Service
Service
Service

246V5LSB/93
246V5LSB/00
246V5LSB/01
246V5LSB/75
246V5LSBG/93

246V5LAB/00
246V5LAB/01
246V5LAB/75

Service Manual

SAFETY NOTICE

ANY PERSON ATTEMPTING TO SERVICE THIS CHASSIS MUST FAMILIARIZE HIMSELF WITH THE CHASSIS AND BE AWARE OF THE NECESSARY SAFETY PRECAUTIONS TO BE USED WHEN SERVICING ELECTRONIC EQUIPMENT CONTAINING HIGH VOLTAGES.

CAUTION: USE A SEPARATE ISOLATION TRANSFOMER FOR THIS UNIT WHEN SERVICING

REFER TO BACK COVER FOR IMPORTANT SAFETY GUIDELINES

飛利浦 PHILIPS

Revision List

Version	Release Date	Revision History
A00	Feb.1, 2013	Initial release, Draft Version
A01	Feb.22,2013	Add new model 246V5LSB/00
A02	Mar.15,2013	Add new model 246V5LAB/00
A03	Mar.22,2013	Add new model 246V5LAB/01 &246V5LSB/01
A04	May.31,2013	Add new model 246V5LSB/75
A05	Jul.5,2013	Add new model 246V5LSBG/93
A06	May.30,2014	Add new model 246V5LAB/75

Important Safety Notice

This electronic user guide is intended for anyone who uses the Philips monitor. Take time to read this user manual before you use your monitor. It contains important information and notes regarding operating your monitor. The Philips guarantee applies provided the product is handled properly for its intended use, in accordance with its operating instructions and upon presentation of the original invoice or cash receipt, indicating the date of purchase, dealers name and model and production number of the product.

Warnings

Use of controls, adjustments or procedures other than those specified in this documentation may result in exposure to shock, electrical hazards and/or mechanical hazards. Read and follow these instructions when connecting and using your computer monitor.

Operation

- Keep the monitor out of direct sunlight and away from stoves or any other heat source.
- Remove any object that could fall into ventilation holes or prevent proper cooling of the monitor's electronics.
- Do not block the ventilation holes on the cabinet.
- When positioning the monitor, make sure the power plug and outlet are easily accessible.
- If turning off the monitor by detaching the power cable or DC power cord, wait for 6 seconds before attaching the power cable or DC power cord for normal operation.
- Please use approved power cord provided by Philips all the time. If your power cord is missing, please contact with your local service center. (Please refer to Customer Care Consumer Information Center)
- • Do not subject the monitor to severe vibration or high impact conditions during operation.
- • Do not knock or drop the monitor during operation or transportation.

Maintenance

- To protect your monitor from possible damage, do not put excessive pressure on the LCD panel. When moving your monitor, grasp the frame to lift; do not lift the monitor by placing your hand or fingers on the LCD panel.
- Unplug the monitor if you are not going to use it for an extensive period of time.
- Unplug the monitor if you need to clean it with a slightly damp cloth. The screen may be wiped with a dry cloth when the power is off. However, never use organic solvent, such as, alcohol, or ammonia-based liquids to clean your monitor.
- To avoid the risk of shock or permanent damage to the set, do not expose the monitor to dust, rain, water, or excessive moisture environment.
- If your monitor gets wet, wipe it with dry cloth as soon as possible.
- If foreign substance or water gets in your monitor, please turn the power off immediately and disconnect the power cord. Then, remove the foreign substance or water, and send it to the maintenance center.
- Do not store or use the monitor in locations exposed to heat, direct sunlight or extreme cold.
- In order to maintain the best performance of your monitor and use it for a longer lifetime, please use the monitor in a location that falls within the following temperature and humidity ranges.
  - Temperature: 0-40°C 32-95°F
  - Humidity: 20-80% RH

- IMPORTANT: Always activate a moving screen saver program when you leave your monitor unattended. Always activate a periodic screen refresh application if your monitor will display unchanging static content. Uninterrupted display of still or static images over an extended period may cause “burn in”, also known as “after-imaging” or “ghost imaging”, on your screen. “Burn-in”, “after-imaging”, or “ghost imaging” is a well-known phenomenon in LCD panel technology. In most cases, the “burned in” or “after-imaging” or “ghost imaging” will disappear gradually over a period of time after the power has been switched off.

Warning

Severe” burn-in” or “after-image” or “ghost image” symptoms will not disappear and cannot be repaired. The damage mentioned above is not covered under your warranty.

