected.
- Connect the video cable from the monitor to the video card.
- Press the power button to turn on the monitor, the power indicator will light up.

5.2 Control Buttons



1.	Menu/Return	2.	Auto adjustment /Input source change / Enter
3.	Brightness adjustment button /▲「+」	4.	Volume adjustment button/▼「-」
5.	Power button	6.	Power Indicator

FRONT PANEL CONTROL

- **Power Button:**

  Press this button to switch ON/OFF monitor's power.

- **Power Indicator:**

  Green — Power On mode.

  Orange — Power Saving mode.

- **MENU / RETURN:**

  1. Turn the OSD menu on/off or return to the previous menu.

  2. Exit OSD menu when in volume OSD status.

- **Adjust ▲▼:**

  1. Adjust Brightness and volume when the OSD is off.

  2. Navigate through adjustment icons when OSD is ON or adjust a function when function is activated.

- **A Button:**

  HW191A:

  1. The OSD menu is used as "confirmation" function during start-up.

  2. The 「Auto adjustment」 function works only for VGA input. (The auto adjustment function is used to optimize the 「horizontal position」, 「vertical position」,「clock」,and 「phase」.)

NOTES:

- Do not install the monitor in a location near heat sources such as radiators or air dusts, or in a place subject to direct sunlight, or excessive dust or mechanical vibration or shock.
- Save the original shipping box and packing materials, as they will come in handy if you ever have to ship your monitor.
- For maximum protection, repackage your monitor as it was originally packed at the factory.
- To keep the monitor looking new, periodically clean it with a soft cloth. Stubborn stains may be removed with a cloth lightly dampened with a mild detergent solution. Never use strong solvents such as thinner, benzene, or abrasive cleaners, since these will damage the cabinet. As a safety precaution, always unplug the monitor before cleaning it.

5.3 Adjusting the Picture

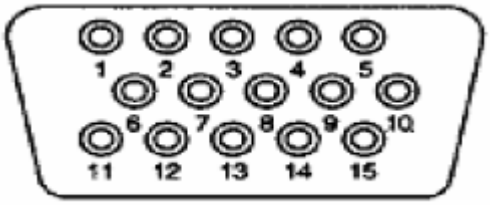
BRIGHTNESS/CONTRAST	
BRIGHTNESS	Adjust the brightness value of the display according to your preference. Select 「BRIGHTNESS」 option to adjust the brightness value.
CONTRAST	Adjust the contrast value of the display according to your preference. Select 「CONTRAST」 option to adjust the contrast value.
X-CONTRAST	Optimal setting for high contrast images or videos. The dark and light areas of the image are automatically detected, and the contrast is enhanced to provide a clearer, sharper image. Also, you may select the 「X-CONTRAST」 option.
INPUT SETTING	
INPUT SETTING	Select the 「INPUT SETTING」option to change between analog (VGA) or Digital (DVI) source. Enter the option and select Analog or Digital. [Dual input mode optional]
AUTO SEARCH	From the Signal Selection menu, select the 「AUTO SEARCH」 option to activate or deactivate the automatic signal search function. [For DVI/ HDMI Input only]
COLOR SETTING	
WARM NATURE COOL	Adjust the color temperature value of the display according to your preference: WARM /NATURE/ COOL.
USER	Move the cursor to the User option and select it, To adjust the red, enter the 「R」 option and adjust the level. To adjust the green, enter the 「G」 option and adjust the level. To adjust the blue, enter the 「B」 option and adjust the level.
IMAGE SETTING	
AUTO ADJUST	The auto adjustment function is used to optimize the 「horizontal position」, 「vertical position」, 「clock」,and 「phase」. [For VGA Input only]
ASPECT RATIO	When the aspect ratio of screen is distorted, you may make adjustments by using this function. "FULL" indicates full screen display, which does not ensure the image is shown as is or in initial scale. "FIT" indicates scaling by the proportion of original images, which may cause the screen showing black bands. [The availability of this function depends upon the selected model]

H-POSITION	Select the 「H-POSITION」option to shift the screen image to the left or right. Enter the option and adjust the level. [For VGA only]
V-POSITION	Select the 「V-POSITION」option to shift the screen image up or down. Enter the option and adjust the level. [For VGA only]
CLOCK	Select the 「CLOCK」option to reduce the vertical flicker of characters on the screen. Enter the option and adjust the level. [For VGA only]
PHASE	Select the 「PHASE」option to reduce the horizontal flicker of characters on the screen. Enter the option and adjust the level. [For VGA only]
SHARPNESS	Select the 「SHARPNESS」option to adjust the sharpness of the display. Set the value from -2 to 2.
HDMI MODE	Transferring audio-video image by HDMI port would cause edges of the image being cut on the screen; select 「PC Mode」to display in full screen. Enter the option and select 「VIDEO Mode」(VIDEO) or 「PC Mode」(PC). [For HDMI Input only]
RESPONSE TIME	Setup the display response time through the Response time function. Available settings are **MINIMUM, INTERMEDIATE**, and **MAXIMUM**. [This feature is limited to specific models only.]
OSD SETTING	
LANGUAGE	Select 「LANGUAGE」 option to change the language of the OSD. Enter the option and select a language. [Reference only, the OSD Language depends on the selected model]
H-POSITION	Select 「H-POSITION」option to adjust the horizontal position of the OSD. Enter the option and adjust the level.
V-POSITION	Select 「V-POSITION」option to adjust the vertical position of the OSD. Enter the option and adjust the level.
TRANSPARENCY	Select 「TRANSPARENCY」option to adjust the transparency of the OSD. Enter the option and adjust the level.
OSD TIME-OUT	Select 「OSD TIME-OUT」option to set the OSD time out from 10 to 100 seconds. Enter the option and adjust the level.

OSD COLOR	To choose the color combination of the OSD window, select 「OSD COLOR」option under 「OSD SETTING」menu, choose modes 1/2/3.
SYSTEM	
AUDIO INPUT	While transferring via the HDMI port, it is recommended to set AUDIO INPUT to HDMI; if no sound is outputted, it is recommended to select AUDIO INPUT as PC, and make sure the PC audio output cable is connected to monitor's LINE IN (or AUDIO IN) port. [For HDMI Input only]
VOLUME	Select the 「VOLUME」option to change the volume level. Enter the option and adjust the level.
MUTE	Select the 「MUTE」 option to switch the function On or Off.
DDC/CI	Select the 「DDC/CI」 option to switch the function On or Off. [Dual input mode optional]
FACTORY RESET	Select the 「FACTORY RESET」option to reset to the monitor's default setting. This will erase the current settings. Enter the option and select On or Off.
INFORMATION	Display Horizontal frequency/Vertical frequency/Resolution information.

6. Input/output Specification

6.1 Input Signal Connector



D-SUB

Pin	Input signal	Pin	Input signal	Pin	Input signal
1	Red video	6	Red video ground	11	
2	Green video/Sync on green	7	Green video ground	12	Data line (SDA)
3	Blue video	8	Blue video ground	13	H-Sync
4		9	+5V	14	V-Sync
5	Ground	10	Ground	15	Clock line (SCL)

6.2 Factory Preset Display Modes

MODE	RESOLUTION	HORIZONTAL FREQUENCY (KHz)	VERTICAL FREQUENCY (Hz)
1	720×400 @70Hz	31.469	70.087
2	640×480 @60Hz	31.469	59.940
3	640×480 @67Hz	35.000	66.667
4	640×480 @72Hz	37.861	72.809
5	640×480 @75Hz	37.500	75.000
6	800×600 @56Hz	35.156	56.250
7	800×600 @60Hz	37.879	60.317
8	800×600 @72Hz	48.077	72.188
9	800×600 @75Hz	46.875	75.000
10	832×624 @75Hz	49.725	75.000
11	1024×768 @60Hz	48.363	60.004
12	1024×768 @66Hz	53.964	66.132
13	1024×768 @70Hz	56.476	70.069
14	1024×768 @75Hz	60.023	75.029
15	1152×864@75Hz	67.500	75.000
16	1152×870 @75Hz	68.681	75.062
17	1280×720 @60Hz	45.000	60.000
18	1280×960 @60Hz	60.000	60.000
19	1280×1024 @60Hz	63.981	60.020
20	1280×1024 @75Hz	79.976	75.025
21	1400×1050@75Hz	63.981	60.020
22	1440×900 @60Hz	64.981	60.050
23	1440×900 @75Hz	66.981	75.070

6.3 Panel Specification

HannStar Display model HSD190MGW1-A02 is a color active matrix thin film transistor (TFT) liquid crystal display (LCD) that uses amorphous silicon TFT as switching device. This model is composed of a TFT LCD panel, the voltage reference, common voltage, DC-DC converter, column, and row driver circuit. This TFT LCD has a 19-inch diagonally measured active display area with WXGA+ resolution (900 vertical by 1440 horizontal pixel array).

6.3.1 Features

_ 19” WXGA+ TN(Twisted Nematic) mode TFT LCD panel
_ High speed response time
_ 4 CCFLs Backlight system
_ Supported WXGA+ (V:900 lines, H:1440 pixels) resolution
_ Supported to 75Hz refresh rate
_ LCD Timing Controller
_ RoHS compliance

6.3.2 Display Characteristics

Item	Specification	
Outline dimension	428x278x18.5 (typ.)	
Display area	408.24 (H) x255.15 (V)	
Number of Pixel	1440(H) x 900(V)	
Pixel pitch	0.2835(H) x 0.2835(V)	
Pixel arrangement	RGB Vertical stripe	
Display color	16.2M (6-bit+FRC)	
Display mode	Normally white	
Surface treatment	Antiglare, Hard-Coating (3H)	
Weight	2200	
Back-light	4-CCFLs, Top & bottom edge side	
Input signal	2-ch LVDS	
Power consumption	Logic system	2.7
	B/L system	22
Optimum viewing direction	6 o’clock	

6.3.3 Electrical Characteristics

1. TFT LCD Module

Item	Symbol	Min.	Max.	Unit.
Power supply Voltage	VDD	-0.3	6.0	V(DC)

2. Backlight Unit

Item	Symbol	Min.	Max.	Unit
Lamp current	I_L	3.0	9.0	MA
Lamp frequency	f_L	40	80	KHz

6.3.4 Optical Characteristics

Measuring Condition

_ Measuring surrounding: dark room

_ Lamp current IBL: (6.5)±0.1mA, lamp freq. FL= 50KHz, Inverter: TDK TBD332LR

_ VDD1=5.0V, fV=60Hz, fDCLK=53.25MHz

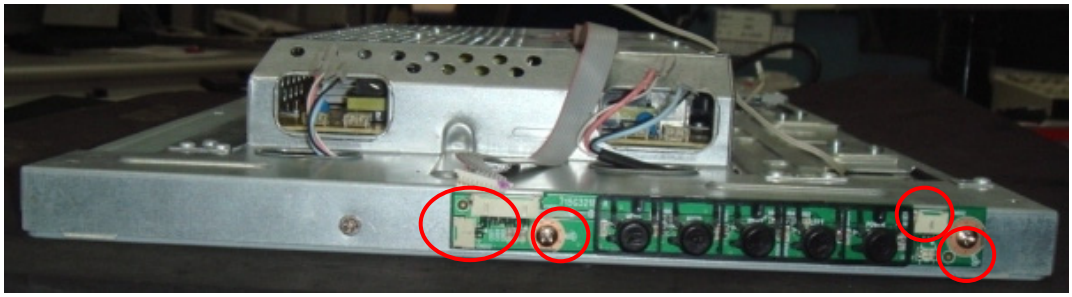
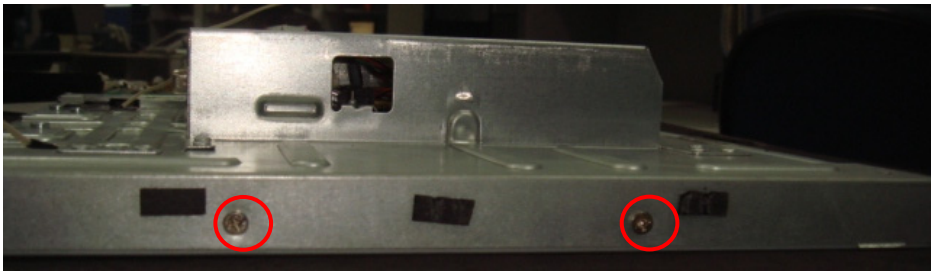
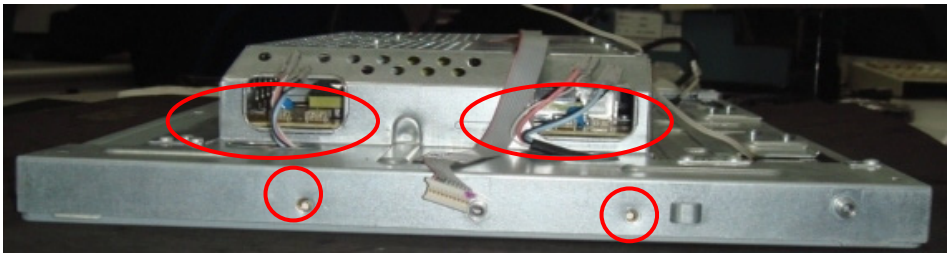
_ Surrounding temperature : 25±2oC

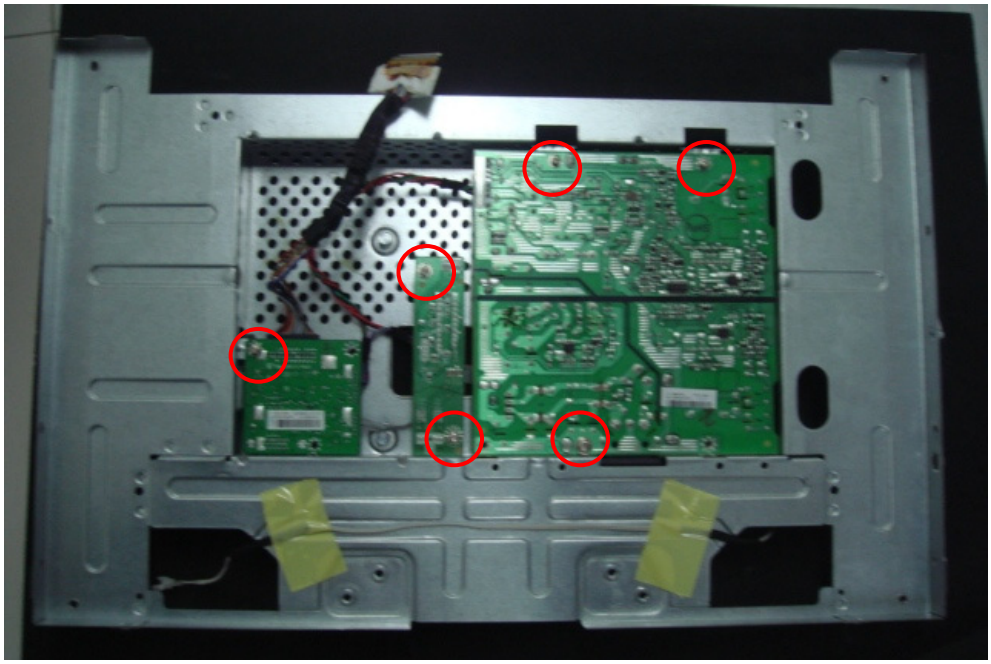
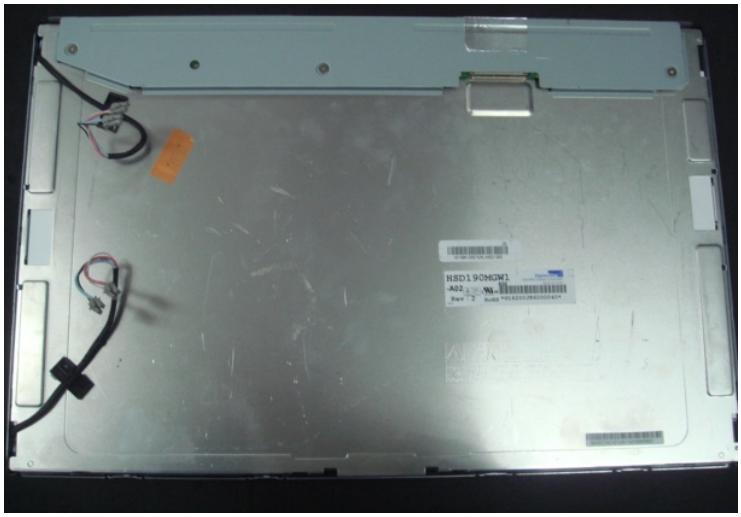
_ 30min. Warm-up time.

Item		Symbol	Condition	Min.	Typ.	Max.	Unit
Contrast		CR	$\Theta=0^o$ $\phi=0^o$ Normal viewing angle	450	700	--	
Response time	Rising	TR		--	1.5	3	msec
	Falling	TF		--	3.5	7	
White luminance (center of screen)		Y_L		240	300	--	cd/m^2
White luminance (center of screen)		Y_L		280	350	--	cd/m^2
Color chromaticity (CIE1931)	Red	Rx		0.613	0.643	0.673	
		Ry		0.295	0.325	0.355	
	Green	Gx		0.265	0.295	0.325	
		Gy		0.586	0.616	0.646	
	Blue	Bx		0.113	0.143	0.173	
		By		0.051	0.081	0.111	
	White	Wx		0.280	0.310	0.340	
		Wy		0.300	0.330	0.360	
Viewing angle	Hor.	Θ_L	CR>10	65	75	--	
		Θ_R		65	75	--	
	Ver.	Θ_H		65	75	--	
		Θ_L		55	65	--	
Viewing angle	Hor.	Θ_L	CR>5	75	85	--	
		Θ_R		75	85	--	
	Ver.	Θ_H		75	85	--	
		Θ_L		65	75	--	
Brightness uniformity		B_{UNI}	$\Theta=0^o$ $\phi=0^o$	75	--	--	%

7. Mechanical Instructions

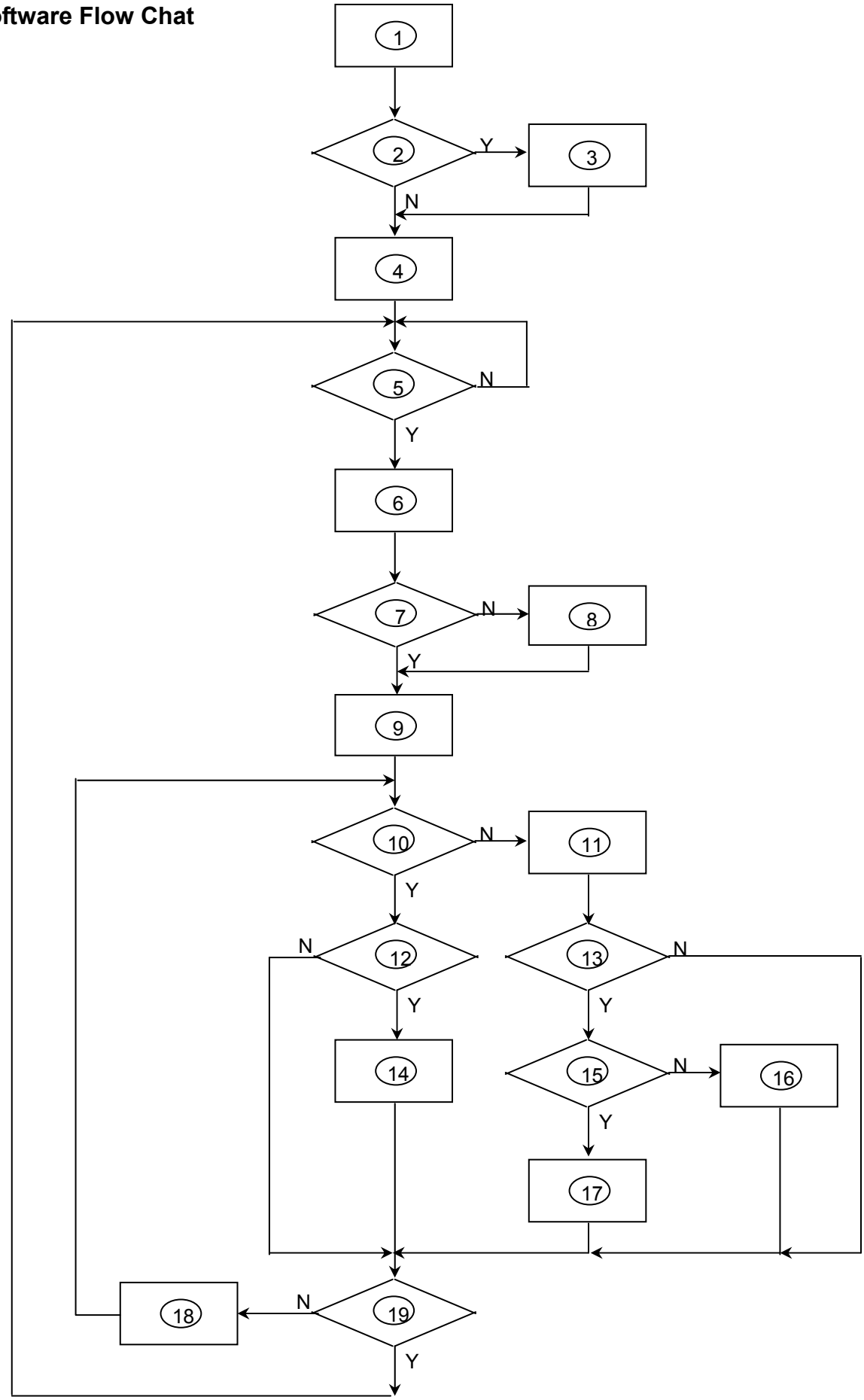
Step	Figure	Description
Preparation		Lay the LCD on a flat, soft and clean surface.
Remove the base		Remove the screws remarked in red

Remove rear cover		Remove the screws remarked in red
Remove the key board		Remove the screws remarked in red and disconnected the connecter remarked in red
remove the shield	 	Remove the screws remarked in red and disconnected the connecter remarked in red

Remove the boards		Remove the screws remarked in red
The end		The panel

8. Block Diagram

8.1 Software Flow Chat

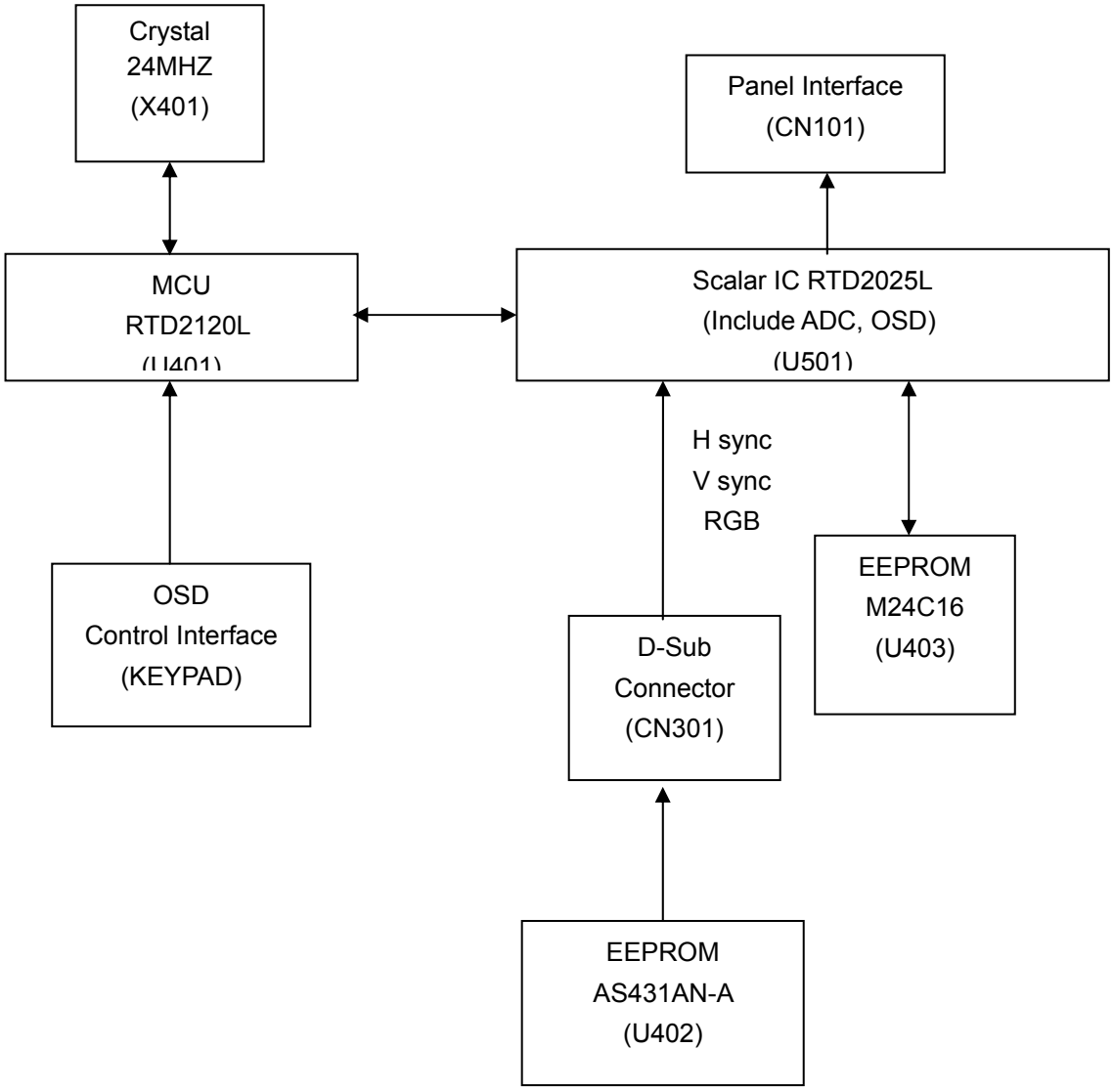


07/08/13

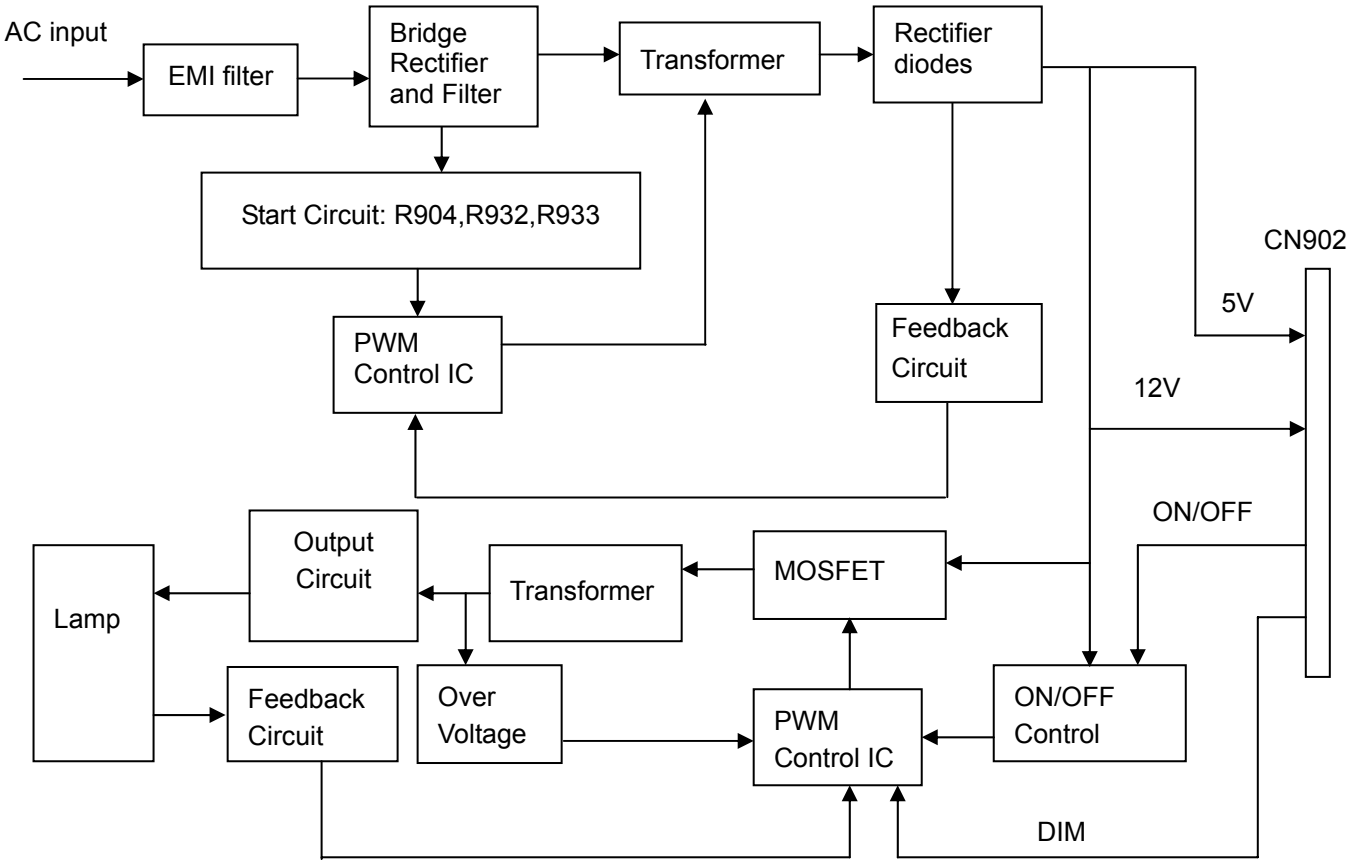
1) MCU initialize.
2) Is the EPROM blank?
3) Program the EPROM by default values.
4) Get the PWM value of brightness from EPROM.
5) Is the power key pressed?
6) Clear all global flags.
7) Are the AUTO and SELECT keys pressed?
8) Enter factory mode.
9) Save the power key status into EPROM.
   Turn on the LED and set it to green color.
   Scalar initializes.
10) In standby mode?
11) Update the lifetime of back light.
12) Check the analog port, are there any signals coming?
13) Does the scalar send out an interrupt request?
14) Wake up the scalar.
15) Are there any signals coming from analog port?
16) Display "No connection Check Signal Cable" message. And go into standby mode after the message disappear.
17) Program the scalar to be able to show the coming mode.
18) Process the OSD display.
19) Read the keyboard. Is the power key pressed?

8.2 Electrical Block Diagram

8.2.1 Main Board

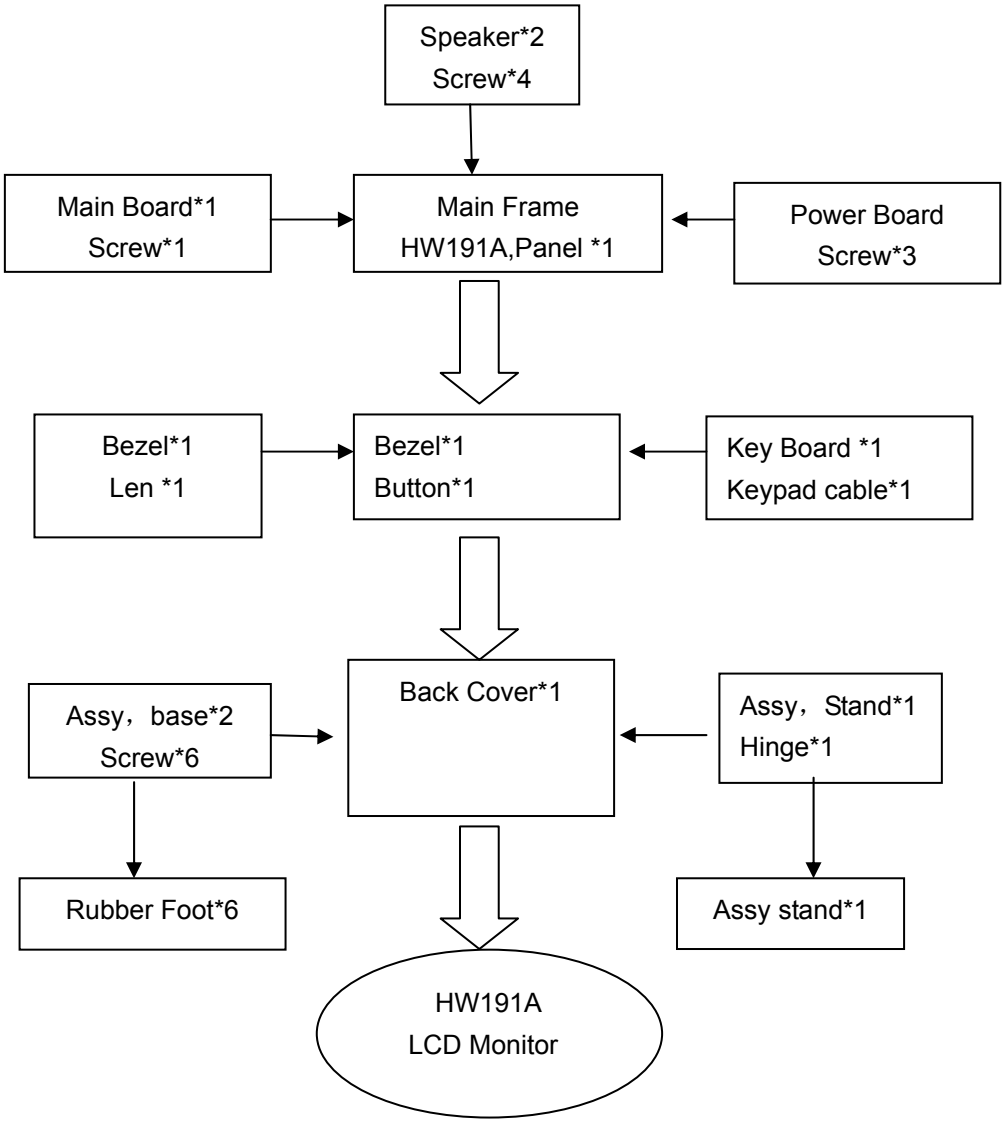


8.2.2 Power/Inverter Board

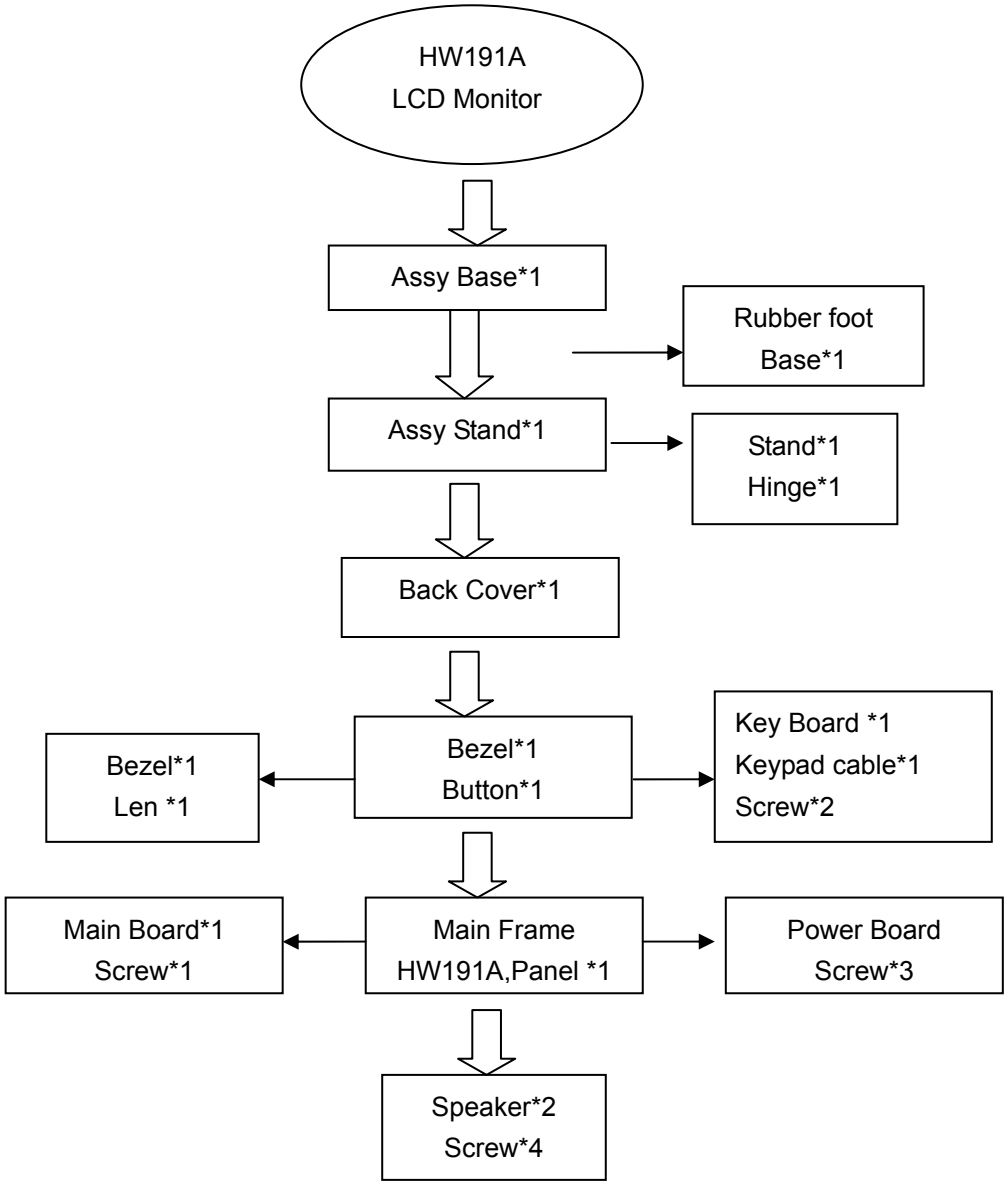


8.3 Mechanical Block Diagram

8.3.1 Assembly Block

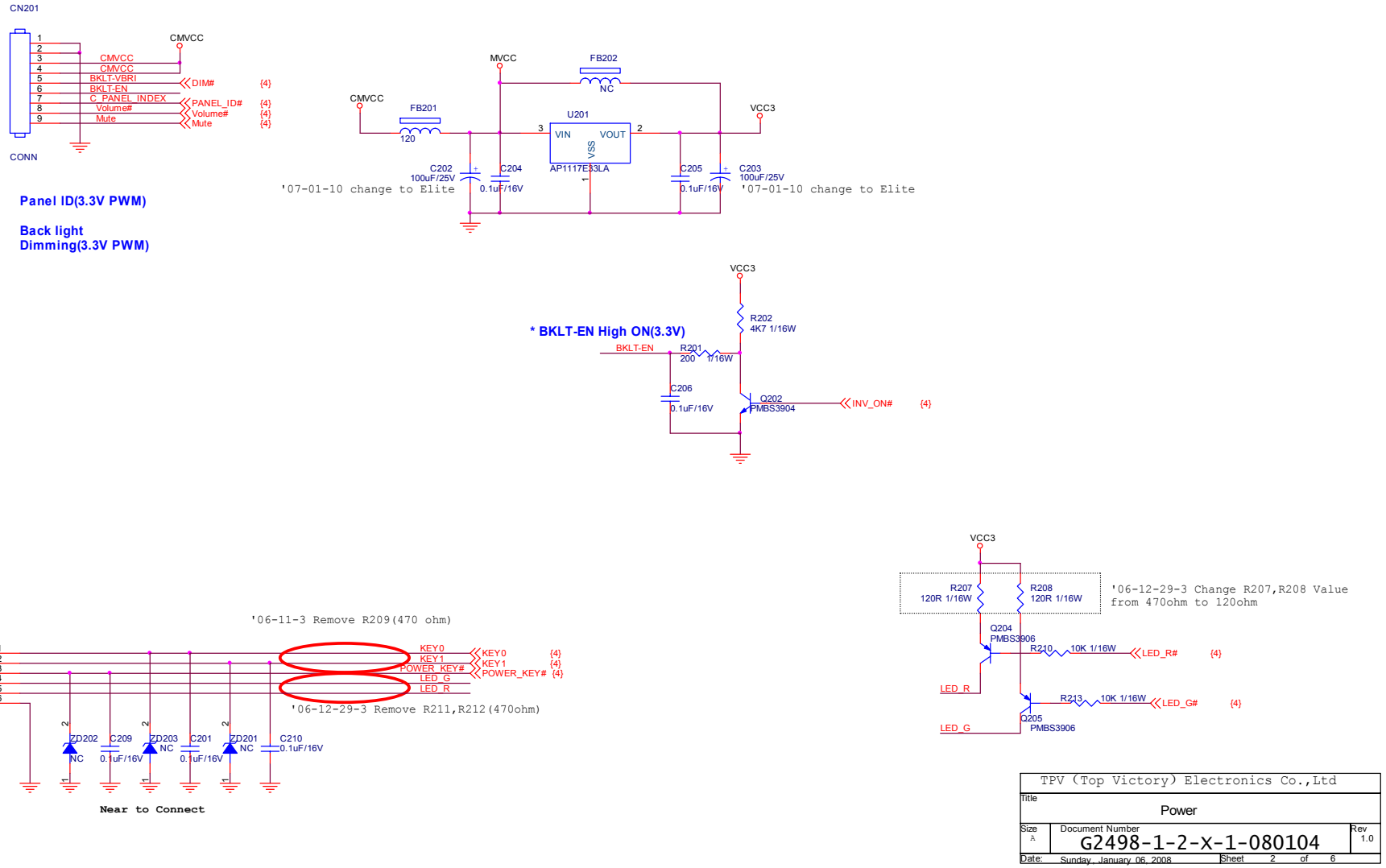


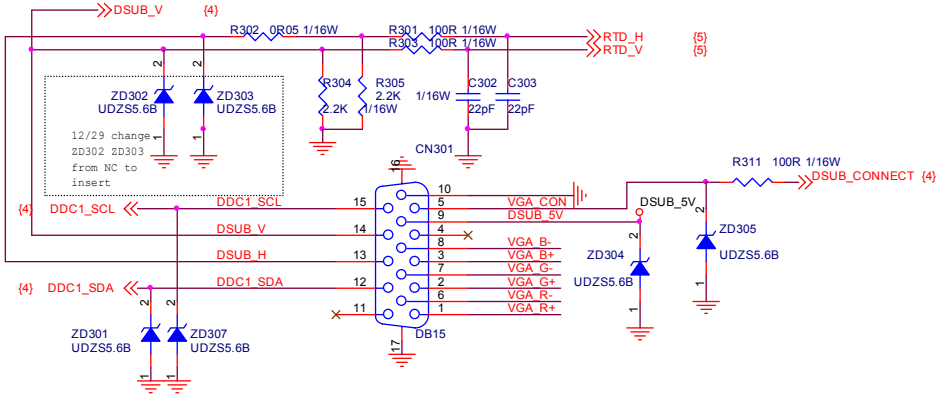
8.3.1 Disassembly Block

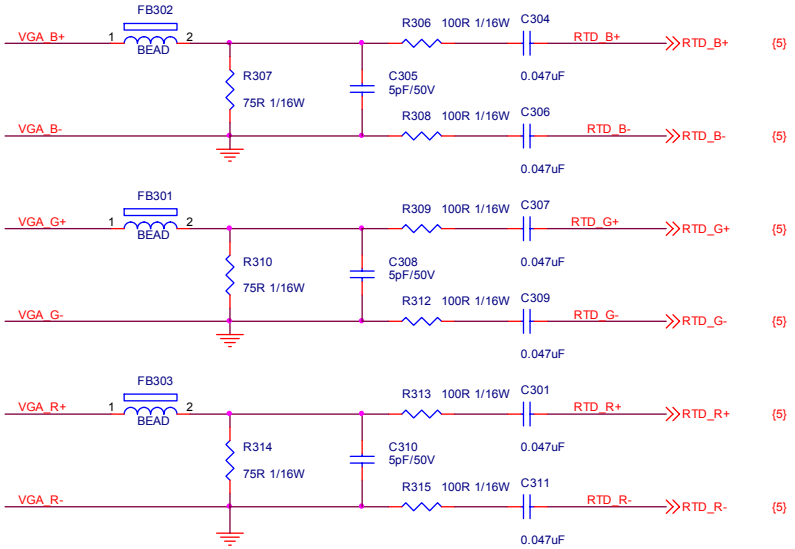


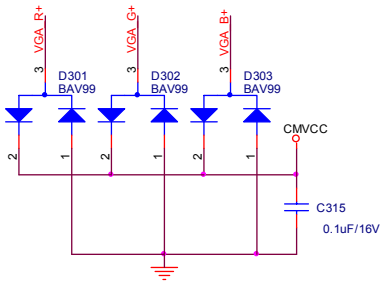
9. Schematic

9.1 Main Board



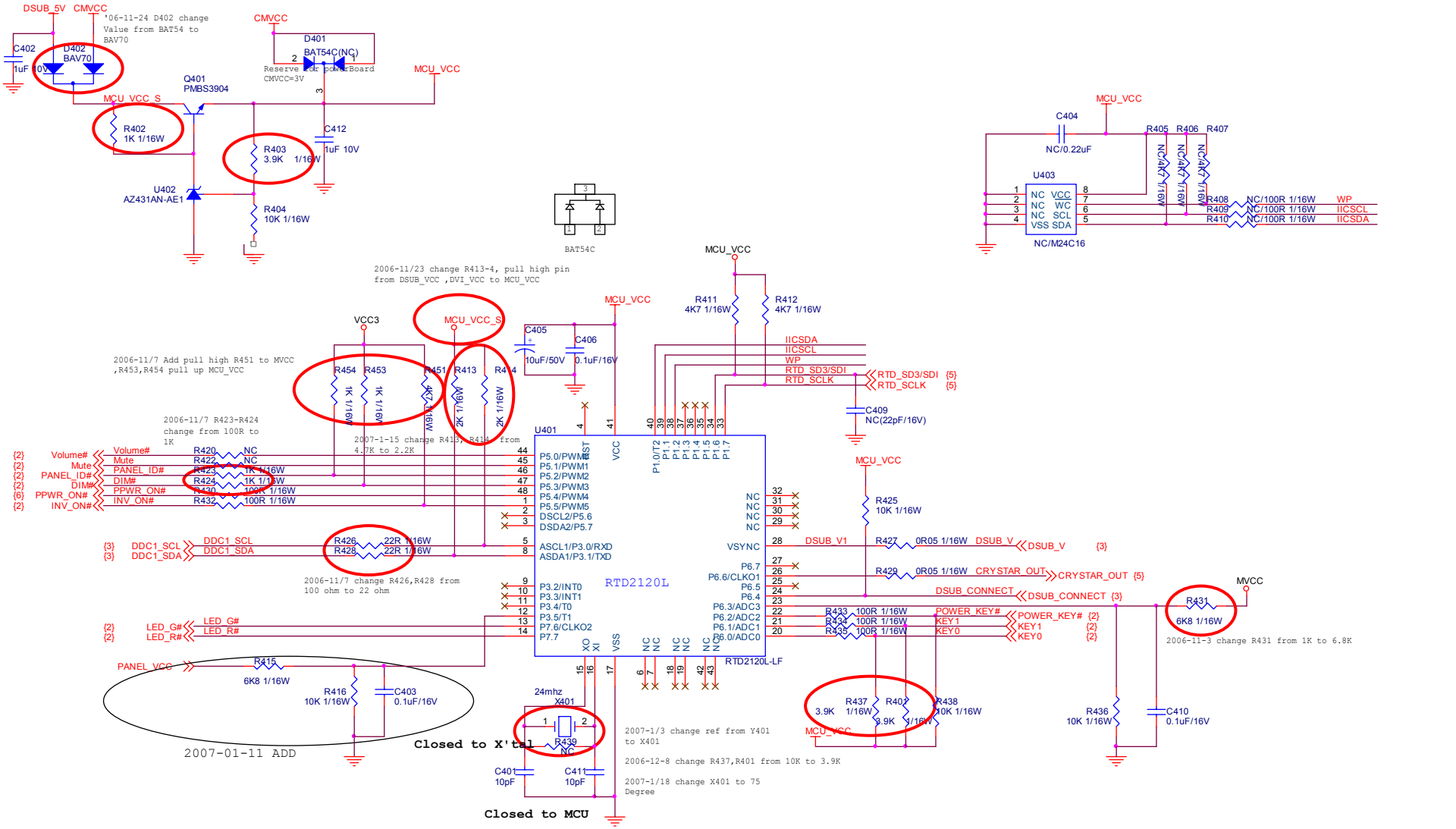




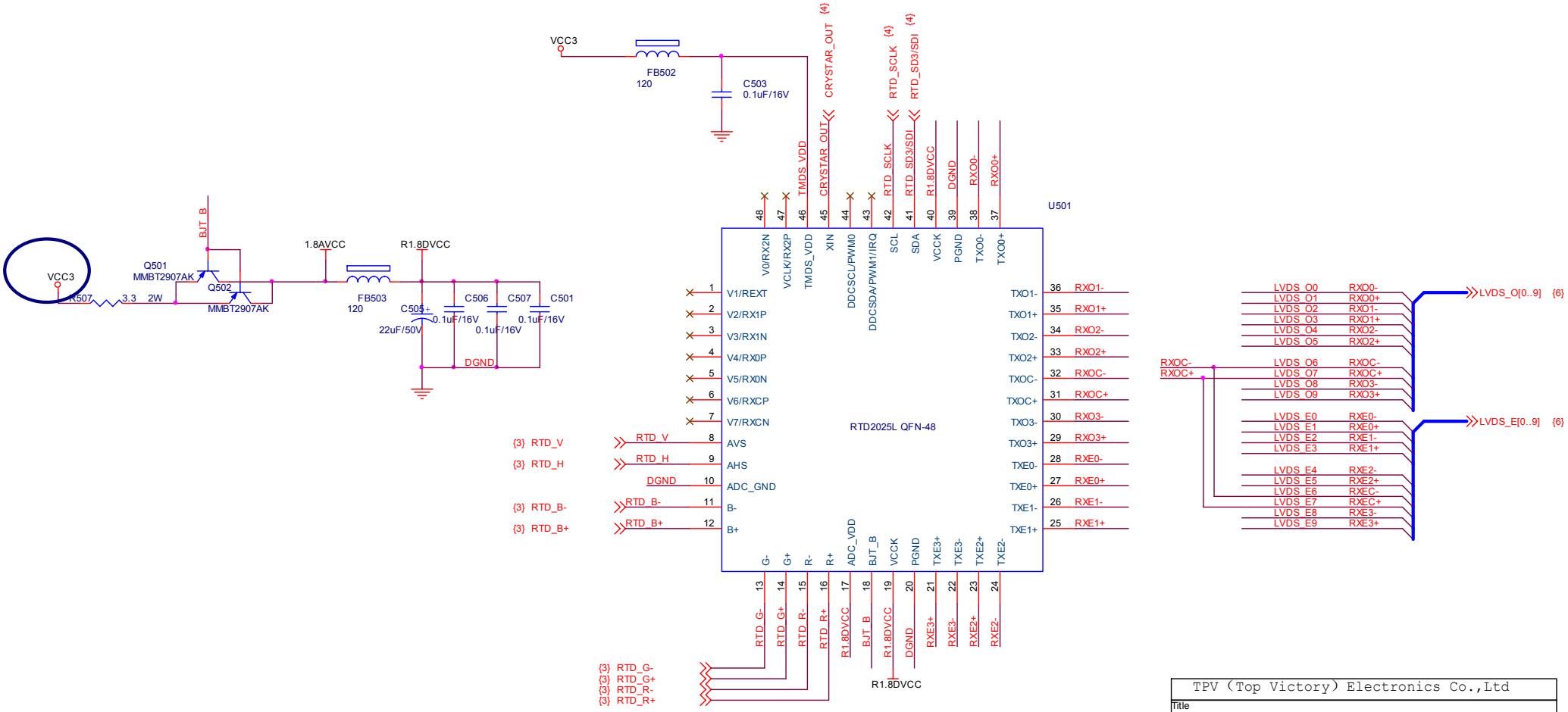


TPV (Top Victory) Electronics Co.,Ltd		
Title: Input		
Size: A	Document Number: G2498-1-2-X-1-080104	Rev: 1.0
Date: Sunday, January 06, 2008	Sheet 3 of 6	