Service

- The casing cover should be opened only by qualified service personnel.
- If there is any need for any document for repair or integration, please contact with your local service center. (Please refer to the chapter of “Consumer Information Center”)
- For transportation information, please refer to “Technical Specifications”.
- Do not leave your monitor in a car/trunk under direct sun light.

Note

Consult a service technician if the monitor does not operate normally, or you are not sure what procedure to take when the operating instructions given in this manual have been followed.

1. Monitor Specifications

Technical specifications

Picture/Display	
Monitor Panel Type	TFT-LCD
Backlight	LED
Panel Size	24" W (61 cm)
Aspect Ratio	16:9
Pixel Pitch	0.277 × 0.277 mm
Brightness	250 cd/m²
SmartContrast	10,000,000:1
Contrast Ratio (typ.)	1000:1
Response Time (typ.)	5ms
Optimum Resolution	1920 × 1080 @ 60Hz
Viewing Angle	170° (H) / 160° (V) @ C/R > 10
Display Colors	16.7M
Vertical Refresh Rate	56Hz - 76Hz
Horizontal Frequency	30kHz - 83kHz
sRGB	YES
Connectivity	
Signal Input	DVI (digital), VGA (Analog), HDMI(Optional)
Input Signal	Separate Sync, Sync on Green
Audio In/Out	PC audio-in, headphone out(246V5LHAB/246V5LAB)
Convenience	
Built-in speakers	2W × 2 (246V5LHAB/246V5LAB)
User Convenience	246V5LSB: AUTO/▼ /▲ /◀ /OK 246V5LAB: AUTO/▼ /▲ /◀ /OK 246V5LHAB: AUTO/▼ /▲ /◀ /OK
OSD Languages	English, French, German, Spanish, Italian, Russian, Simplified Chinese, Portuguese, Turkish, Dutch, Swedish, Finnish, Polish, Czech, Korean, Japanese, Hungarian, Ukraine, Brazil Portuguese, Greek(optional), Traditional Chinese(optional)
Other Convenience	Kensington Lock
Plug & Play Compatibility	DDC/CI, sRGB, Windows 8/7/Vista/XP, Mac OSX, Linux
Stand	
Tilt	-5 / +20

246V5LAB/246V5LSB

Power	
On Mode	246V5LAB: 26.21 W (typ.), 33 .41W (max.) 246V5LSB: 24.6 W (typ.), 26.45W (max.)
Sleep (Standby)	0.5W
Off	0.3W
Power LED indicator	On mode: White, Standby/Sleep mode: White (blinking)
Power Supply	Built-in, 100-240VAC, 50-60Hz

Dimension	
Product with stand (W×H×D)	565× 435 × 238 mm
Product without stand (W×H×D)	565 × 354 × 63 mm
Weight	
Product with stand	4.65kg
Product without stand	4.22kg
Product with packaging	6.14kg
Operating Condition	
Temperature range (operation)	0°C to 40 °C
Temperature range (Non-operation)	-20°C to 60°C
Relative humidity	20% to 80%
MTBF	30,000hrs
Environmental	
ROHS	YES
EPEAT	Silver (www.epeat.net)
Packaging	100% recyclable
Specific Substances	100% PVC BFR free housing
Energy Star	YES
Compliance and standards	
Regulatory Approvals	CE Mark, FCC Class B, GOST SEMKO,TCO Certified, ETL, ISO9241-307,BSMI
Cabinet	
Color	Black
Finish	Glossy/Texture