07/08/03

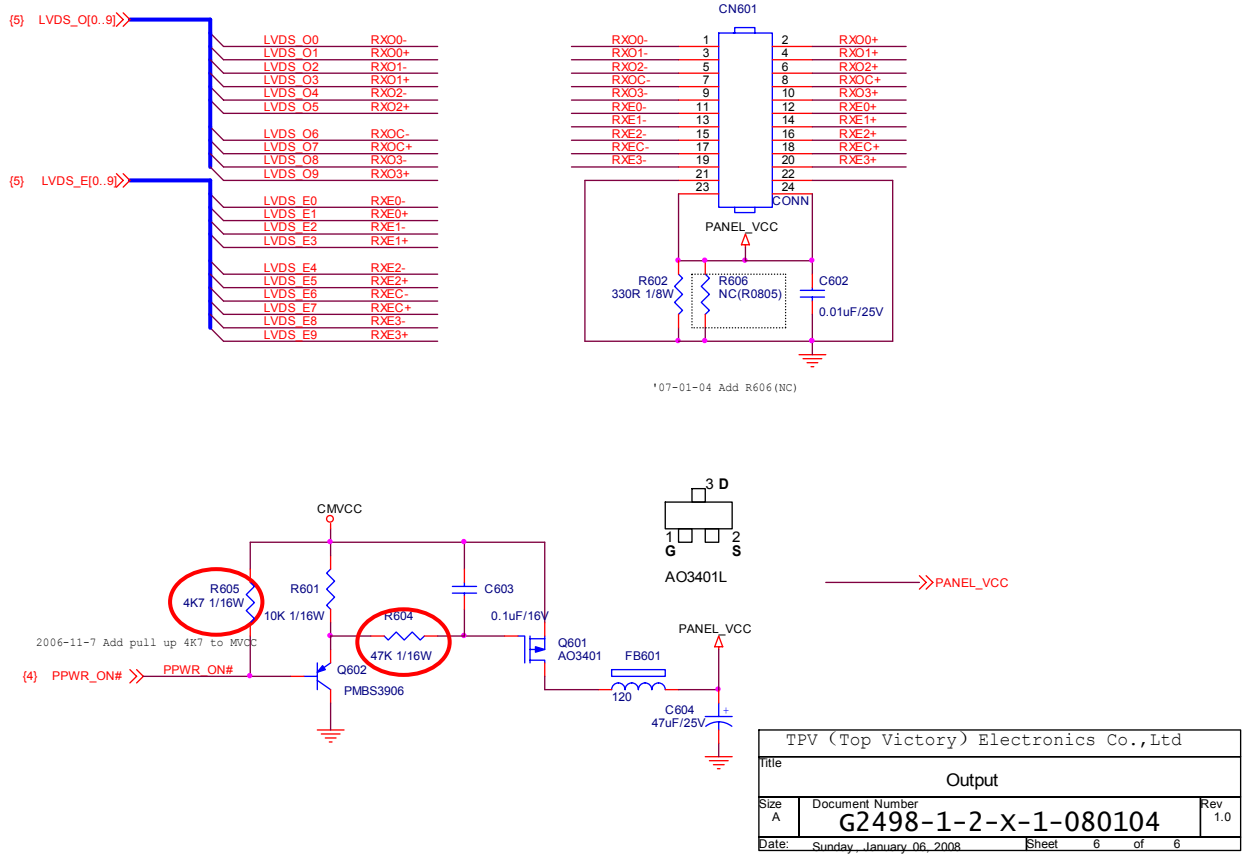


TPV (Top Victory) Electronics Co.,Ltd		
Title	MCU/RTD2120	
Size A	Document Number G2498-1-2-X-1-080104	Rev 1.0
Date: Friday, January 25, 2008	Sheet 4 of 6	



TPV (Top Victory) Electronics Co.,Ltd		
Title: RTD2025L		
Size: A	Document Number: G2498-1-2-X-1-080104	Rev: 1.0
Date: Sunday, January 06, 2008	Sheet 5 of 6	

LVDS Panel (Normal Type)



TPV (Top Victory) Electronics Co.,Ltd		
Title: Output		
Size: A	Document Number: G2498-1-2-X-1-080104	Rev: 1.0
Date: Sunday, January 06, 2008	Sheet 6 of 6	

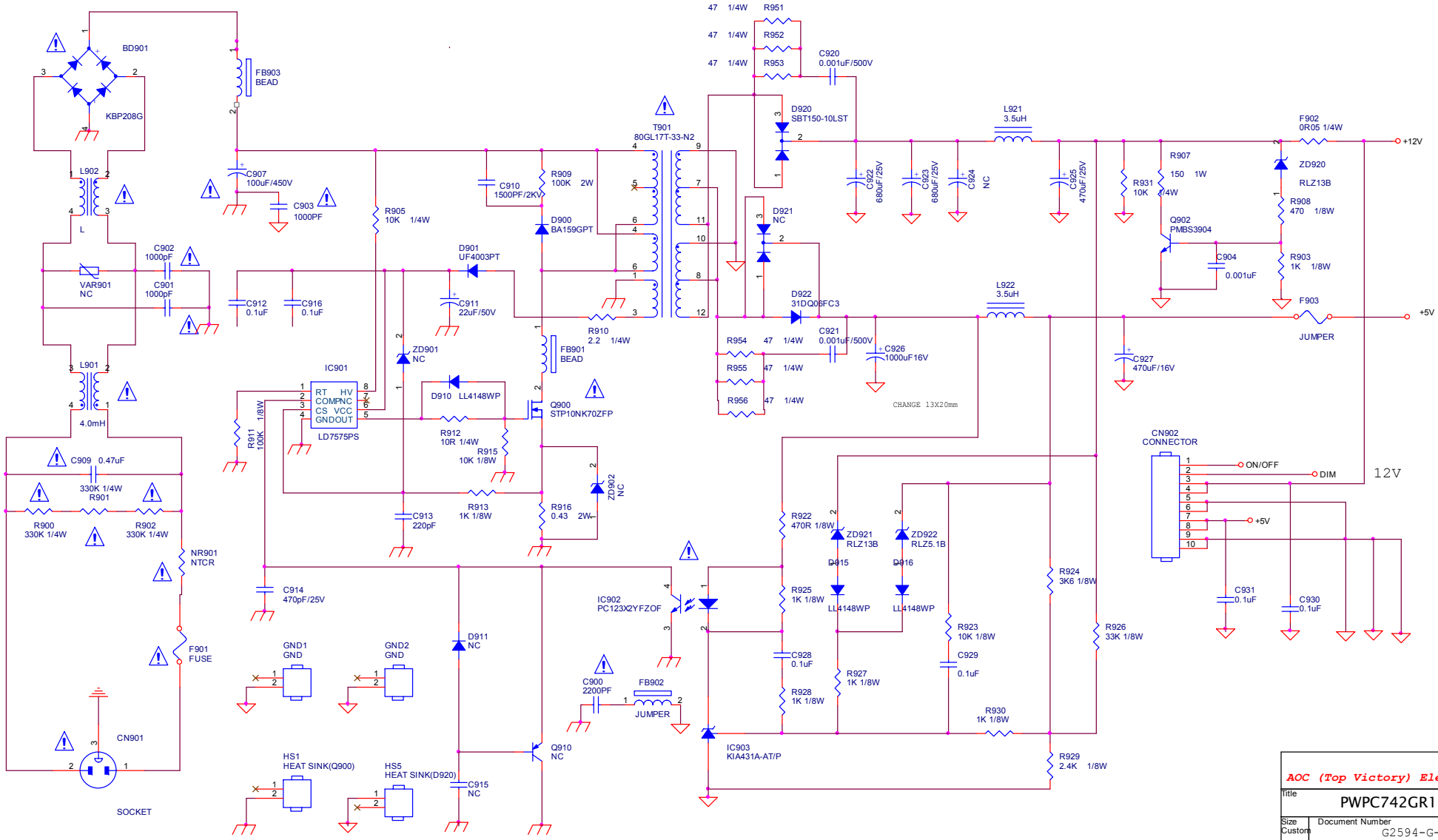
TPV (Top Victory) Electronics Co.,Ltd

Realtek Semiconductor Corp.

A G2498-1-2-X-1-080104

07/08/03

9.2 Power Board



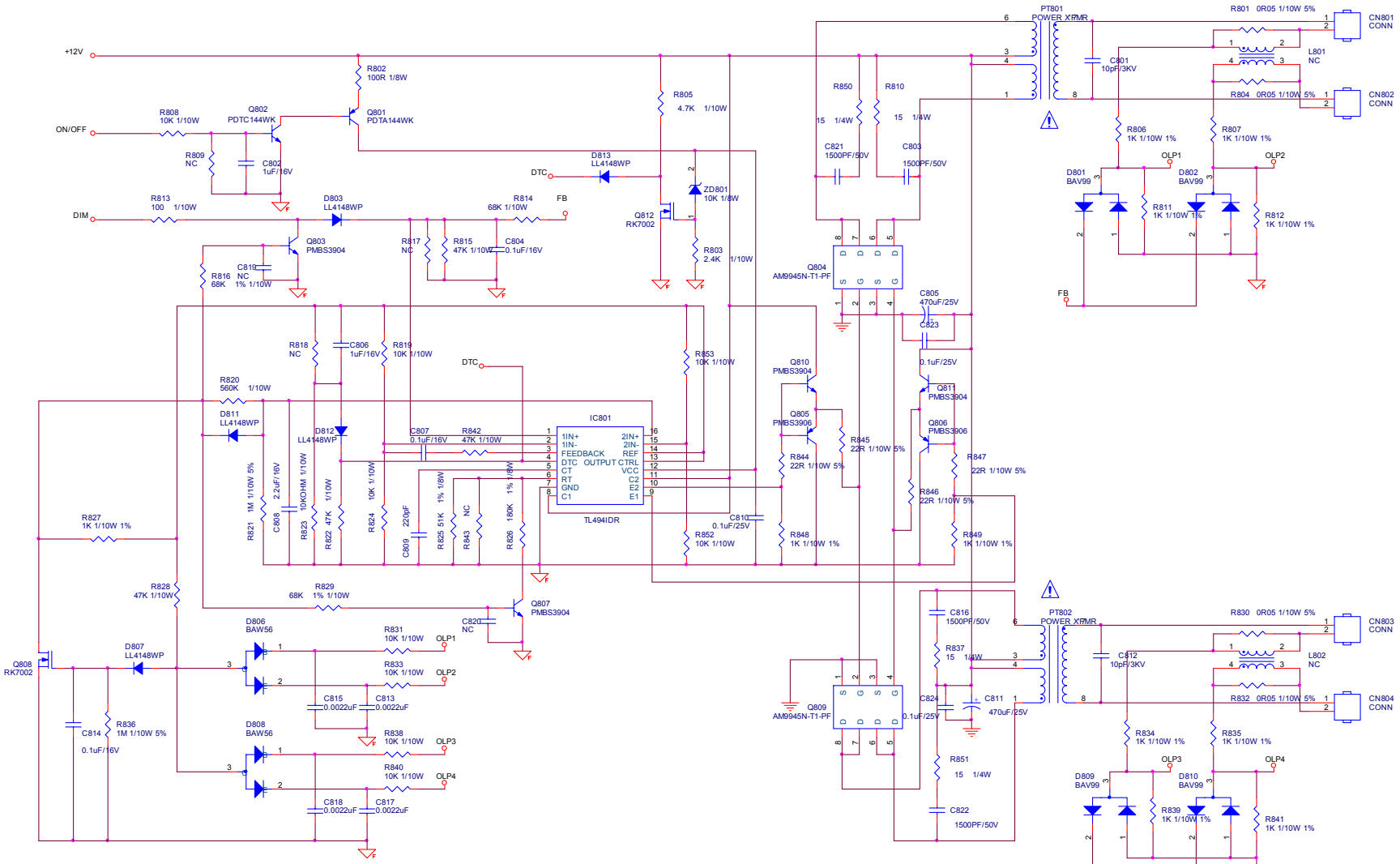
AOC (Top Victory) Electronics Co., Ltd

Title: PWPC742GR1

Size: Custom | Document Number: G2594-G-X-X-2-070515

Date: Thursday, May 17, 2007 | Sheet 1 of

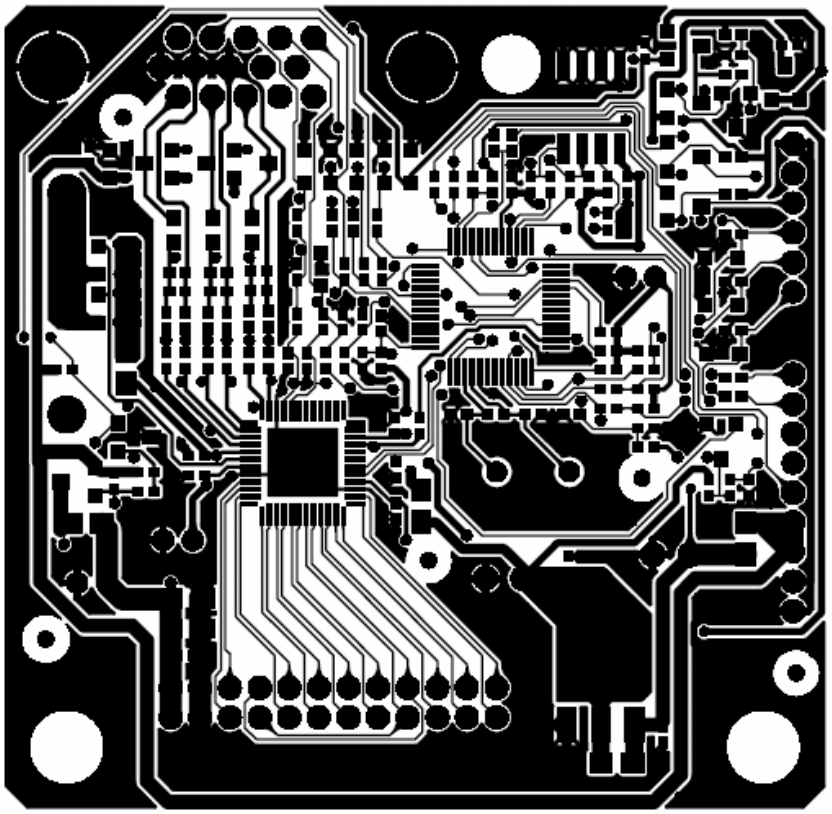
07/08/03

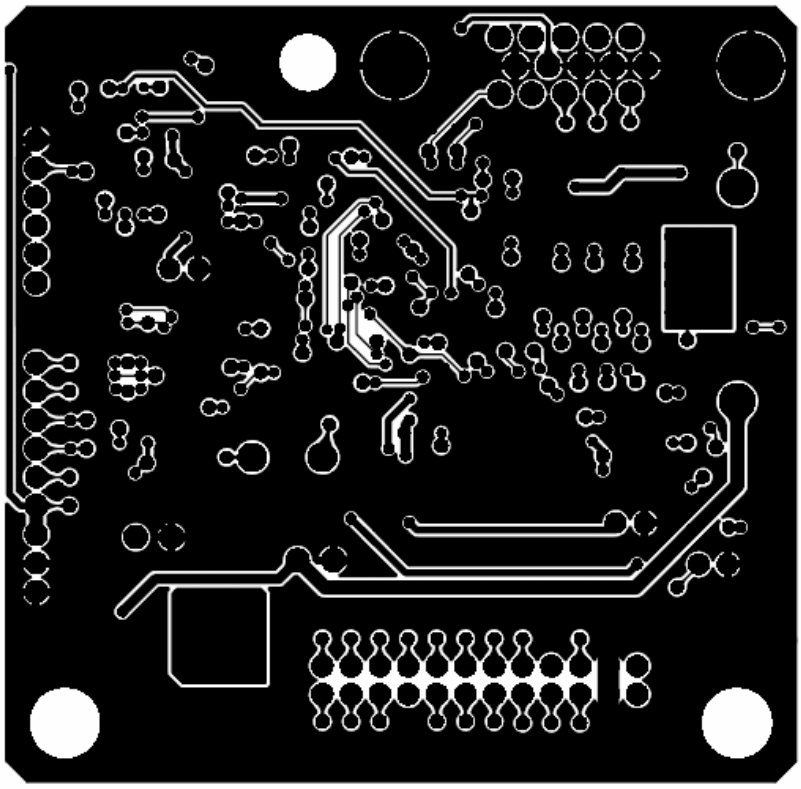


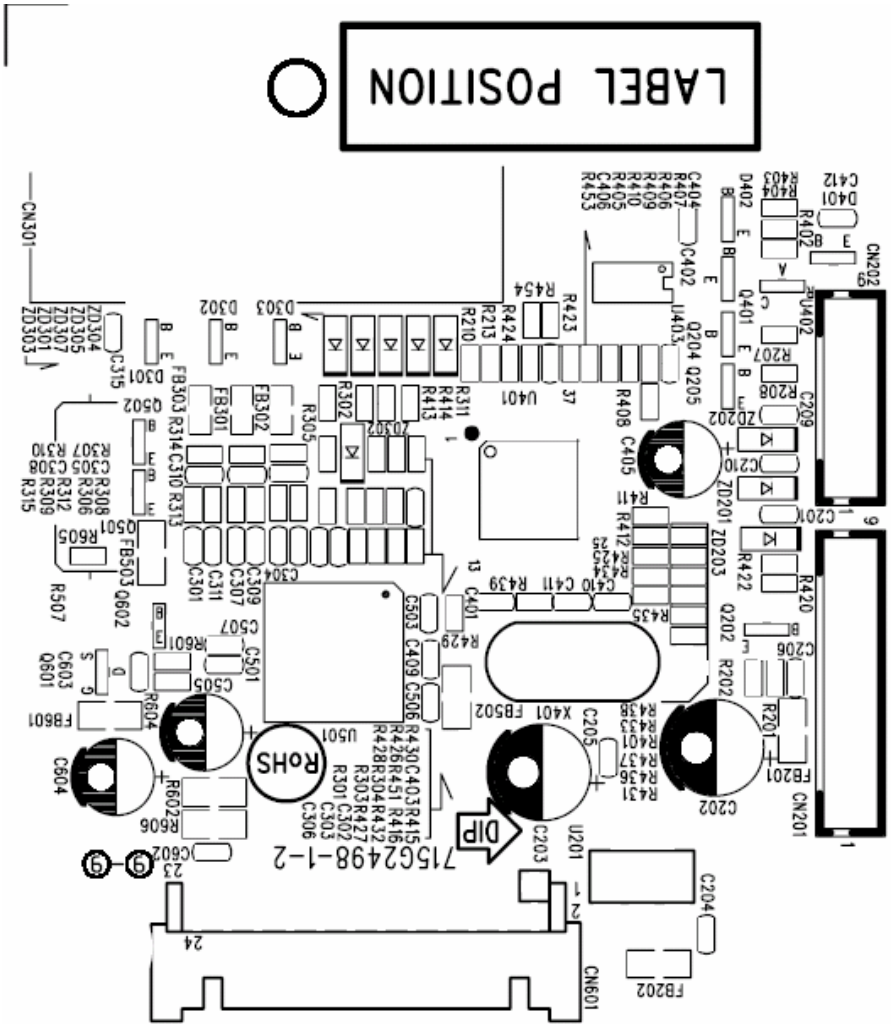
TPV(Top victory) Electronics Co.,ltd.		
Title: 00. Engineer Marks,Contents		
Size: A3	Document Number: G2594-G-X-X-2-070515	Rev: G
Date: Thursday, May 17, 2007	Sheet 1 of 1	

10. PCB Layout

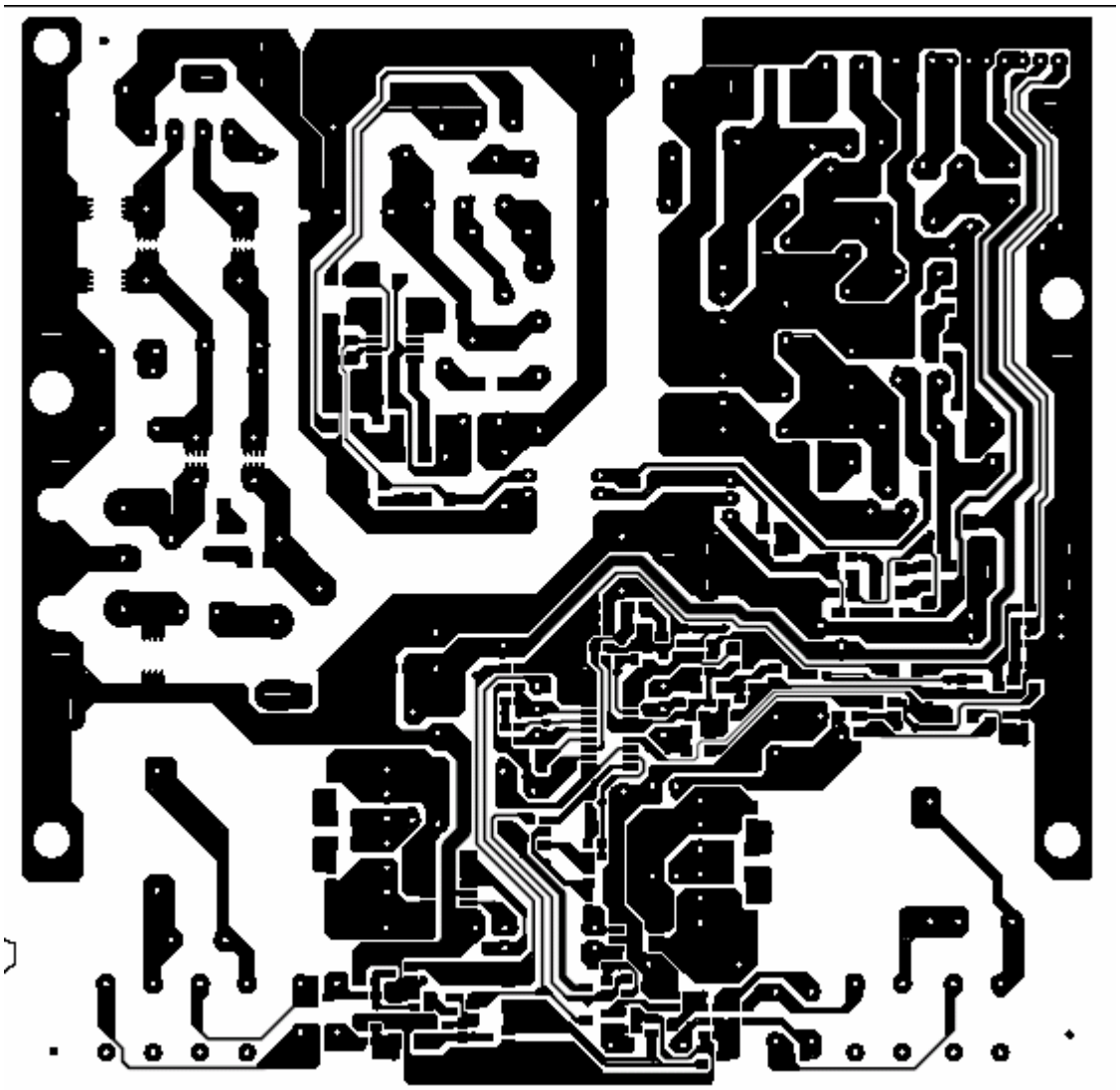
10.1 Main Board

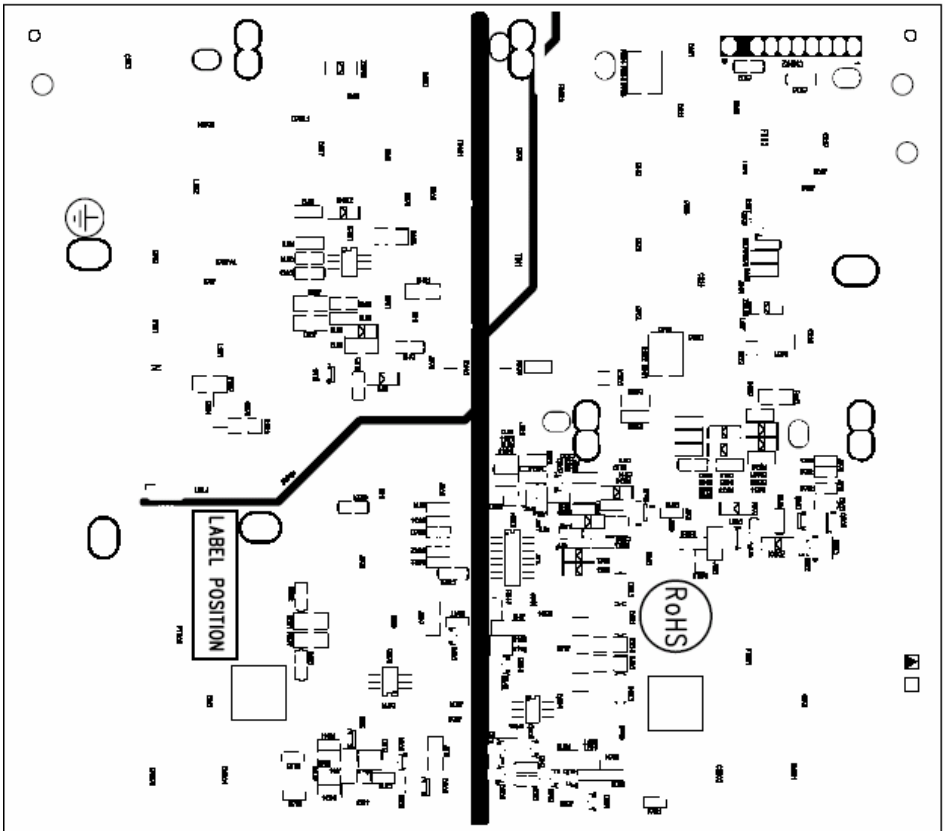


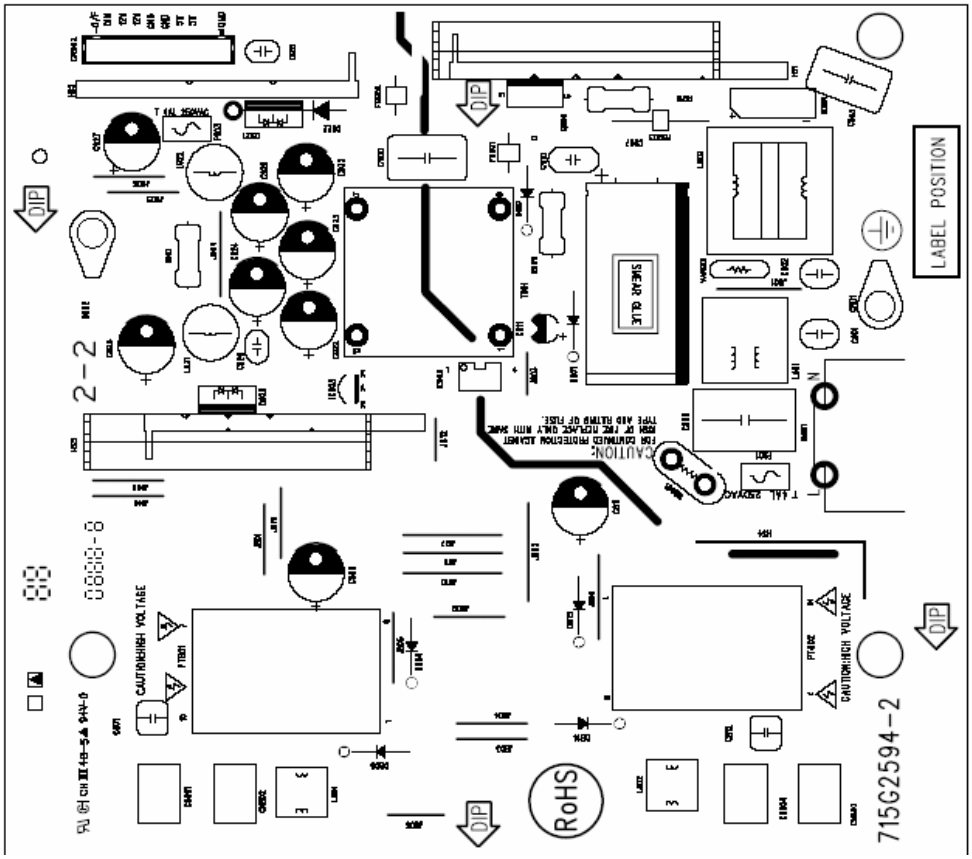




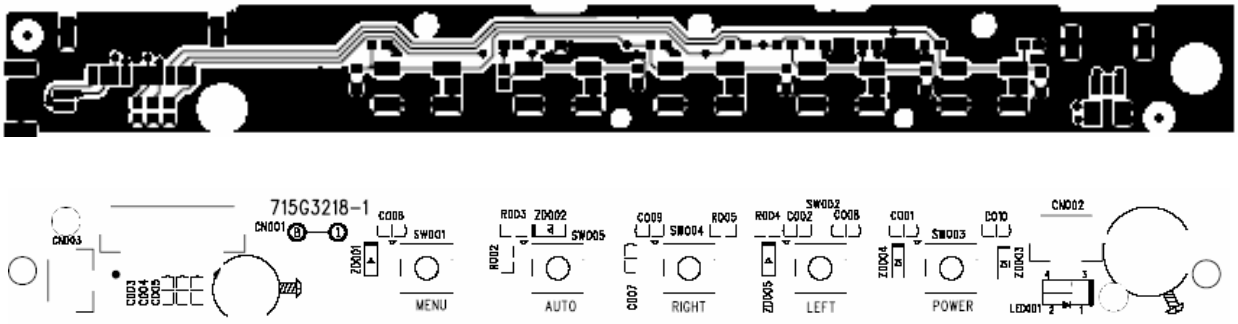
10.2 Power Board



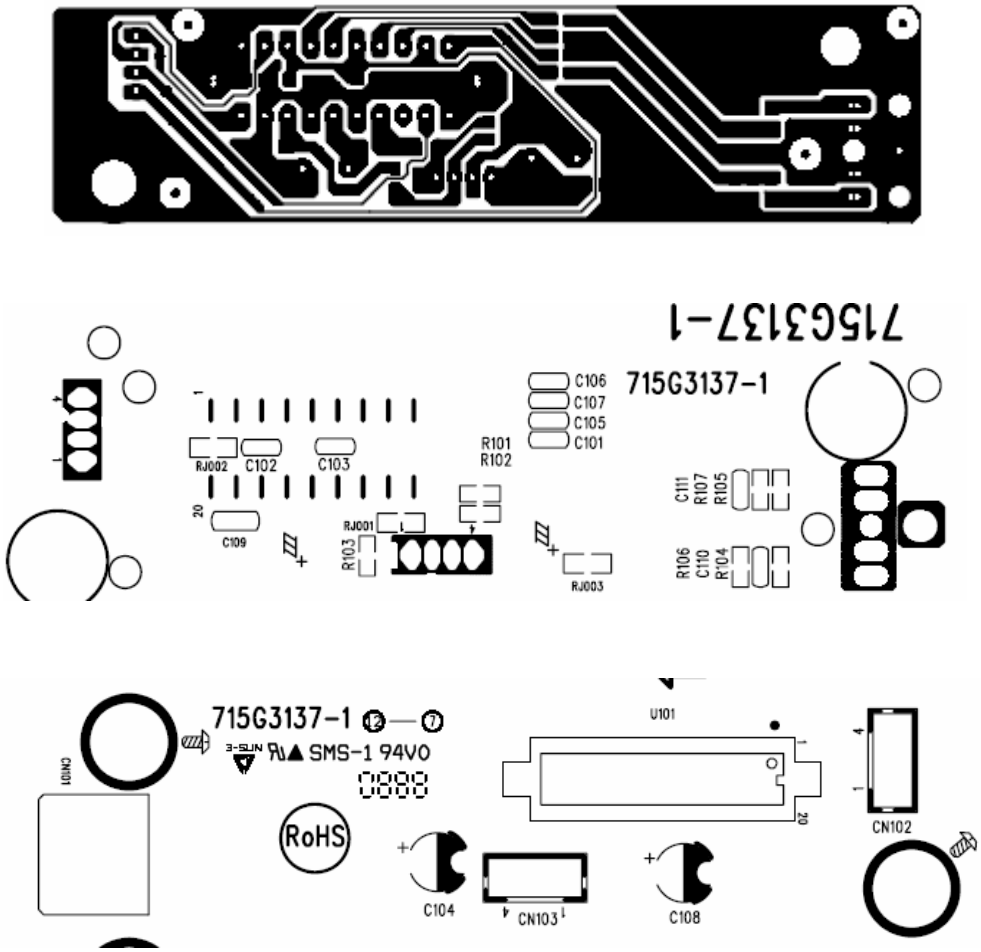




10.3 key board



10.4 Audio board



11. Maintainability

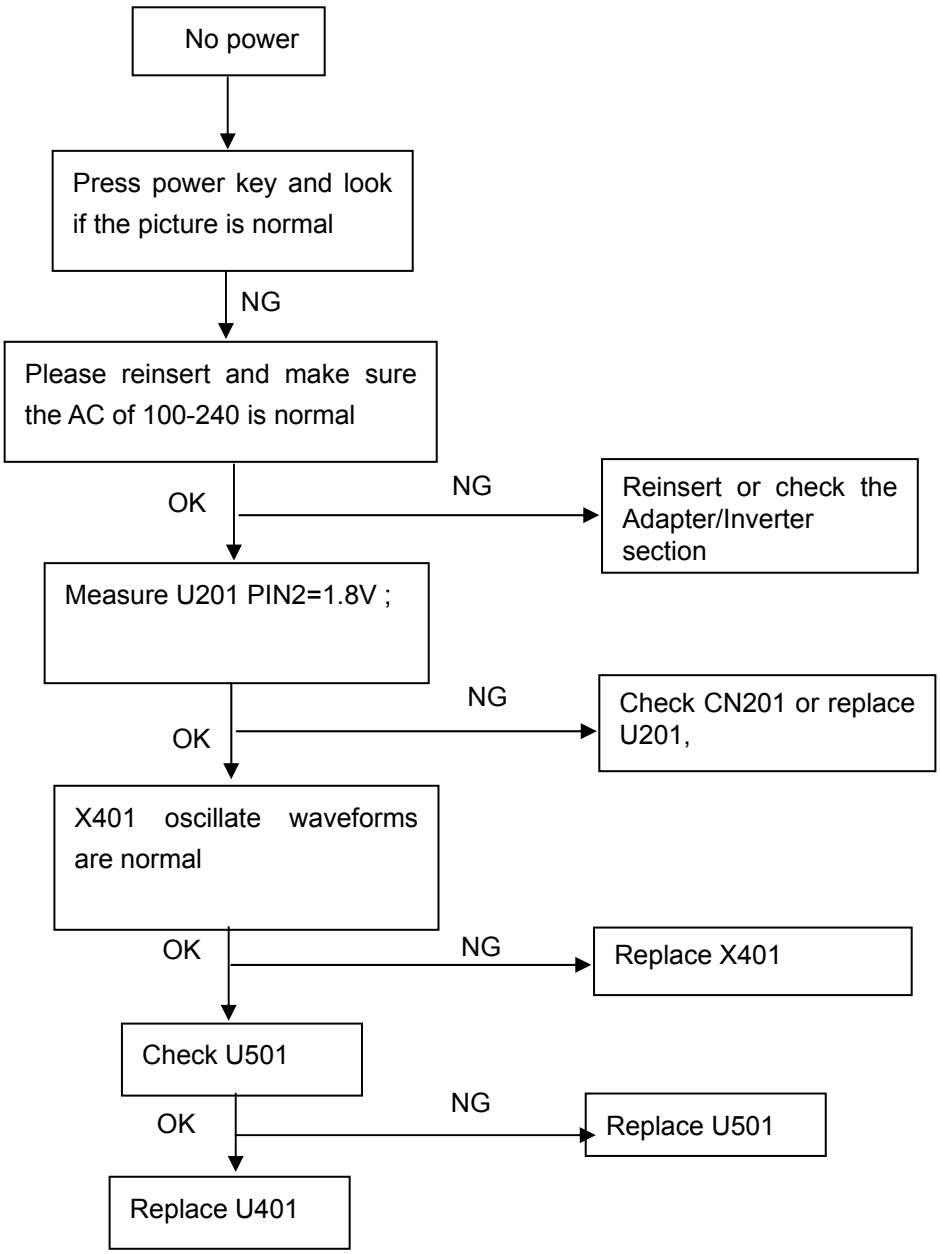
11.1 Equipments and Tools Requirement

1. Voltmeter.
2. Oscilloscope.
3. Pattern Generator.
4. DDC Tool with Compatible Computer.
5. Alignment Tool.
6. LCD Color Analyzer.
7. Service Manual.
8. User Manual.

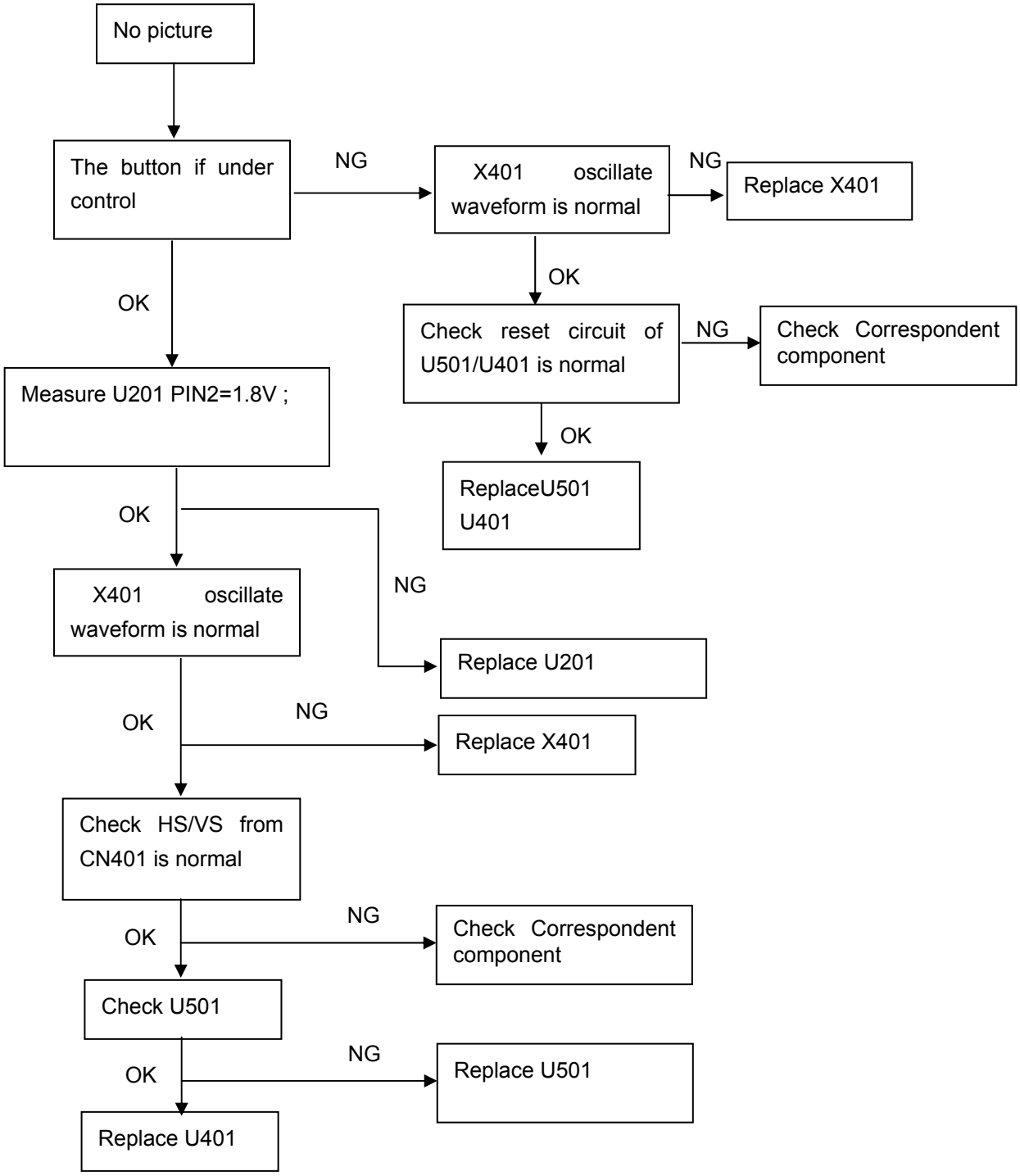
11.2 Trouble Shooting

11.2.1 Main Board

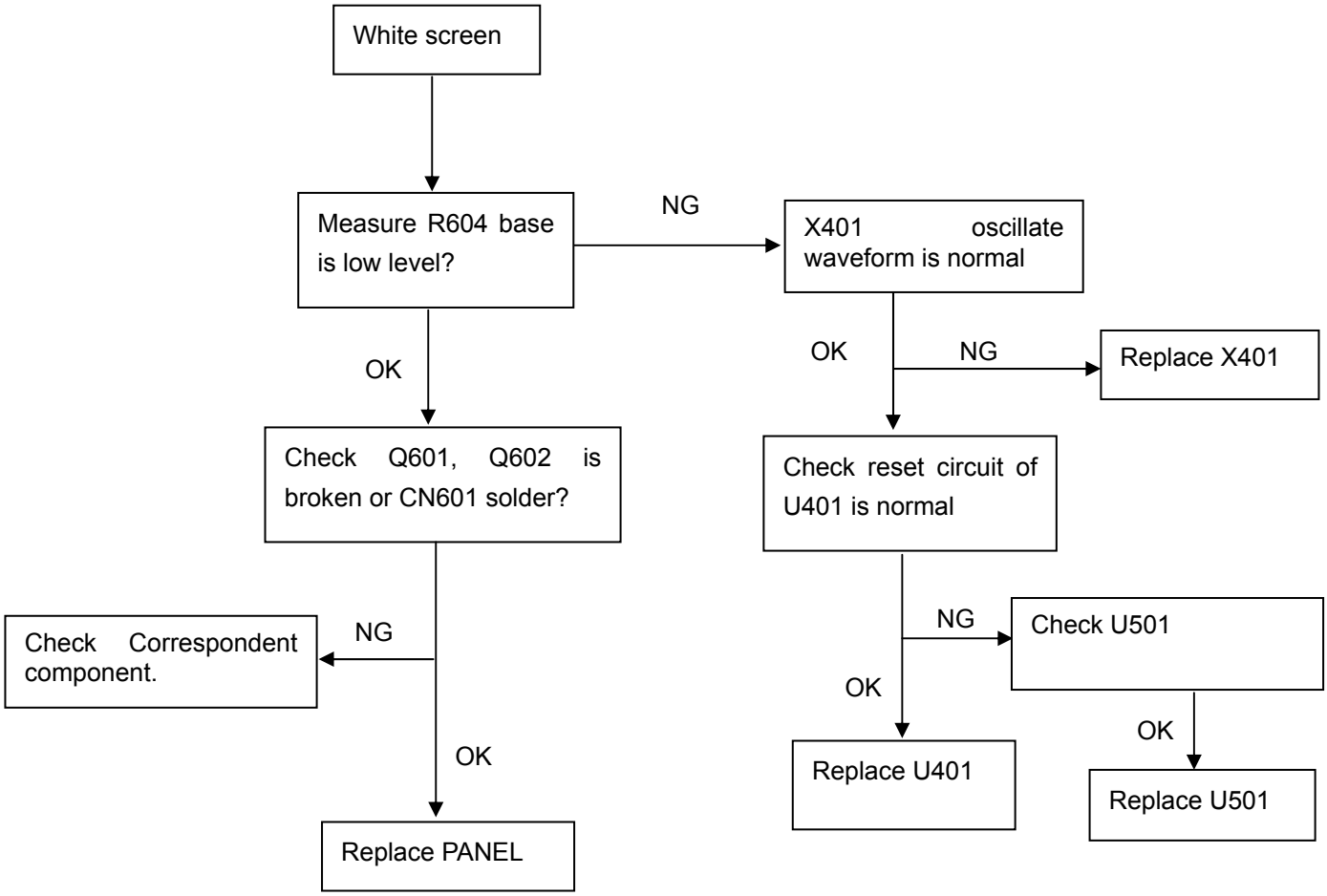
No power



No picture (LED orange)