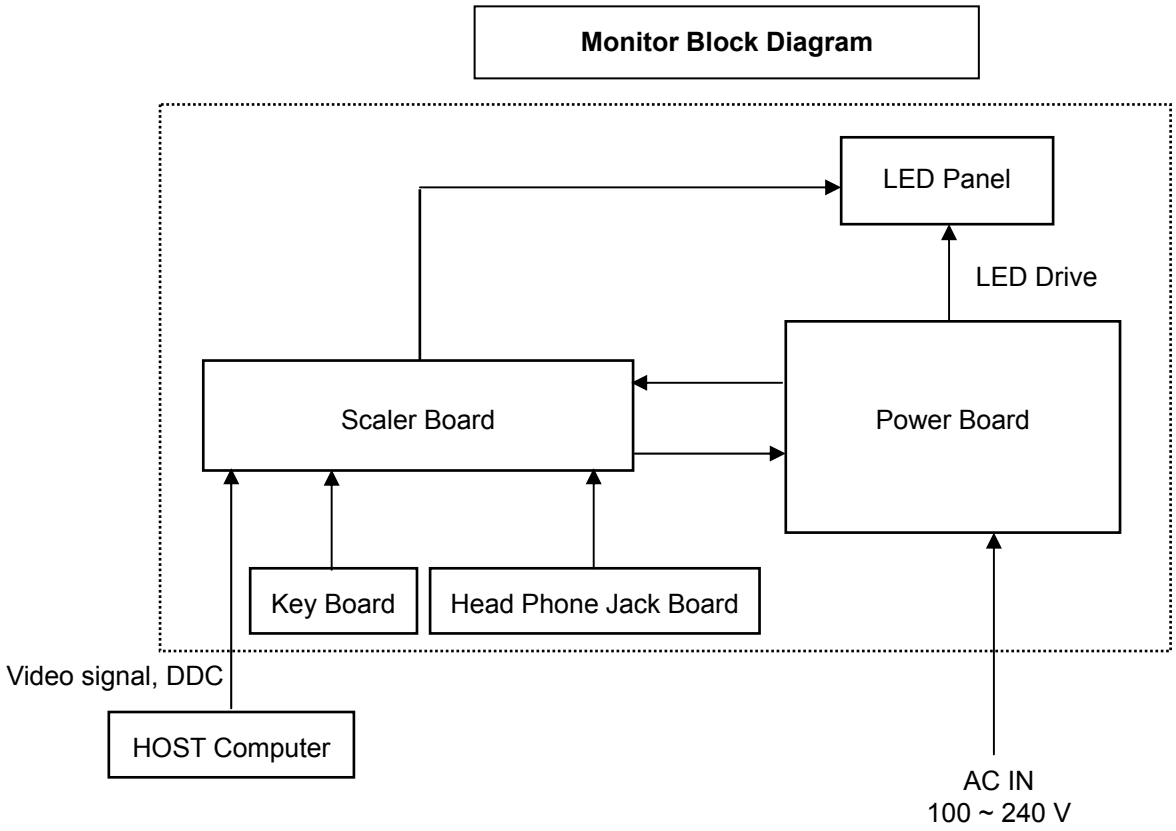
Note:

1. EPEAT Gold or Silver is valid only where Philips registers the product. Please visit www.epeat.net for registration status in your country.
2. This data is subject to change without notice. Go to www.philips.com/support to download the latest version of leaflet.

2. LCD Monitor Description

The LCD monitor will contain a scaler board, a power board, a head phone jack board and a key board. The scaler board houses 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 scaler board chips each voltage.



3. Operating Instructions

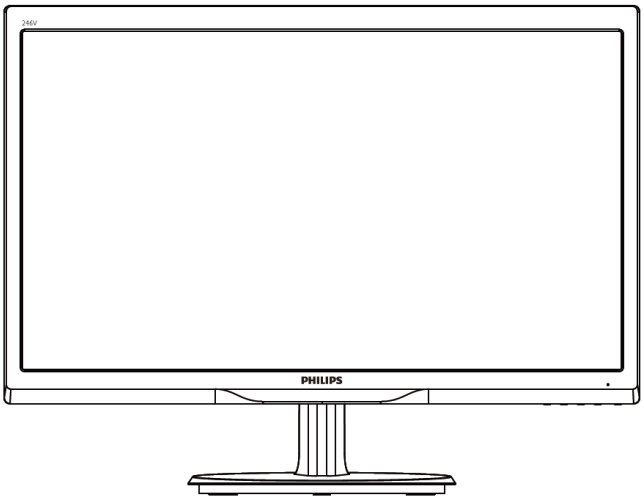
3.1 General Instructions

Press the power button to turn the monitor on or off. The other control knobs are located at front panel of the monitor. By changing these setting, the picture can be adjusted to your personal preference.

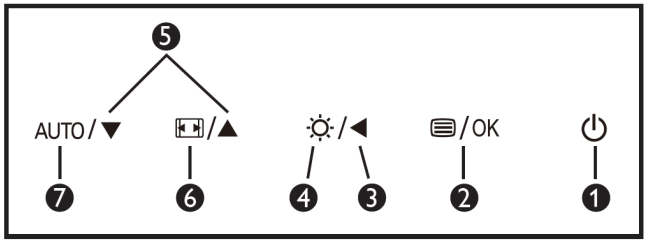
* The power cord should be connected.
* Press the power button to turn on the monitor. The power indicator will light up.