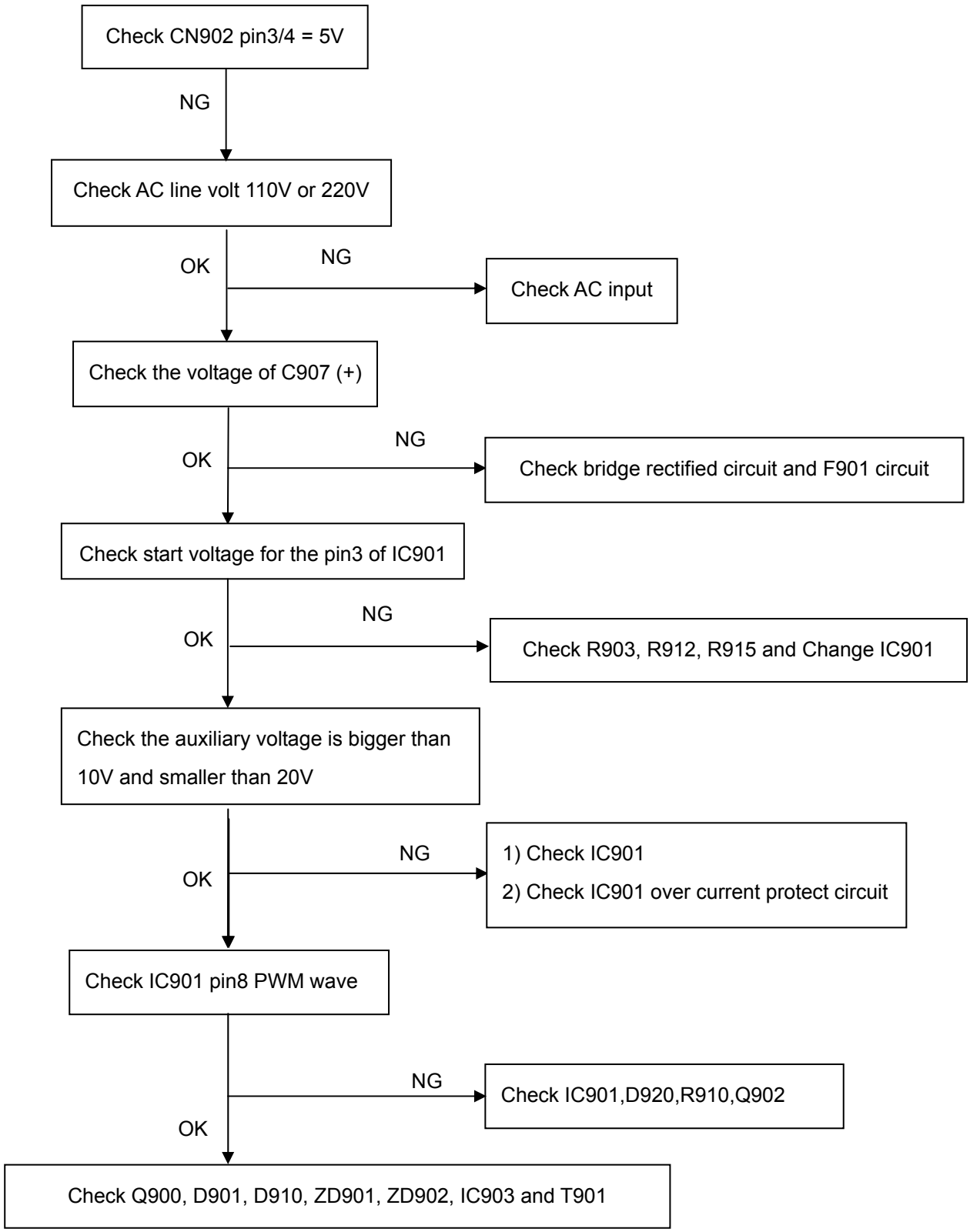


White screen

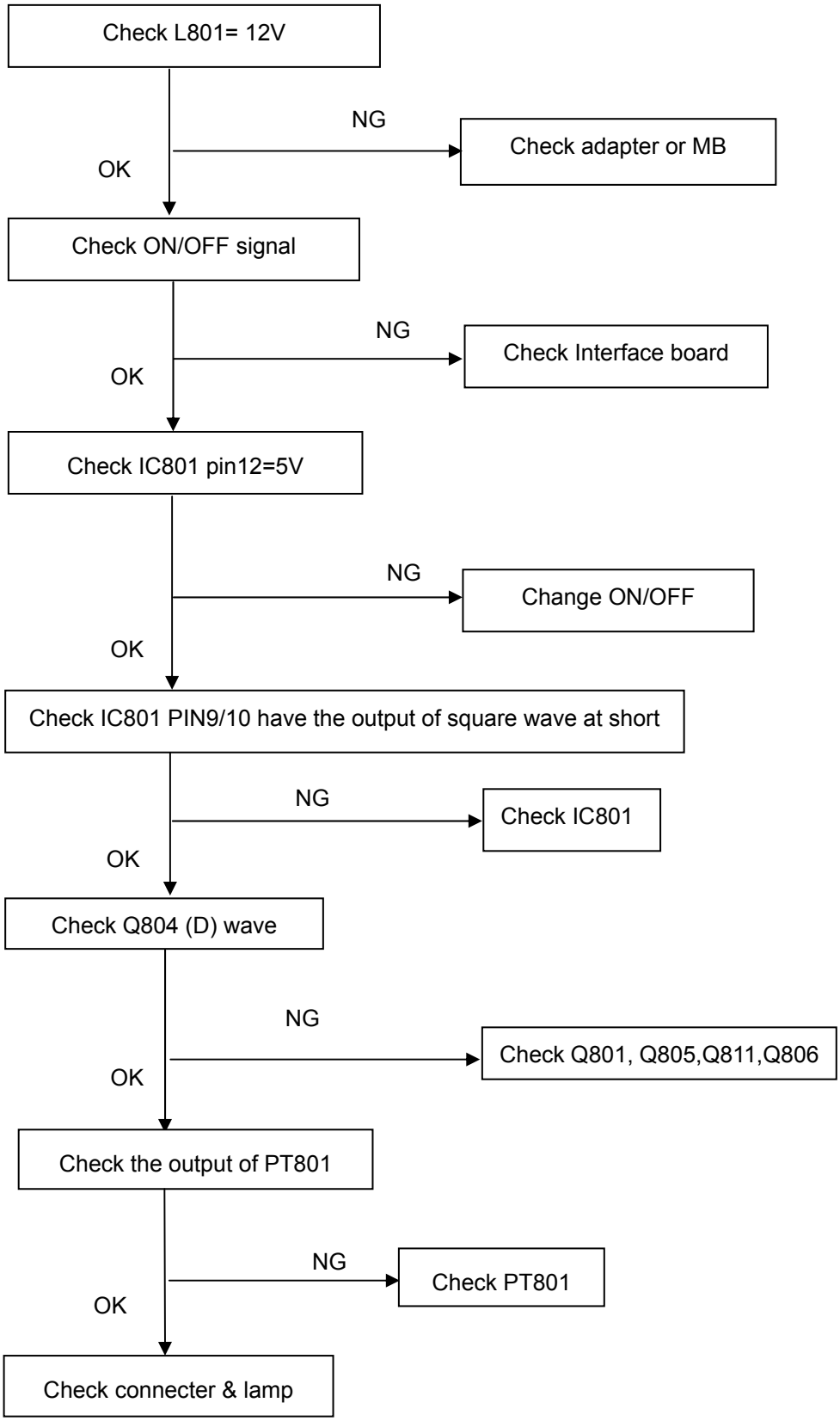


11.2.2 Power Board

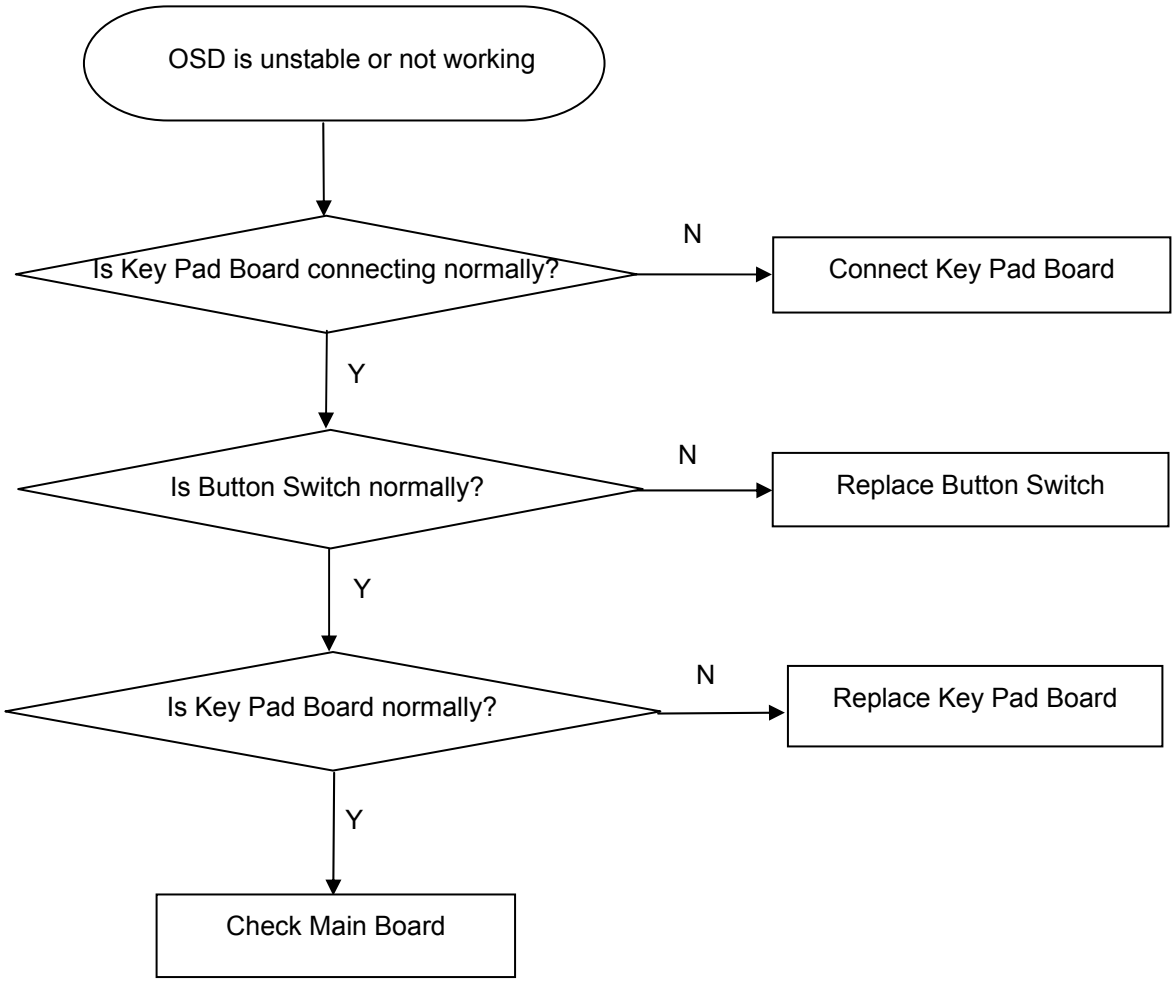
1) No power



2.) No Backlight



11.2.3 Key Board



12. DDC Instruction

General

DDC Data Re-programming

In case the main EEPROM with Software DDC which store all factory settings were replaced because a defect, repaired monitor' the serial numbers have to be re-programmed.

It is advised to re- soldered the main EEPROM with Software DDC from the old board onto the new board if circuit board have been replaced, in this case the DDC data does not need to be re-programmed.

Additional information about DDC (Display Data Channel) may be obtained from Video Electronics Standards Association (VESA). Extended Display Identification Data (EDID) information may be also obtained from VESA.

1. An i486 (or above) personal computer or compatible.
2. Microsoft operation system Windows 95/98/2000/XP.
3. " PORT95NT.exe, WinDDC_ setup" program.
4. Software OSD SN Alignment kits

The kit contents:

a. OSD SN BOARD x1

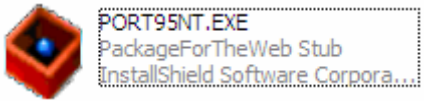
b. Printer cablex1

c. VGA cable x1

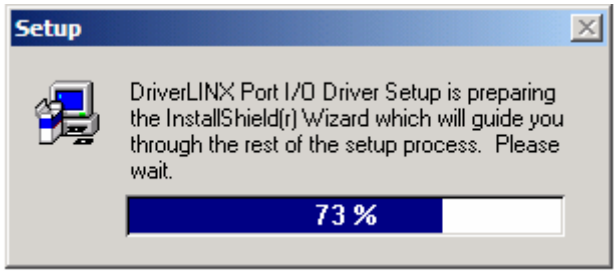
d. Digital cable x1

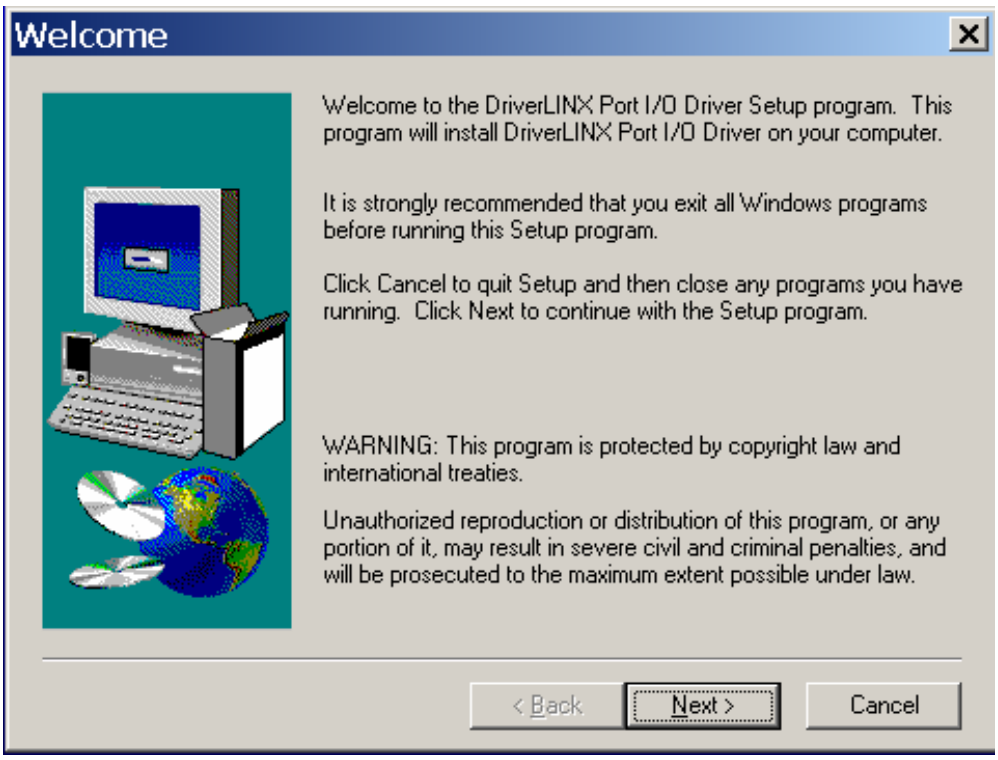
e. 12V DC power source

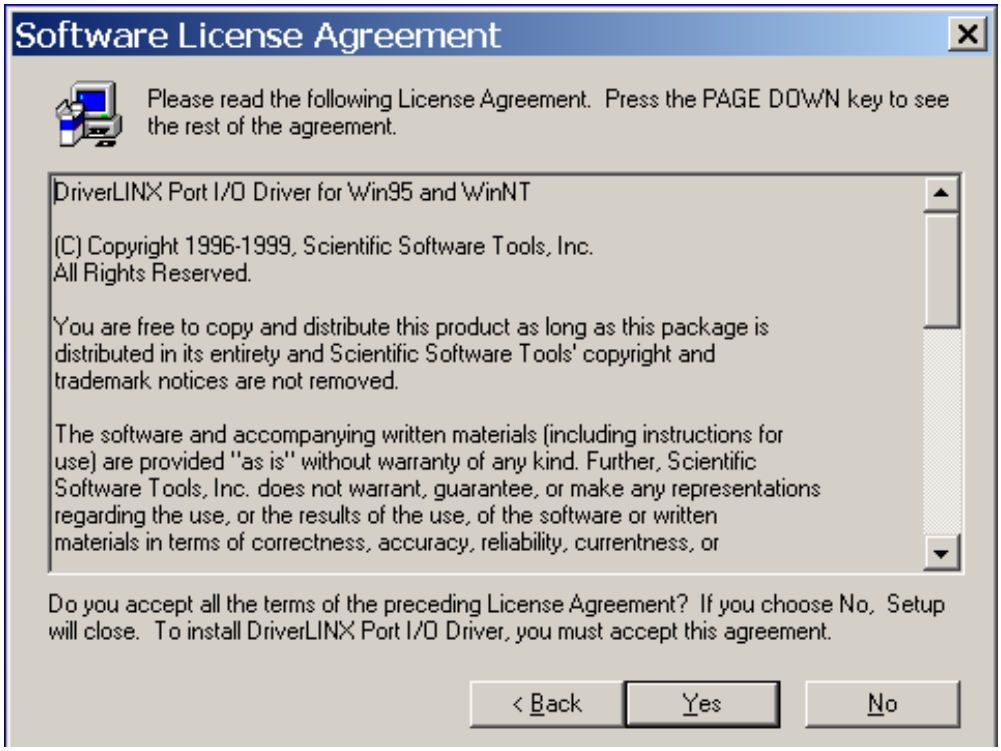
1. Install the "PORT95NT.EXE", and restart the computer.

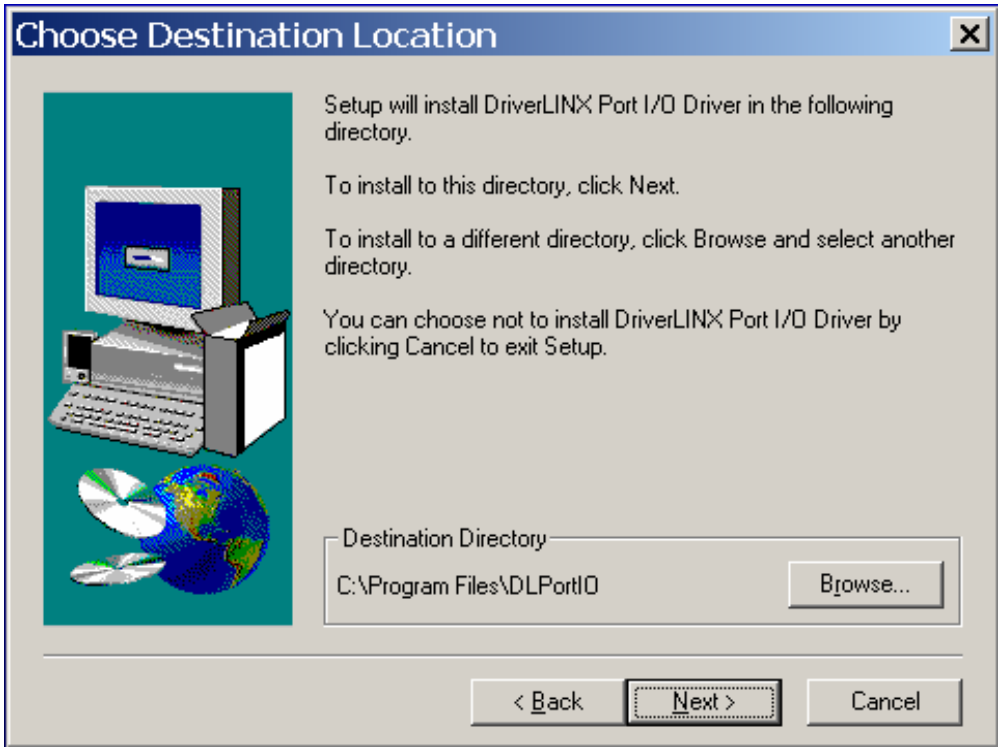
You must install the 

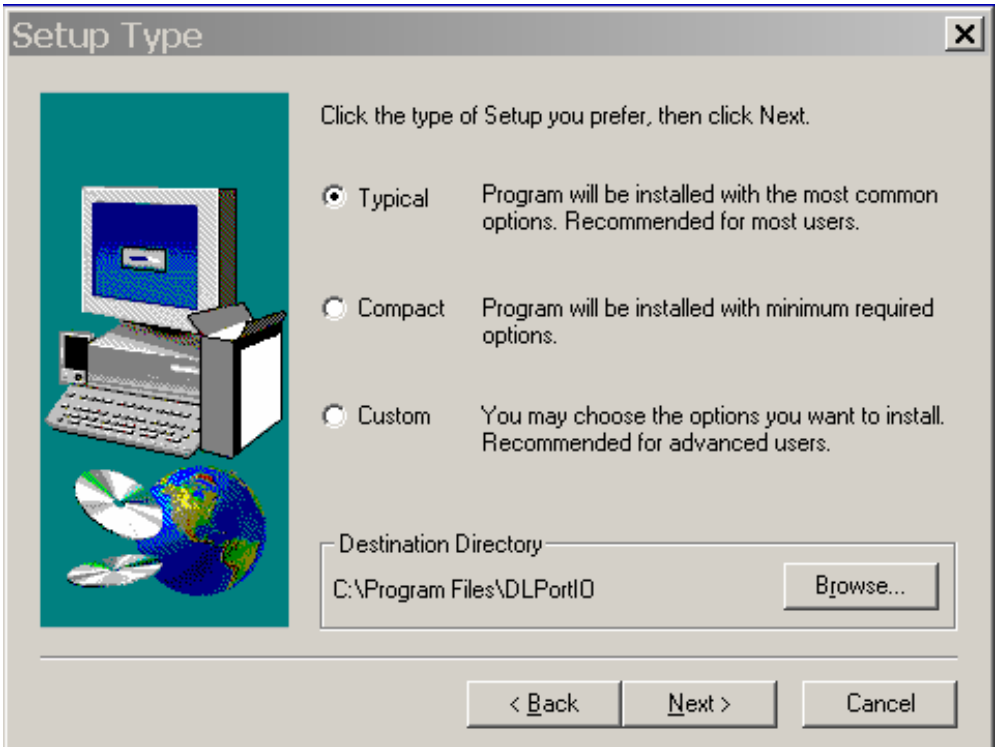
at the first. The processing as follows:

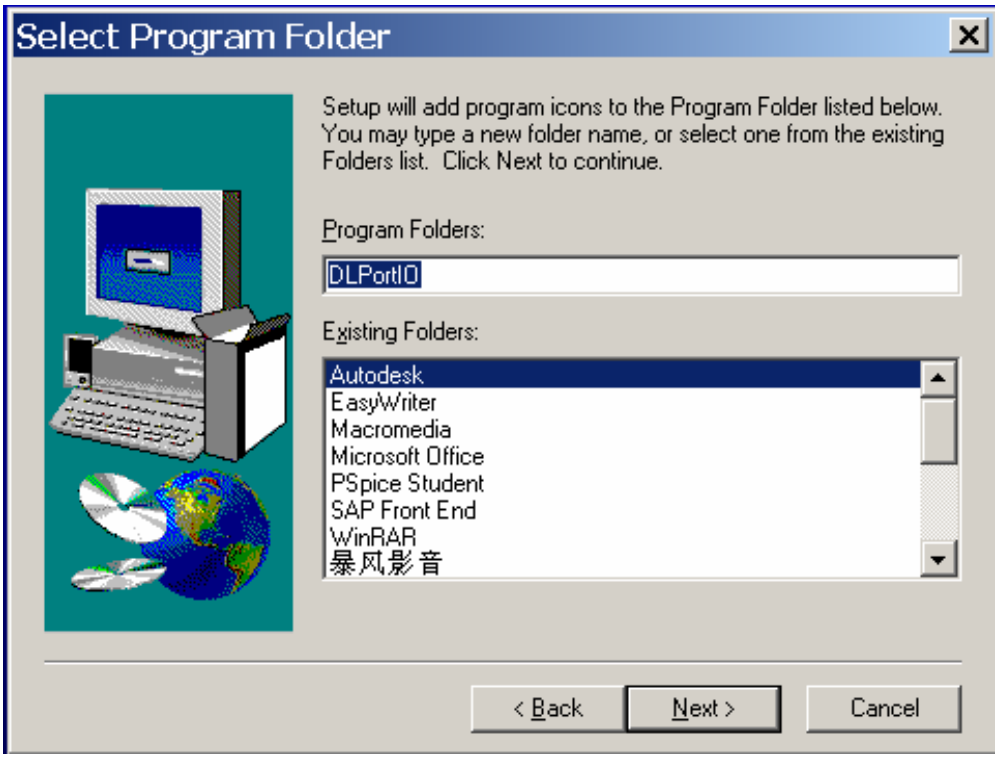


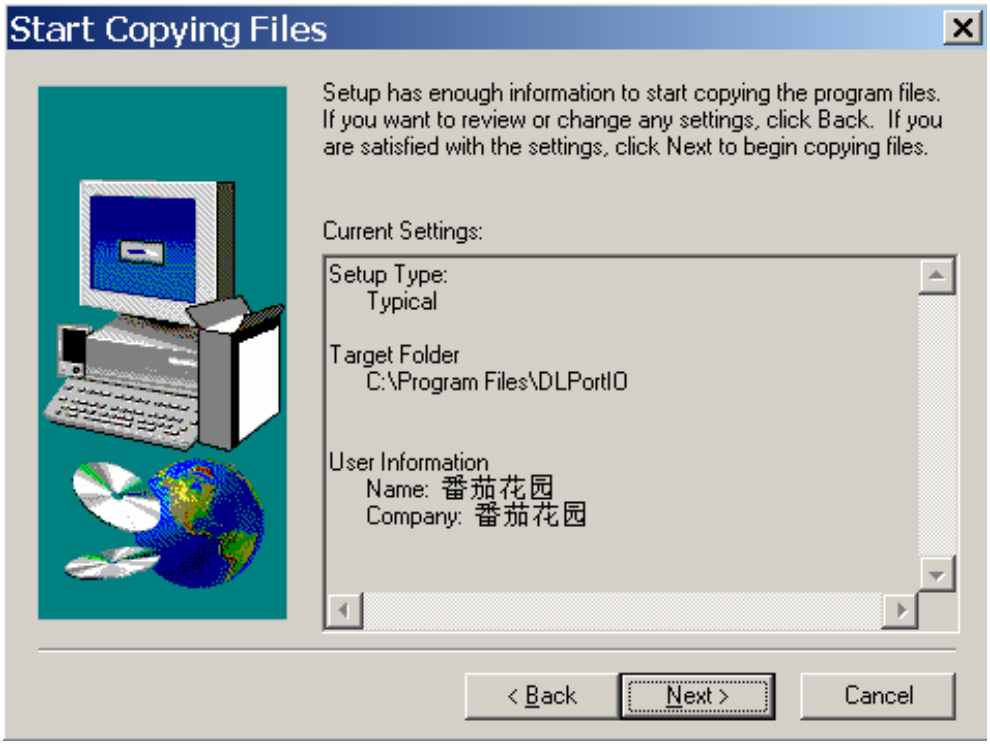


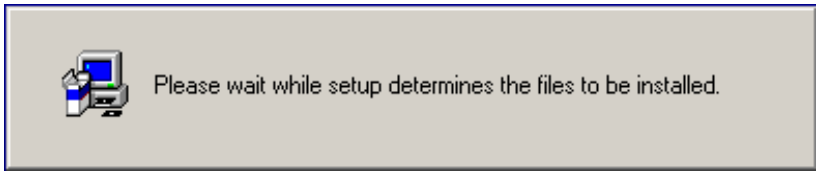




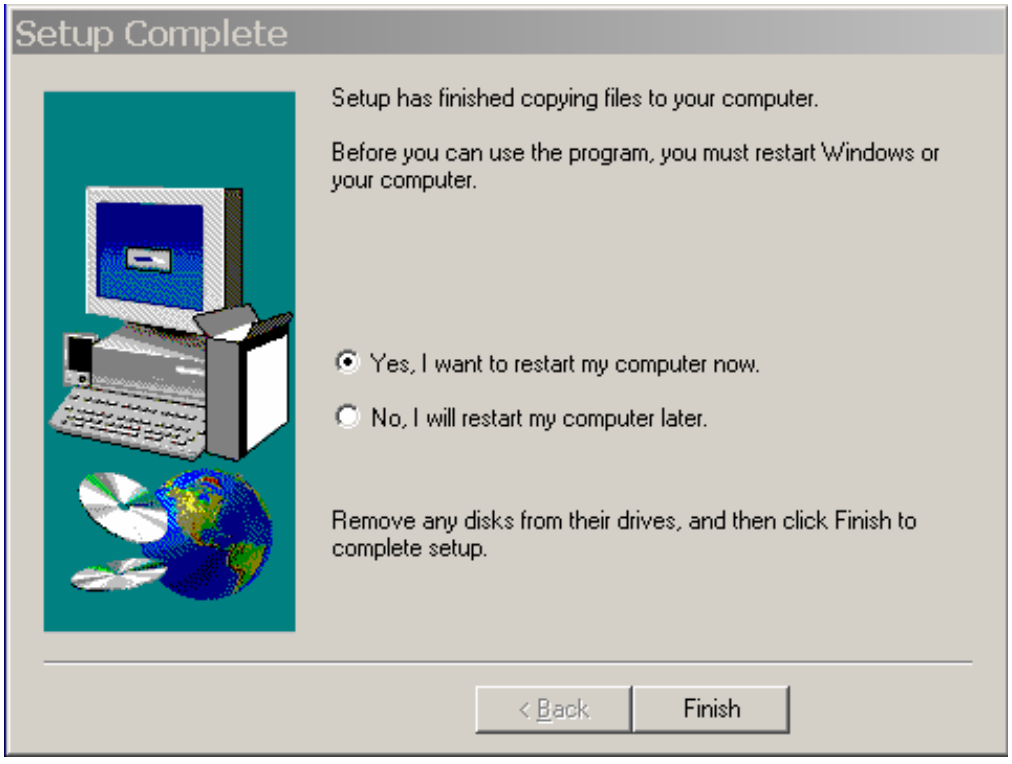








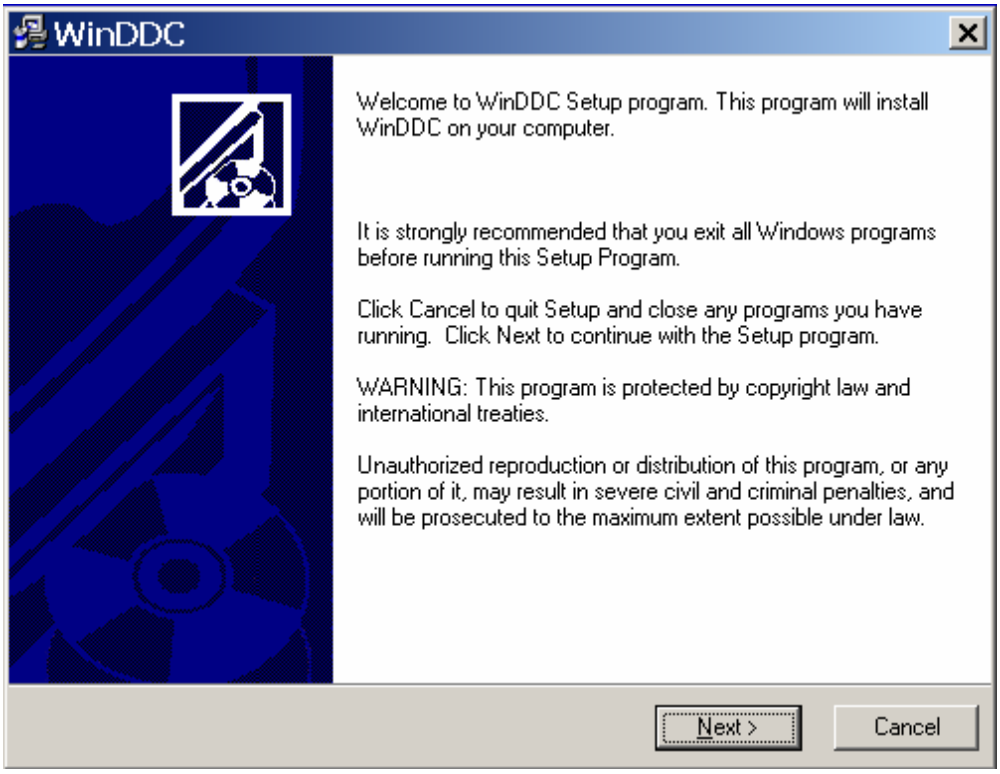
Click Finish to complete the installation.

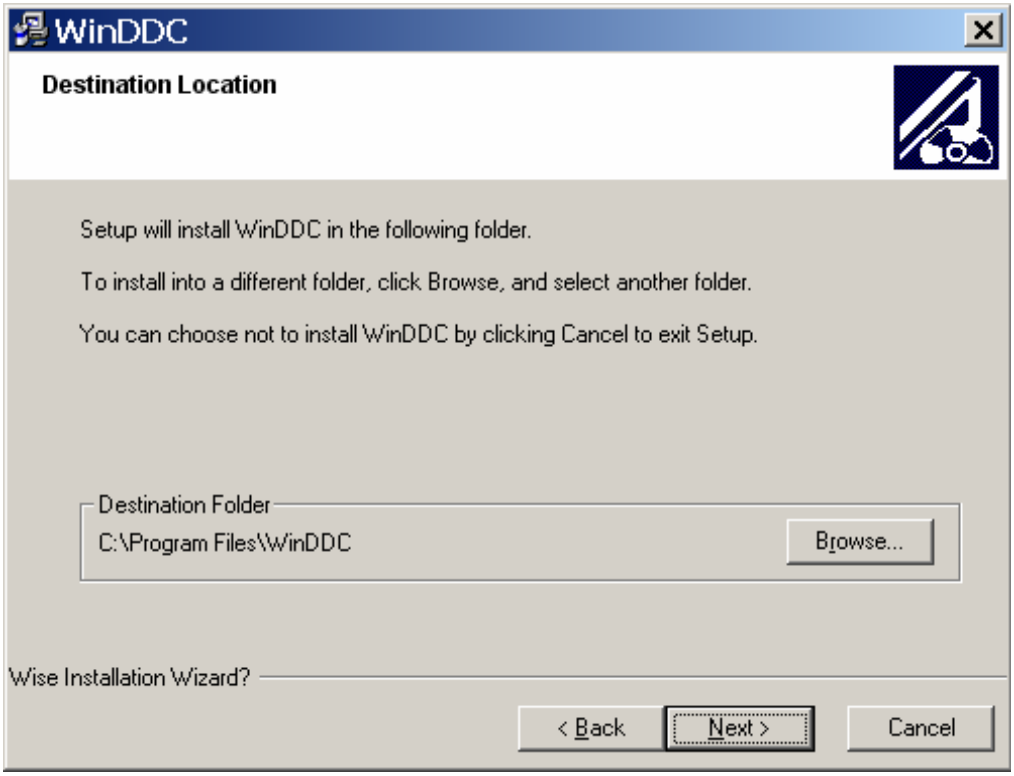


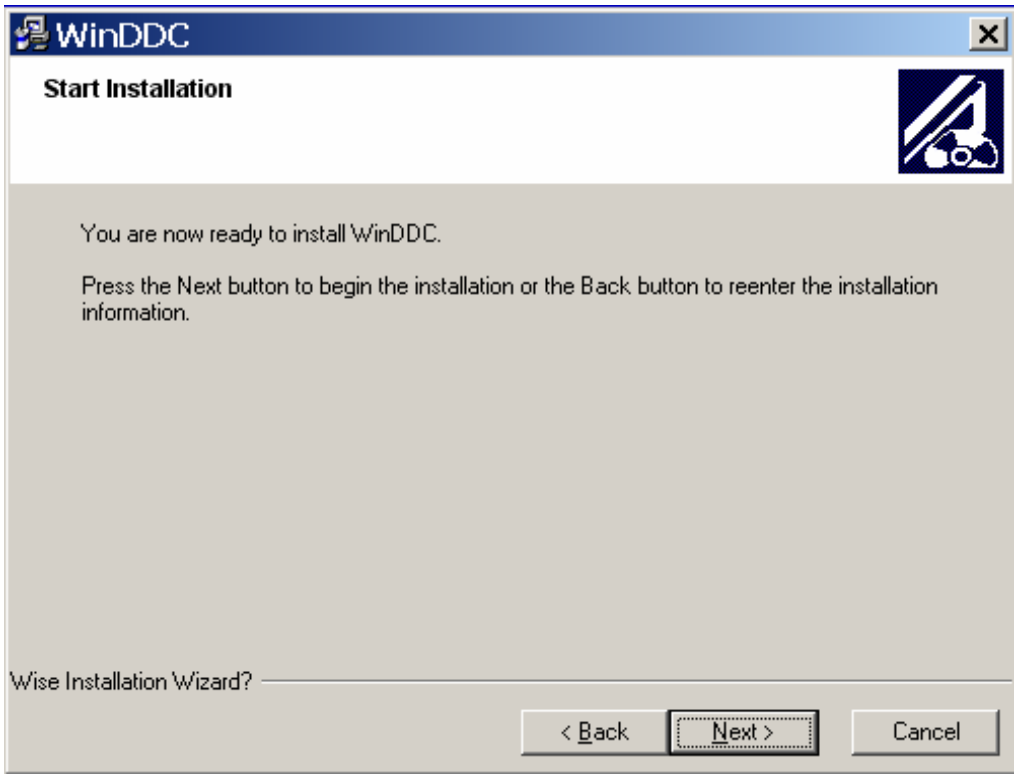
Note: After installation, you must restart the PC to take the setup to effect.

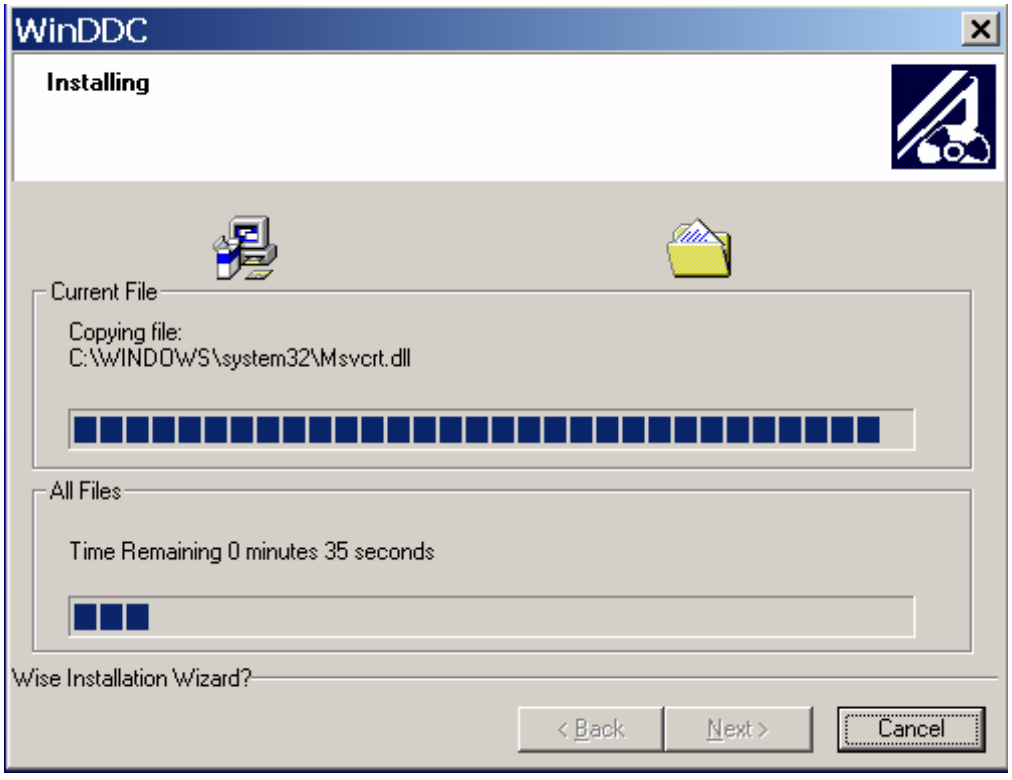
2. Install the "WinDDC_ setup"

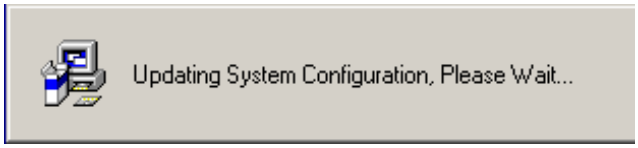
Second, you must install the  . The processing as follows:



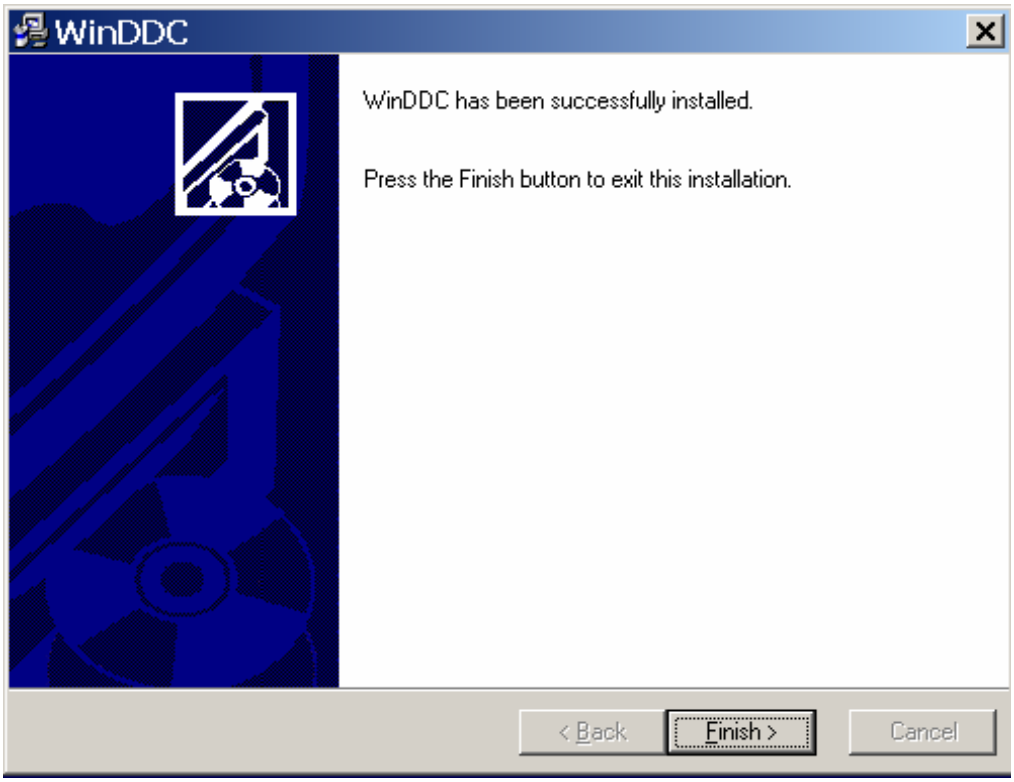






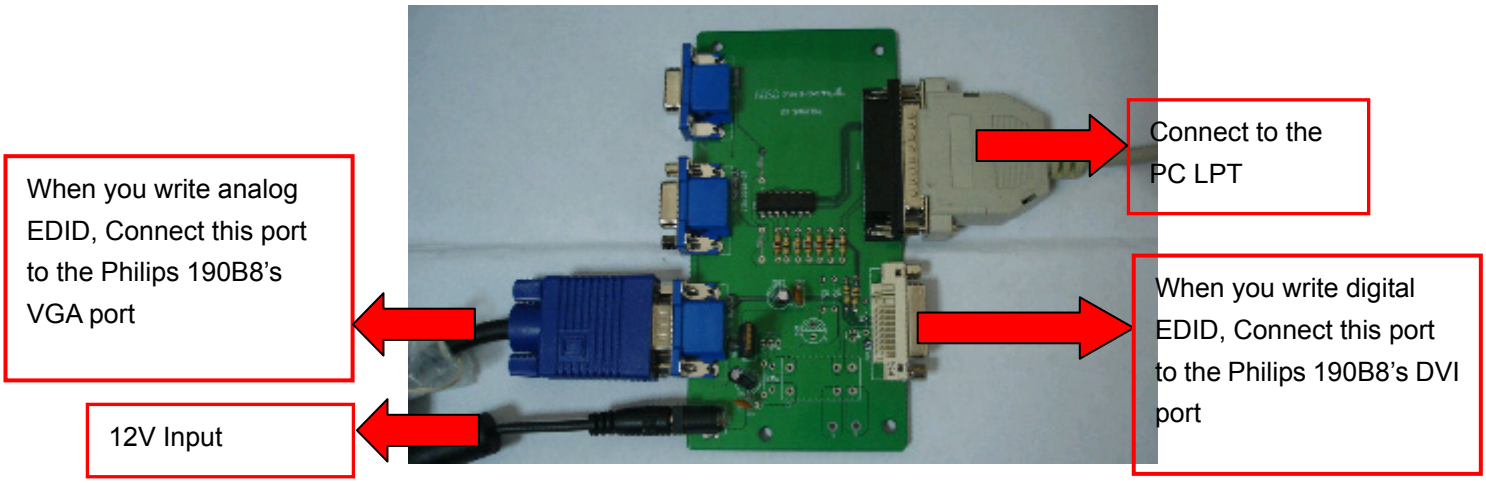


Click [Finish] to complete the installation.



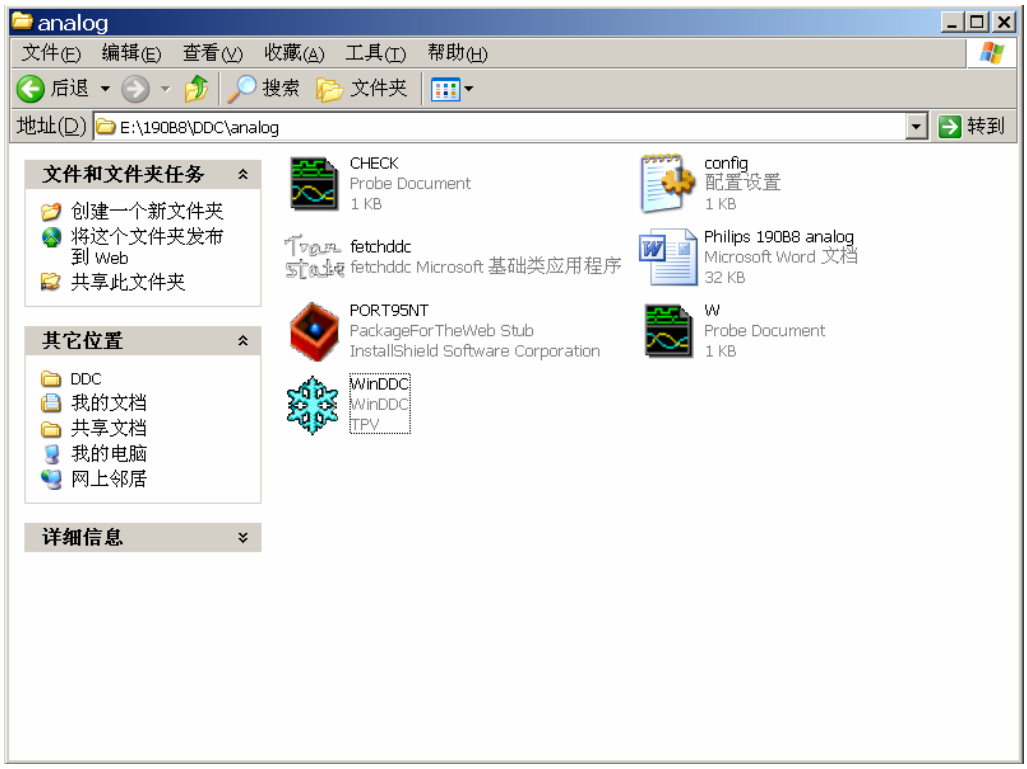
3. Connect the DDC board as follow:

(Take philips 190B8 for example)

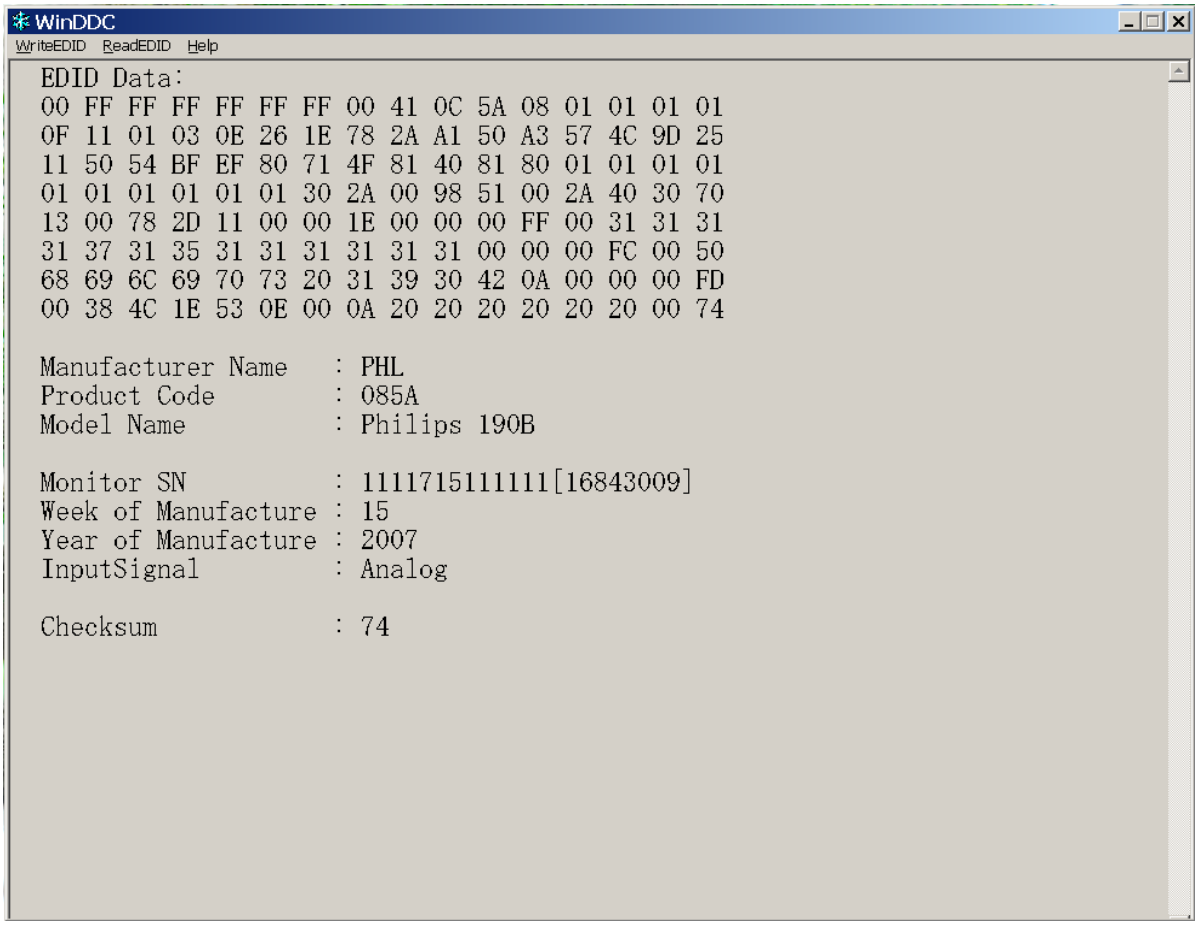


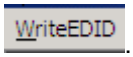
Note: Pin5 of the VGA cable which connects to the monitor should be cut off.

4. Take analog DDC write for example, as follow

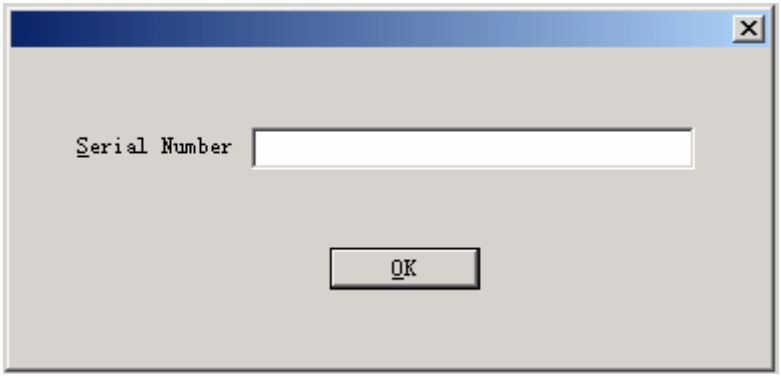


a. Double-click WinDDC.exe， appear as follow Figs：

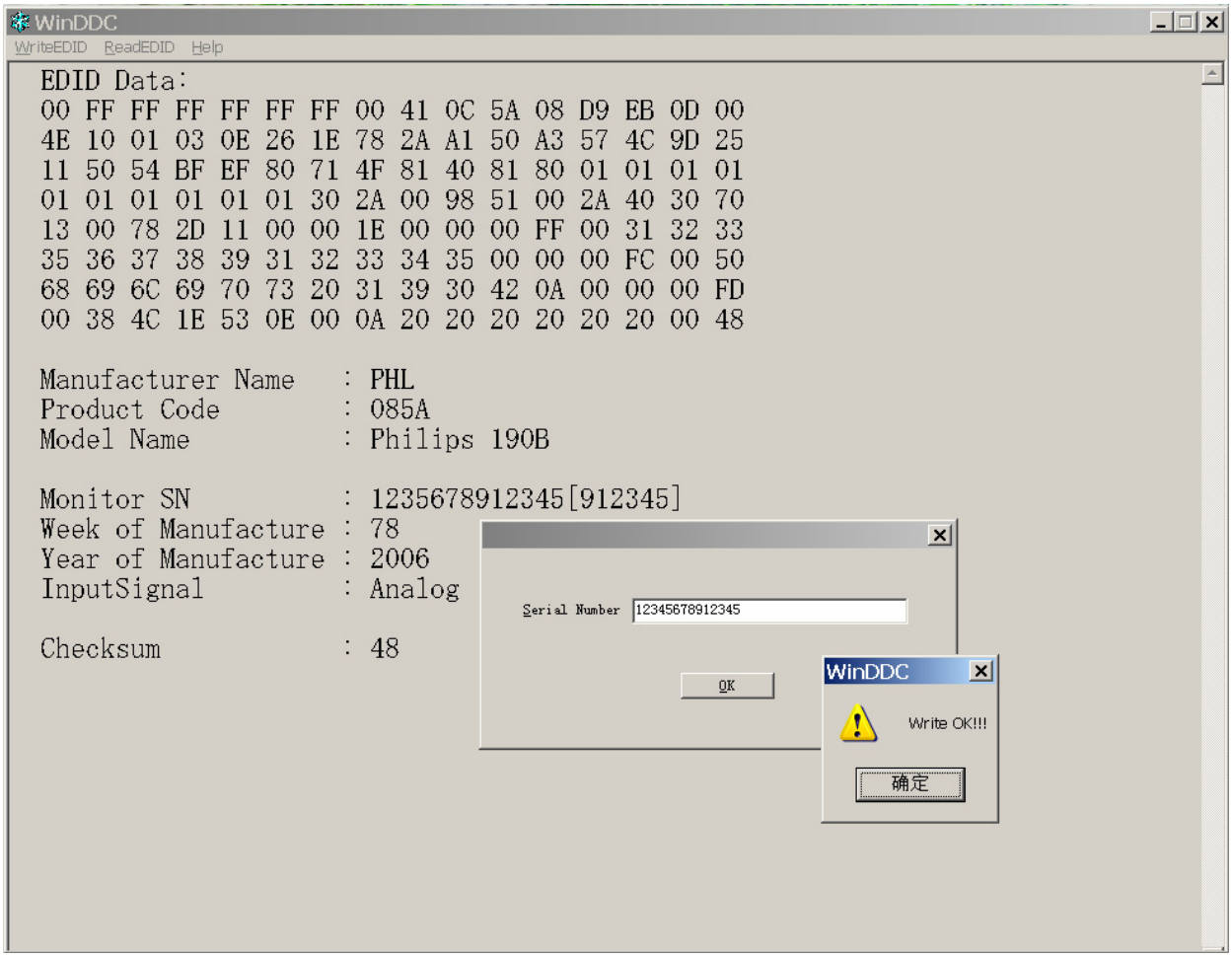


b. Click 

.



c. Key 14 numbers in the Serial Number blank, then click “OK”. Now analog DDC Write completes, as follow.



Note: The way of digital DDC write is the same as analog DDC write.

HW191A EDID

Analog

128 bytes EDID Data (Hex):

00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15

0: 00 FF FF FF FF FF FF 00 22 64 91 89 00 00 00 00
16: 10 12 01 03 0A 29 1A 78 EA 9B B6 A4 53 4B 9D 24
32: 14 4F 54 BF EF 80 81 80 81 C0 81 40 71 4F 61 46
48: 90 4F 95 0F 01 01 9A 29 A0 D0 51 84 22 30 50 98
64: 36 00 98 FF 10 00 00 1E 00 00 00 FD 00 31 4B 1E
80: 53 0E 00 0A 20 20 20 20 20 20 00 00 00 FF 00 31
96: 32 33 34 35 36 37 38 39 30 31 32 33 00 00 00 FC
112: 00 48 61 6E 6E 73 2E 47 20 48 57 31 39 31 00 05

Decoded EDID data

<---Header--->

Header: 00 FF FF FF FF FF FF 00

<-x-Header-x->

<---Vendor/Product Identification--->
ID Manufacturer Name: HSD
ID Product Code: 8991
ID Serial Number: 00000000
Week of Manufacture: 16
Year of Manufacture: 2008
<-x-Vendor/Product Identification-x->

<---EDID Structure Version/Revision--->
EDID Version#: 01
EDID Revision#: 03
<-x-EDID Structure Version/Revision-x->

<---Basic Display Parameters/Features--->
Video i/p definition: Analog
Signal Level Standard: 0.700V/0.300V(0.700Vpp)
Setup: Blank-to-Black not expected
Separate Sync Support: Yes
Composite Sync Support: No
Sync. on green video supported: Yes
Serration of the Vsync.Pulse is not required.
Max. H. Image Size : 41cm.
Max. V. Image Size : 26cm.
Display Gamma: 2.2
DPMS Features, Stand-by: Yes.
DPMS Features, Suspend: Yes.
DPMS Features, Active off: Yes.
Display Type: R/G/B color display.
Preferred Timing Mode: Yes.
<---Basic Display Parameters/Features--->

<---Color Characteristics--->
Red x: 0.6425781250
Red y: 0.3251953125
Green x: 0.2978515625
Green y: 0.6162109375
Blue x: 0.1425781250
Blue y: 0.0810546875
White x: 0.3095703125
White y: 0.3310546875
<-x-Color Characteristics-x->
<---Established Timings--->
Established Timings 1: BF

-720x400 @70Hz VGA,IBM
-640x480 @60Hz VGA,IBM
-640x480 @67Hz Apple,Mac II
-640x480 @72Hz VESA
-640x480 @75Hz VESA
-800x600 @56Hz VESA
-800x600 @60Hz VESA
Established Timings 2: EF
-800x600 @72Hz VESA
-800x600 @75Hz VESA
-832x624 @75Hz Apple,Mac II
-1024x768 @60Hz VESA
-1024x768 @70Hz VESA
-1024x768 @75Hz VESA
-1280x1024 @75Hz VESA
Established Timings 3: 80
-1152x870 @75Hz Apple,Mac II
<-x-Established Timings-x->

<---Standard Timing Identification--->
-1280x1024 @60
-1280x720 @60
-1280x960 @60
-1152x864 @75
-1024x768 @66
-1400x1050 @75
-1440x900 @75
<-x-Standard Timing Identification-x->

<---Detailed Timing Descriptions--->
Detailed Timing: 1440x900 @ 60Hz.
<-x-Detailed Timing Descriptions-x->

<---Detailed Timing Descriptions--->
Detailed Timing: FD (Monitor limits)
Min. V. rate: 49Hz
Max. V. rate: 75Hz
Min. H. rate: 30KHz
Max. H. rate: 83KHz
Max. Pixel Clock: 140MHz
Detailed Timing: FF (Monitor SN) '1234567890123'
Detailed Timing: FC (Monitor Name) 'Hanns.G HW191 '
<-x-Detailed Timing Descriptions-x->
Extension Flag: 00
Checksum: 05

13. White- Balance, Luminance Adjustment

Approximately 30 minutes should be allowed for warm up before proceeding White-Balance adjustment.

1. How to do the Chroma-7120 MEM. Channel setting
   A. Reference to chroma 7120 user guide
   B. Use “SC” key and “NEXT” key to modify x,y,Y value and use “**ID**” key to modify the TEXT description Following is the procedure to do white-balance adjust

2. Setting the color temp. you want
   A. MEM.CHANNEL 3 (9300 color):
      9300 color temp. parameter is x = 283 ±28, y = 297 ±28,Y=220cd/㎡
   B. MEM.CHANNEL 4 (6500 color):
      6500 color temp. parameter is x = 313±28, y = 329 ±28, Y=220cd/㎡
   C. MEM.CHANNEL 9 (5500 color):
      5500 color temp. parameter is x = 333±28, y = 348 ±28, Y=220cd/㎡

3. Enter into factory mode of HW191A
   Turn on the power, press simultaneously the MENU and AUTO buttons, then the factory OSD will be at the left top of the panel.

4. Bias adjustment:
   Set the **Contrast** to 70; Adjust the **Brightness** to 100.

5. Gain adjustment:

Move cursor to “-F-” and press MENU key

   A. Adjust 9300 color-temperature
      1. Switch the Chroma-7120 to **RGB-Mode** (with press “MODE” button)
      2. Switch the MEM. Channel to Channel 3 (with up or down arrow on chroma 7120)
      3. The LCD-indicator on chroma 7120 will show x = 283 ±28, y = 297 ±28, Y=220cd/㎡
      4. Adjust the RED of color 1 on factory window until chroma 7120 indicator reached the value R=100
      5. Adjust the GREEN of color 1 on factory window until chroma 7120 indicator reached the value G=100
      6. Adjust the BLUE of color 1 on factory window until chroma 7120 indicator reached the value B=100
      7. Repeat above procedure (item 4,5,6) until chroma 7120 RGB value meet the tolerance =100±2

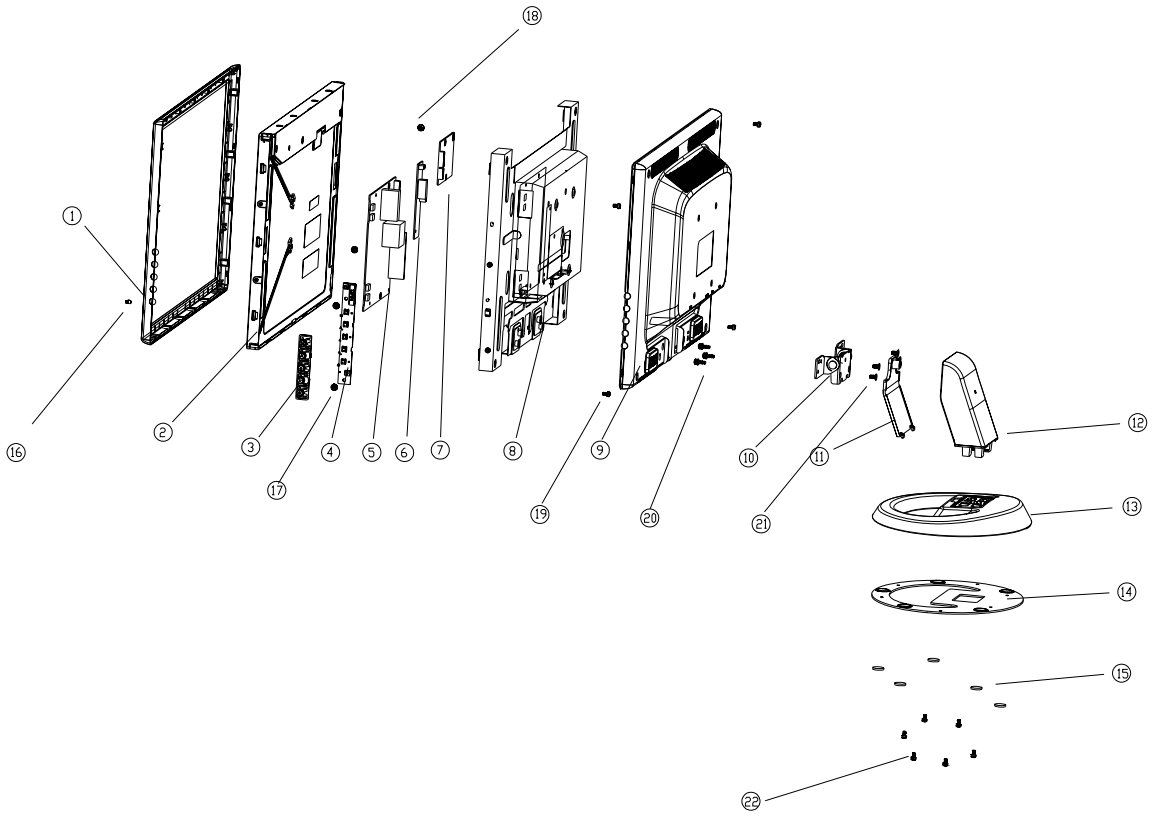
   B. Adjust 6500 color-temperature
      1. Switch the chroma-7120 to **RGB-Mode** (with press “MODE” button)
      2. Switch the MEM.channel to Channel 4(with up or down arrow on chroma 7120)
      3. The LCD-indicator on chroma 7120 will show x = 313 ±28, y = 329 ±28, Y=220cd/㎡
      4. Adjust the RED of color 2 on factory window until chroma 7120 indicator reached the value R=100
      5. Adjust the GREEN of color 2 on factory window until chroma 7120 indicator reachedthe value G=100
      6. Adjust the BLUE of color 2 on factory window until chroma 7120 indicator reached the value B=100
      7. Repeat above procedure (item 4,5,6) until chroma 7120 RGB value meet the tolerance =100±2

   C. Adjust 5500 color-temperature

1. Switch the chroma-7120 to **RGB-Mode** (with press “MODE” button)
2. Switch the MEM.channel to Channel 9 (with up or down arrow on chroma 7120)
3. The LCD-indicator on chroma 7120 will show x = 333±28, y = 348 ±28, Y=220cd/㎡
4. Adjust the RED of color 3 on factory window until chroma 7120 indicator reached the value R=100
5. Adjust the GREEN of color 3 on factory window until chroma 7120 indicator reachedthe value G=100
6. Adjust the BLUE of color 3 on factory window until chroma 7120 indicator reached the value B=100
7. Repeat above procedure (item 4,5,6) until chroma 7120 RGB value meet the tolerance =100±2

D. Turn the Power-button off to quit from factory mode.

14.Monitor Exploded View



ITEM	P/N	DESCRIPTION	Q'ty
01	H34G0018-1	BEZEL	1
02	PANEL	PANEL	1
03	KEPC8HA1	KEY BOARD	1
04	H33G0009-1	OSD-BUTTON	1
05		POWER BOARD	1
06		AUDIO BOARD	1
07		MAIN BOARD	1
08	H15G0012	MAIN FRAME	1
09	H34G0019-1	REAR COVER	1
10	H37G 0007	HINGE	1
11	H34G0021-1	STAND COVER FRONT	1
12	H34G0022-1	STAND COVER REAR	1
13	H34G0020-1	BASE	1
14	H15G0013 1	BASE BRACBET	1
15	H12G6118 2	PORON FOOT	5
16	H33G0010-1	POWER LENS	3
17	0M1G 930 4120	SCREW	2
18	0D1G1730 8120	SCREW	7
19	0M1G 940 6 47 CR3	SCREW	4
20	AQ1G1740 12120	SCREW	3
21	0M1G 140 10225 CR3	SCREW	4
22	0Q1G 130 8120	SCREW	6

15. BOM List

T98HRDDTWNHZACE

Location	Part NO.	Description
	040G 58162435A	P/N LABEL FOR MANUAL PE BAG
	040G 58162461A	EPA LABEL
	045G 77 3	PE PACKING
	050G 600 1 W	WHITE STRAP
	050G 600 2	HANDLE1
	050G 600 3	HANDLE2
	052G 1211 B	Conductive Tape 85mm *40mm *0.09mm
	052G 1211527	Conductive Tape 75mm *45mm *0.08mm
	052G6020 17	PROTECT FILM
E078	078G 457E01 Y	SPEAKER 4 OHM 2W 40*20MM 100MM
E08904	089G 173 56 4B	AUDIO CABLE
E08902	089G 715HAA D2	SIGNAL CABLE
E08901	089G420A18N IS	POWER CORD 32-D001922
E09504	095G8014 2TE01	HARNESS 2P-2P 480MM
E09503	095G8014 3TE01	HARNESS 3P-2P 100MM
E09502	095G801410WE13	HARNESS 10P-(6+4)P 340MM
E09501	095G8018 3TE12	WIRE HARNESS 30P-24P 185mm TONGFU
	0D1G1730 8120	SCREW
	0D1G1740 8120	SCREW
	0M1G 130 6120	SCREW M3X6
	0M1G 140 10225 CR3	SCREW
	0M1G 930 4120	screw
	0M1G 940 6 47 CR3	SCREW
	705GH834038	ASS'Y
E750	750GLH90GW122N000R	PANEL HSD190MGW1-A02 NJ HSD
	AUPC8HA3	Audio Board G3137-1-X-X-1-080715
	CBPC8HRDHZH1	Main Board G2498-1-2-X-6-080618
	H15G0012HSD 1	MAIN FRAME
	H26G 800850 1B	BARCODE
	H33G0009 ZT 1B	OSD-BUTTON
	H33G0010 1 1C	POWER LENS
	H34G0018DAAA1B	BEZEL
	H34G0019 ZT 1B	REAR COVER
	H40G 19N85012A	HW191A ID LABEL
	H40G 581850 3A	STICKER WARRANTY LABEL
	H40G 58185010A	BEZEL BASIC VISTA LOGO
	H41G780085026A	QSG
	H44G9017 1	EPS
	H44G9017 2	EPS

	H44G9017850 2A	HW TW CARTON
	H45G 76 28 HS	PE BAG FOR MANUAL
	H45G 87 1HS1	EPE COVER
	H45G 87 4HS2	PE BAG FOR BASE
	H70G1600850 6A	CD MANUAL
U402	056G 158501	IC AS431AN-E1 SOT23
U501	056G 562701	SCALER IC RTD2025L QFN-48
U201	056G 585 4A	IC AP1117E33L-13
U401	056G1125701 X	IC MCU RTD2120L-LF REALTEK
U403	056G1133 56	M24C16-WMN6TP
Q501	057G 417 22 T	TRA KN2907AS -60V/-0.6A SOT-23
Q502	057G 417 22 T	TRA KN2907AS -60V/-0.6A SOT-23
Q602	057G 417517	LMBT3906LT1G SOT-23 BY LRC
Q205	057G 417517	LMBT3906LT1G SOT-23 BY LRC
Q204	057G 417517	LMBT3906LT1G SOT-23 BY LRC
Q202	057G 417518	LMBT3904LT1G SOT-23 BY LRC
Q401	057G 417518	LMBT3904LT1G SOT-23 BY LRC
Q601	057G 763 1	A03401 SOT23 BY AOS(A1)
R302	061G0402000	RST CHIP MAX 0R05 1/16W
R427	061G0402000	RST CHIP MAX 0R05 1/16W
R429	061G0402000	RST CHIP MAX 0R05 1/16W
R409	061G0402101	RST CHIPR 100 OHM +-5% 1/16W
R410	061G0402101	RST CHIPR 100 OHM +-5% 1/16W
R420	061G0402101	RST CHIPR 100 OHM +-5% 1/16W
R422	061G0402101	RST CHIPR 100 OHM +-5% 1/16W
R430	061G0402101	RST CHIPR 100 OHM +-5% 1/16W
R432	061G0402101	RST CHIPR 100 OHM +-5% 1/16W
R433	061G0402101	RST CHIPR 100 OHM +-5% 1/16W
R434	061G0402101	RST CHIPR 100 OHM +-5% 1/16W
R435	061G0402101	RST CHIPR 100 OHM +-5% 1/16W
R408	061G0402101	RST CHIPR 100 OHM +-5% 1/16W
R301	061G0402101	RST CHIPR 100 OHM +-5% 1/16W
R303	061G0402101	RST CHIPR 100 OHM +-5% 1/16W
R306	061G0402101	RST CHIPR 100 OHM +-5% 1/16W
R308	061G0402101	RST CHIPR 100 OHM +-5% 1/16W
R309	061G0402101	RST CHIPR 100 OHM +-5% 1/16W
R311	061G0402101	RST CHIPR 100 OHM +-5% 1/16W
R312	061G0402101	RST CHIPR 100 OHM +-5% 1/16W
R313	061G0402101	RST CHIPR 100 OHM +-5% 1/16W
R315	061G0402101	RST CHIPR 100 OHM +-5% 1/16W
R402	061G0402102	RST CHIPR 1 KOHM +-5% 1/16W
R424	061G0402102	RST CHIPR 1 KOHM +-5% 1/16W
R453	061G0402102	RST CHIPR 1 KOHM +-5% 1/16W
R601	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W

R438	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W
R436	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W
R425	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W
R416	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W
R404	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W
R213	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W
R210	061G0402103	RST CHIPR 10 KOHM +-5% 1/16W
R207	061G0402121	RST CHIP 120R 1/16W 5%
R208	061G0402121	RST CHIP 120R 1/16W 5%
R201	061G0402201	RST CHIP 200R 1/16W 5%
R413	061G0402202	RST CHIP 2K 1/16W 5%
R414	061G0402202	RST CHIP 2K 1/16W 5%
R428	061G0402220	RST CHIPR 22 OHM +-5% 1/16W
R426	061G0402220	RST CHIPR 22 OHM +-5% 1/16W
R304	061G0402222	RST CHIPR 2.2 KOHM +-5% 1/16W
R305	061G0402222	RST CHIPR 2.2 KOHM +-5% 1/16W
R401	061G0402392	RST CHIP 3.9K 1/16W 5%
R403	061G0402392	RST CHIP 3.9K 1/16W 5%
R437	061G0402392	RST CHIP 3.9K 1/16W 5%
R605	061G0402472	RST CHIPR 4.7 KOHM +-5% 1/16W
R451	061G0402472	RST CHIPR 4.7 KOHM +-5% 1/16W
R412	061G0402472	RST CHIPR 4.7 KOHM +-5% 1/16W
R411	061G0402472	RST CHIPR 4.7 KOHM +-5% 1/16W
R407	061G0402472	RST CHIPR 4.7 KOHM +-5% 1/16W
R406	061G0402472	RST CHIPR 4.7 KOHM +-5% 1/16W
R405	061G0402472	RST CHIPR 4.7 KOHM +-5% 1/16W
R202	061G0402472	RST CHIPR 4.7 KOHM +-5% 1/16W
R604	061G0402473	RST CHIPR 47 KOHM +-5% 1/16W
R415	061G0402682	RST CHIP 6K8 1/16W 5%
R431	061G0402682	RST CHIP 6K8 1/16W 5%
R307	061G0402750	RST CHIPR 75 OHM +-5% 1/16W
R310	061G0402750	RST CHIPR 75 OHM +-5% 1/16W
R314	061G0402750	RST CHIPR 75 OHM +-5% 1/16W
R602	061G0805331	RST CHIPR 330 OHM +-5% 1/8W
C401	065G0402100 31	CAP 0402 10PF J 50V NPO
C411	065G0402100 31	CAP 0402 10PF J 50V NPO
C602	065G0402103 22	CHIP 0.01UF 25V X7R
C603	065G0402104 15	MLCC 0402 0.1UF K 16V X5R
C507	065G0402104 15	MLCC 0402 0.1UF K 16V X5R
C506	065G0402104 15	MLCC 0402 0.1UF K 16V X5R
C503	065G0402104 15	MLCC 0402 0.1UF K 16V X5R
C501	065G0402104 15	MLCC 0402 0.1UF K 16V X5R
C410	065G0402104 15	MLCC 0402 0.1UF K 16V X5R
C406	065G0402104 15	MLCC 0402 0.1UF K 16V X5R

C404	065G0402104 15	MLCC 0402 0.1UF K 16V X5R
C201	065G0402104 15	MLCC 0402 0.1UF K 16V X5R
C204	065G0402104 15	MLCC 0402 0.1UF K 16V X5R
C205	065G0402104 15	MLCC 0402 0.1UF K 16V X5R
C206	065G0402104 15	MLCC 0402 0.1UF K 16V X5R
C209	065G0402104 15	MLCC 0402 0.1UF K 16V X5R
C210	065G0402104 15	MLCC 0402 0.1UF K 16V X5R
C315	065G0402104 15	MLCC 0402 0.1UF K 16V X5R
C403	065G0402104 15	MLCC 0402 0.1UF K 16V X5R
C402	065G0402105 A5	CAP 0402 1UF K 10V X5R
C412	065G0402105 A5	CAP 0402 1UF K 10V X5R
C302	065G0402220 31	CHIP 22PF 50V NPO
C303	065G0402220 31	CHIP 22PF 50V NPO
C311	065G0402473 12	CHIP 0.047uF 16V X7R
C309	065G0402473 12	CHIP 0.047uF 16V X7R
C307	065G0402473 12	CHIP 0.047uF 16V X7R
C306	065G0402473 12	CHIP 0.047uF 16V X7R
C304	065G0402473 12	CHIP 0.047uF 16V X7R
C301	065G0402473 12	CHIP 0.047uF 16V X7R
C305	065G0402509 31	CHIP 5pF 50V NPO
C308	065G0402509 31	CHIP 5pF 50V NPO
C310	065G0402509 31	CHIP 5pF 50V NPO
FB601	071G 56K121 M	CHIP BEAD
FB503	071G 56K121 M	CHIP BEAD
FB502	071G 56K121 M	CHIP BEAD
FB201	071G 56K121 M	CHIP BEAD
FB301	071G 59K190 B	19 OHM BEAD
FB302	071G 59K190 B	19 OHM BEAD
FB303	071G 59K190 B	19 OHM BEAD
D402	093G 64 42 PP	BAV70 SOT-23
D301	093G 6433S	DIODE BAV99 SEMTECH
D302	093G 6433S	DIODE BAV99 SEMTECH
D303	093G 6433S	DIODE BAV99 SEMTECH
ZD301	093G 39S501 T	LUDZS5.6BT1G BY LRC
ZD302	093G 39S501 T	LUDZS5.6BT1G BY LRC
ZD303	093G 39S501 T	LUDZS5.6BT1G BY LRC
ZD304	093G 39S501 T	LUDZS5.6BT1G BY LRC
ZD305	093G 39S501 T	LUDZS5.6BT1G BY LRC
ZD307	093G 39S501 T	LUDZS5.6BT1G BY LRC
	715G2498 1 2	MAIN BOARD PCB
	KEPC8HA1	KEY BOARDG3218-1-X-X-1-080715
	PWPC8942CHD1	POWER G2594-2-X-X-7-080618
	Q40G 58170931A	HT POT LABEL
	Q40G000260811A	Basic label

	0Q1G 130 8120	SCREW 42A9930011
	0Q1G1740 12120	SCREW
	AQ1G1740 12120	SCREW
	H12G6118 2	PORON FOOT
	H15G0013 1	BASE BRACBET
	H34G0020 ZT 1B	BASE
	H34G0021 ZT 1B	STAND COVER FRONT
	H34G0022 ZT 1B	STAND COVER REAR
	H37G0007 1	HINGE
CN102	033G3802 4	WAFER EH-4
CN103	033G3802 4B Y W	WAFER
CN101	088G 30214K	PHONE JACK 5PIN
	Q90G6258 2	HEAT SINK
U101	056G 616 37	IC TPA6021A4NE4 2W*2 PDIP-20
CN202	033G3802 6B Y L	WAFER
CN201	033G3802 9B Y W	WAFER
CN601	033G8027 24 H	CONN W TO B12P*2 P*2.0 4505-2
	040G 45762412B	CBPC LABEL
R507	061G152M33964L	RST MOFR 3.3 OHM +-5% 2WS
C405	067G 3151007KV	ELCAP 10UF M 50V 105℃ KINGNICHI
C203	067G 3151014KV	EC 105℃ CAP 100uF M 25V
C202	067G 3151014KV	EC 105℃ CAP 100uF M 25V
C604	067G 3154704KV	ELCAP 47UF M 25V 105℃ KINGNICHI
C505	067G315V220 7K	CAP 105℃ 22UF M 50V
CN301	088G 35315F HD	D-SUB CONN F ATTACHED SCREW
X401	093G 22 45 H	24MHZ/30PF/49US
GND1	009G6005 1	GROUND TERMINAL
GND2	009G6005 1	GROUND TERMINAL
CN804	033G8021 2E F	WAFER
CN803	033G8021 2E F	WAFER
CN802	033G8021 2E F	WAFER
CN801	033G8021 2E F	WAFER
	040G 45762412B	CBPC LABEL
IC902	056G 139 3A	IC PC123Y22FZ0F
NR901	061G 58100 WD	RST NTCR 10 OHM +-20% 5A THINKING
R907	061G152M15164L	RST MOFR 150 OHM +-5% 2WS
C909	063G107K474 US	0.47UF +-10%
C812	065G 6J1006ET	10PF 5% SL 6KV
C801	065G 6J1006ET	10PF 5% SL 6KV
C901	065G305M1022EM	Y2 1000PF +-20% 250VAC
C902	065G305M1022EM	Y2 1000PF +-20% 250VAC
C903	065G306M1022BP	1000PF Y1.CAP
C900	065G306M2222BP	2200PF +-20% 250VAC
C907	067G 40Z10115K	CAP 105℃ 100UF M 450V

C926	067G215P1023AV	CAP 105℃ 1000UF M 16V
C927	067G215P1023AV	CAP 105℃ 1000UF M 16V
C925	067G215P4714AV	CAP 105℃ 470UF M 25V
C923	067G215P4714AV	CAP 105℃ 470UF M 25V
C922	067G215P4714AV	CAP 105℃ 470UF M 25V
C811	067G215P4714AV	CAP 105℃ 470UF M 25V
C805	067G215P4714AV	CAP 105℃ 470UF M 25V
C924	067G215P6814AV	CAP 105C 680UF M 25V
L902	073G 174 65 H	LINE FILTER
L901	073G 174 76 H	FILTER
L921	073G 253 91 H	CHOKE COIL
L922	073G 253 91 H	CHOKE COIL
T901	080GL17T 33 N2	XFMR POWER 550uH YUVA
PT801	080GL17T 40 DN	X'FMR TK.2001U.101
PT802	080GL17T 40 DN	X'FMR TK.2001U.101
CN901	087G 501 32 DL	AC SOCKET DIP 3PIN+2PIN GROUND
CN902	095G 82510TE03	HARNESS 10P-(9+4)P 200mm
	705GQ793015	D921 ASS'Y
	705GQ9KP 57001	Q900 ASS"Y
	705GQ9KP 93001	D920 ASS"Y
HS4	Q85G0053 1 S	shield
BD901	093G 50460 28	BRIDGE DIODE KBP208G LITEON
R101	061G0603103	RST CHIPR 10 KOHM +-5% 1/10W
R102	061G0603103	RST CHIPR 10 KOHM +-5% 1/10W
R103	061G0603103	RST CHIPR 10 KOHM +-5% 1/10W
R104	061G0603103	RST CHIPR 10 KOHM +-5% 1/10W
R105	061G0603103	RST CHIPR 10 KOHM +-5% 1/10W
R107	061G0603622	RST CHIPR 6.2 KOHM +-5% 1/10W
R106	061G0603622	RST CHIPR 6.2 KOHM +-5% 1/10W
RJ001	061G0805000	RST CHIP MAX 0R05 1/8W
RJ002	061G0805000	RST CHIP MAX 0R05 1/8W
RJ003	061G0805000	RST CHIP MAX 0R05 1/8W
C111	065G0603101 31	CER1 0603 NP0 50V 100P PM5 R
C110	065G0603101 31	CER1 0603 NP0 50V 100P PM5 R
C106	065G0603474 12	MLCC 0603 0.47UF K 16V X7R
C107	065G0603474 12	MLCC 0603 0.47UF K 16V X7R
C103	065G0603474 12	MLCC 0603 0.47UF K 16V X7R
C105	065G0603474 12	MLCC 0603 0.47UF K 16V X7R
C102	065G0603474 12	MLCC 0603 0.47UF K 16V X7R
C101	065G0603474 12	MLCC 0603 0.47UF K 16V X7R
C109	065G0805105 22	CAP CHIP 0805 1uF K 25V X7R
CN003	033G8032 2W L	WAFER 1.25 2P
CN002	033G8032 3W L	WAFER 1.25 3P
CN001	033G803210W L	WAFER 1.25 10P

R003	061G0603180 1F	RST CHIPR 1.8 KOHM +-1% 1/10W
R004	061G0603180 1F	RST CHIPR 1.8 KOHM +-1% 1/10W
R002	061G0603300 1F	RST CHIPR 3 KOHM +-1% 1/10W
R005	061G0603300 1F	RST CHIPR 3 KOHM +-1% 1/10W
C010	065G0603104 32	CHIP 0.1UF 50V X7R
C009	065G0603104 32	CHIP 0.1UF 50V X7R
C008	065G0603104 32	CHIP 0.1UF 50V X7R
C007	065G0603104 32	CHIP 0.1UF 50V X7R
SW001	077G 607 4 TO	TACT SW 5P3.1 180TS-1157ALNP-F
SW002	077G 607 4 TO	TACT SW 5P3.1 180TS-1157ALNP-F
SW003	077G 607 4 TO	TACT SW 5P3.1 180TS-1157ALNP-F
SW004	077G 607 4 TO	TACT SW 5P3.1 180TS-1157ALNP-F
SW005	077G 607 4 TO	TACT SW 5P3.1 180TS-1157ALNP-F
LED001	081G 14501 GP	LED GPTD1210YGC3-HB GUANGPU
	715G3218 1	KEY BOARD PCB
HS2	090G6263 1	HEAT SINK
D921	093G 60526	SCHOTTKY MBRF1060CT ITO-220AB
	0M1G1730 8120	SCREW
Q900	057G 667 21	STP10NK70ZFP
HS1	090G6264 1	HEAT SINK
	0M1G1730 8120	SCREW
HS5	090G6241 1 GP	HEAT SINK
D920	093G 60276	DIODE SBT150-10LST SANYO
	0M1G1730 8120	SCREW
IC801	056G 379 22	IC TL494IDR SOIC-16
IC901	056G 379 61	LD7575PS SOP-8
Q902	057G 417 4	PMBS3904/PHILIPS-SMT(04)
Q803	057G 417 4	PMBS3904/PHILIPS-SMT(04)
Q807	057G 417 4	PMBS3904/PHILIPS-SMT(04)
Q810	057G 417 4	PMBS3904/PHILIPS-SMT(04)
Q811	057G 417 4	PMBS3904/PHILIPS-SMT(04)
Q806	057G 417 6	PMBS3906/PHILIPS-SMT(06)
Q805	057G 417 6	PMBS3906/PHILIPS-SMT(06)
Q812	057G 759 2	RK7002
Q808	057G 759 2	RK7002
Q801	057G 760 4B	PDTA144WK SOT346
Q802	057G 760 5B	PDTC144WK SOT346
Q809	057G 763 6	AO4828L
Q804	057G 763 6	AO4828L
R832	061G0603000	RST CHIP MAX 0R05 1/10W
R830	061G0603000	RST CHIP MAX 0R05 1/10W
R804	061G0603000	RST CHIP MAX 0R05 1/10W
R801	061G0603000	RST CHIP MAX 0R05 1/10W
R849	061G0603100 1F	RST CHIPR 1 KOHM +-1% 1/10W

R848	061G0603100 1F	RST CHIPR 1 KOHM +-1% 1/10W
R835	061G0603100 1F	RST CHIPR 1 KOHM +-1% 1/10W
R834	061G0603100 1F	RST CHIPR 1 KOHM +-1% 1/10W
R827	061G0603100 1F	RST CHIPR 1 KOHM +-1% 1/10W
R807	061G0603100 1F	RST CHIPR 1 KOHM +-1% 1/10W
R806	061G0603100 1F	RST CHIPR 1 KOHM +-1% 1/10W
R853	061G0603100 2F	RST CHIPR 10K OHM +-1% 1/10W
R852	061G0603100 2F	RST CHIPR 10K OHM +-1% 1/10W
R840	061G0603100 2F	RST CHIPR 10K OHM +-1% 1/10W
R838	061G0603100 2F	RST CHIPR 10K OHM +-1% 1/10W
R831	061G0603100 2F	RST CHIPR 10K OHM +-1% 1/10W
R833	061G0603100 2F	RST CHIPR 10K OHM +-1% 1/10W
R824	061G0603100 2F	RST CHIPR 10K OHM +-1% 1/10W
R819	061G0603100 2F	RST CHIPR 10K OHM +-1% 1/10W
R808	061G0603100 2F	RST CHIPR 10K OHM +-1% 1/10W
R813	061G0603101	RST CHIPR 100 OHM +-5% 1/10W
R823	061G0603103	RST CHIPR 10 KOHM +-5% 1/10W
R836	061G0603105	RST CHIPR 1M OHM +-5% 1/10W
R821	061G0603105	RST CHIPR 1M OHM +-5% 1/10W
R841	061G0603150 1F	RST CHIPR 1.5 KOHM +-1% 1/10W
R839	061G0603150 1F	RST CHIPR 1.5 KOHM +-1% 1/10W
R812	061G0603150 1F	RST CHIPR 1.5 KOHM +-1% 1/10W
R811	061G0603150 1F	RST CHIPR 1.5 KOHM +-1% 1/10W
R847	061G0603220	RST CHIPR 22 OHM +-5% 1/10W
R844	061G0603220	RST CHIPR 22 OHM +-5% 1/10W
R845	061G0603220	RST CHIPR 22 OHM +-5% 1/10W
R846	061G0603220	RST CHIPR 22 OHM +-5% 1/10W
R803	061G0603362	RST CHIPR 3.6 KOHM +-5% 1/10W
R815	061G0603470 2F	RST CHIPR 47 KOHM +-1% 1/10W
R828	061G0603470 2F	RST CHIPR 47 KOHM +-1% 1/10W
R842	061G0603470 2F	RST CHIPR 47 KOHM +-1% 1/10W
R805	061G0603472	RST CHIPR 4.7K OHM +-5% 1/10W
R822	061G0603473	RST CHIPR 47 KOHM +-5% 1/10W
R820	061G0603564	RST CHIPR 560 KOHM +-5% 1/10W
R816	061G0603680 2F	RST CHIPR 68K OHM +-1% 1/10W
R829	061G0603680 2F	RST CHIPR 68K OHM +-1% 1/10W
R817	061G0603683	RST CHIPR 68K OHM +-5% 1/10W
R814	061G0603750 2F	RST CHIPR 75KOHM +-1% 1/10W
R930	061G0805100 1F	RST CHIPR 1K OHM +-1% 1/8W
R928	061G0805100 1F	RST CHIPR 1K OHM +-1% 1/8W
R927	061G0805100 1F	RST CHIPR 1K OHM +-1% 1/8W
R925	061G0805100 1F	RST CHIPR 1K OHM +-1% 1/8W
R913	061G0805100 1F	RST CHIPR 1K OHM +-1% 1/8W
R923	061G0805100 2F	RST CHIPR 10KOHM +-1% 1/8W

R915	061G0805100 2F	RST CHIPR 10KOHM +-1% 1/8W
R911	061G0805100 3F	RST CHIPR 100KOHM +-1% 1/8W
R802	061G0805101	1ST CHIPR 100 OHM +-5% 1/8W
R903	061G0805102	RST CHIPR 1K OHM +-5% 1/8W
R826	061G0805180 3F	RST CHIPR 180 KOHM +-1% 1/8W
R929	061G0805240 1F	RST CHIPR 2.4K OHM +-1% 1/8W
R926	061G0805330 2F	RST CHIPR 33K OHM +-1% 1/8W
R924	061G0805360 1F	RST CHIPR 3.6K OHM +-1% 1/8W
R922	061G0805471	RST CHIPR 470 OHM +-5% 1/8W
R908	061G0805471	RST CHIPR 470 OHM +-5% 1/8W
R825	061G0805510 2F	RST CHIPR 51K OHM +-1% 1/8W
J813	061G1206000	RST CHIP MAX 0R05 1/4W
J818	061G1206000	RST CHIP MAX 0R05 1/4W
J907	061G1206000	RST CHIP MAX 0R05 1/4W
J908	061G1206000	RST CHIP MAX 0R05 1/4W
J814	061G1206000	RST CHIP MAX 0R05 1/4W
J815	061G1206000	RST CHIP MAX 0R05 1/4W
J816	061G1206000	RST CHIP MAX 0R05 1/4W
J807	061G1206000	RST CHIP MAX 0R05 1/4W
F902	061G1206000	RST CHIP MAX 0R05 1/4W
R912	061G1206100	RST CHIPR 10 OHM +-5% 1/4W
ZD801	061G1206103	RST CHIPR 10K OHM +-5% 1/4W
R931	061G1206103	RST CHIPR 10K OHM +-5% 1/4W
R905	061G1206103	RST CHIPR 10K OHM +-5% 1/4W
R837	061G1206150	RST CHIPR 15 OHM +-5% 1/4W
R810	061G1206150	RST CHIPR 15 OHM +-5% 1/4W
R850	061G1206150	RST CHIPR 15 OHM +-5% 1/4W
R851	061G1206150	RST CHIPR 15 OHM +-5% 1/4W
R910	061G1206229	RST CHIPR 2.2 OHM +-5% 1/4W
R900	061G1206334	RST CHIPR 330KOHM +-5% 1/4W
R901	061G1206334	RST CHIPR 330KOHM +-5% 1/4W
R902	061G1206334	RST CHIPR 330KOHM +-5% 1/4W
R956	061G1206470	RST CHIPR 47 OHM +-5% 1/4W
R955	061G1206470	RST CHIPR 47 OHM +-5% 1/4W
R954	061G1206470	RST CHIPR 47 OHM +-5% 1/4W
R953	061G1206470	RST CHIPR 47 OHM +-5% 1/4W
R952	061G1206470	RST CHIPR 47 OHM +-5% 1/4W
R951	061G1206470	RST CHIPR 47 OHM +-5% 1/4W
C904	065G0603102 32	1000PF +-10% 50V X7R
C814	065G0603104 22	CAP CHIP 0603 0.1UF K 25V X7R
C810	065G0603104 22	CAP CHIP 0603 0.1UF K 25V X7R
C807	065G0603104 22	CAP CHIP 0603 0.1UF K 25V X7R
C804	065G0603104 22	CAP CHIP 0603 0.1UF K 25V X7R
C806	065G0603105 22	CHIP 1UF 25V X7R 0603

C802	065G0603105 22	CHIP 1UF 25V X7R 0603
C813	065G0603222 32	CHIP 2200PF 50V X7R
C815	065G0603222 32	CHIP 2200PF 50V X7R
C817	065G0603222 32	CHIP 2200PF 50V X7R
C818	065G0603222 32	CHIP 2200PF 50V X7R
C928	065G0805104 32	CAP CHIP 0805 0.1uF K 50V X7R
C929	065G0805104 32	CAP CHIP 0805 0.1uF K 50V X7R
C930	065G0805104 32	CAP CHIP 0805 0.1uF K 50V X7R
C931	065G0805104 32	CAP CHIP 0805 0.1uF K 50V X7R
C916	065G0805104 32	CAP CHIP 0805 0.1uF K 50V X7R
C912	065G0805104 32	CAP CHIP 0805 0.1uF K 50V X7R
C824	065G0805104 32	CAP CHIP 0805 0.1uF K 50V X7R
C823	065G0805104 32	CAP CHIP 0805 0.1uF K 50V X7R
C822	065G0805152 32	CHIP 1500PF 50V X7R 0805
C821	065G0805152 32	CHIP 1500PF 50V X7R 0805
C816	065G0805152 32	CHIP 1500PF 50V X7R 0805
C803	065G0805152 32	CHIP 1500PF 50V X7R 0805
C913	065G0805221 31	CAP CHIP 0805 220PF J 50V NPO
C809	065G080522131G	CAP CHIP 0805 220PF G 50V NPO
C808	065G0805225 12	CAP CHIP 0805 2.2UF K 16V X7R
C914	065G0805471 31	CHIP 470PF 50V NPO
D806	093G 64 38 P	BAW56
D808	093G 64 38 P	BAW56
D810	093G 6433S	DIODE BAV99 SEMTECH
D809	093G 6433S	DIODE BAV99 SEMTECH
D802	093G 6433S	DIODE BAV99 SEMTECH
D801	093G 6433S	DIODE BAV99 SEMTECH
ZD922	093G 39S 25 T	RLZ5.1B LLDS
ZD921	093G 39S 40 T	RLZ 13B LLDS
ZD920	093G 39S 40 T	RLZ 13B LLDS
D916	093G 64S511SEM	1N4148W
D915	093G 64S511SEM	1N4148W
D910	093G 64S511SEM	1N4148W
D813	093G 64S511SEM	1N4148W
D812	093G 64S511SEM	1N4148W
D811	093G 64S511SEM	1N4148W
D807	093G 64S511SEM	1N4148W
D803	093G 64S511SEM	1N4148W
C108	067G215Y1007KT	KY50VB10M-TP5 5*11.5
C104	067G215Y1014KT	EC CAP.105 度
	715G3137 1	AUDIO BOARD PCB
NR901	006G 31 4	1.7MM RIVET
CN901	006G 31500	EYELET
T901	006G 31502	1.5MM RIVET

IC903	056G 158 10 T	IC AS431AZTR-E1 TO-92
R909	061G152M10452T	RST MOFR 100KOHM +-5% 2WS
R916	061G152M43852T	RST MOF 0R43 5% 2W
C910	065G 2K152 1T6921	1.5NF/2KV Y5P +-10%
C921	065G517K102 5T	1000PF 10% Y5P 500V
C920	065G517K102 5T	1000PF 10% Y5P 500V
C911	067G 2152207NT	KY50VB22M-TP5 5*11
FB901	071G 55 29	FERRITE BEAD
FB903	071G 55 29	FERRITE BEAD
F901	084G 56 4W	FUSE 4.0A 250V
D901	093G 6038T52T	FR103
D900	093G1100 1152T	DIODE PR1007R 1A/1000V DO-41
	715G2594 2	POWER BOARD PCB

16. DIFFERENT PARTS LIST

Diversity of T98HRDDBWNZHACE Compared with T98HRDDTWNHZACE		
Location	**Part No.**	**Description**
E08901	089G421A18N IS	POWER CORD/32-D022217(与 TPV 共用)
	H34G0018 ASA1B	BEZEL
	H41G780085017B	EU-WARRANTY CARD
	H44G9017850 3A	W EU CARTON
	Q40G0002850 3A	Seal label

Diversity of T98HRDDYWNHZACE Compared with T98HRDDTWNHZACE		
Location	**Part No.**	**Description**
	040G 45760819A	DATE/MODEL LABEL
E08901	089G414A18N IS	POWER CORD 32E1818021(与 TPV 共用)
	H40G 581850 6A	PASS LABEL
	H41G780085023B	warranty card HSG CN
	H44G9017850 1A	HW PRC CARTON
	H45G 87 2004	OUT PE BAG

Diversity of T98HRDDKWNHZACE Compared with T98HRDDTWNHZACE		
Location	**Part No.**	**Description**
E08901	089G402A18N YH	POWER CORD(32-D022438)(美規)
	H40G 58185012B	机器防拆标签
	H41G780085018B	USA-warranty
	H44G9017850 3A	W EU CARTON