3.2 Control Buttons

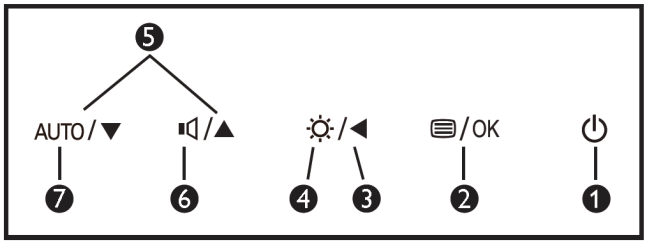
Operating the Monitor



Model 246V5LSB:



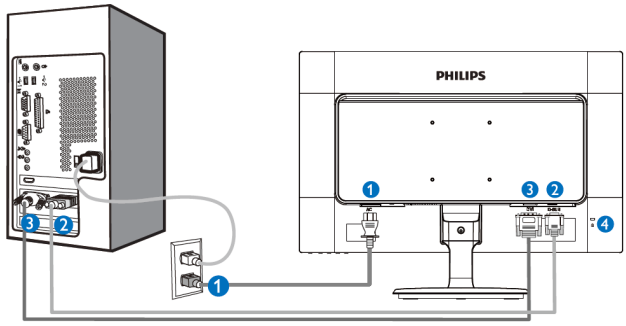
Model 246V5LAB/246V5LHAB:



1	⏻	Switch monitor's power ON and OFF.
2	/OK	Access the OSD menu. Confirm the OSD adjustment.
3	◀	Return to previous OSD level.
4	☼	Adjust the brightness level.
5	▲▼	Adjust the OSD menu.
6		Adjust the speaker volume.
		Change display format.
7	AUTO	Automatically adjust the monitor.

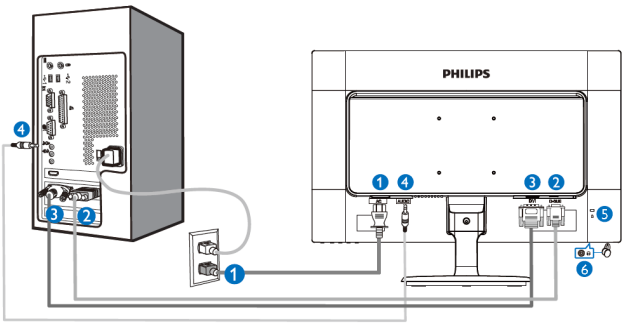
Connecting to your PC

246V5LSB



1. AC power input
2. VGA input
3. DVI-D input (available for selected models)
4. Kensington anti-theft lock

246V5LAB



1. AC power input
2. VGA input
3. DVI-D input (available for selected models)
4. Audio input (available for selected models)
5. Kensington anti-theft lock
6. Earphone jack

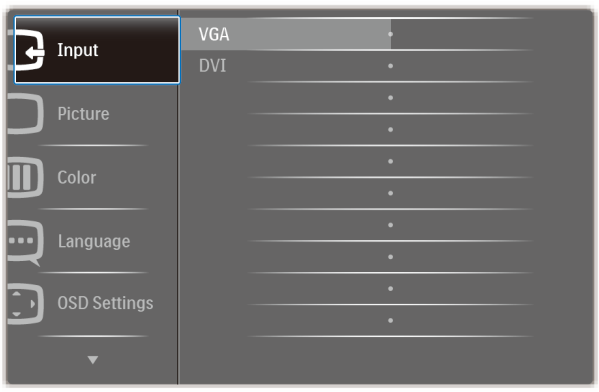
Connect to PC

1. Connect the power cord to the back of the monitor firmly.
2. Turn off your computer and unplug its power cable.
3. Connect the monitor signal cable to the video connector on the back of your computer.
4. Plug the power cord of your computer and your monitor into a nearby outlet.
5. Turn on your computer and monitor. If the monitor displays an image, installation is complete.

3.3 OSD Menu

On-Screen Display (OSD) is a feature in all Philips LCD monitors. It allows an end user to adjust screen performance or select functions of the monitors directly through an on-screen instruction window. A user friendly on screen display interface is shown as below:

Model 246V5LSB:



Model 246V5LAB:

Basic and simple instruction on the control keys

In the OSD shown above, you can press▼▲ buttons at the front bezel of the monitor to move the cursor, and press **OK** button to confirm the choice or change.

The OSD Menu

Below is an overall view of the structure of the On-Screen Display. You can use this as a reference when you want to work your way around the different adjustments later on.

- **Main menu** — **Sub menu**
- Input
  - VGA
  - DVI
  - HDMI
  - DisplayPort
  - (available for selective models)
- Picture
  - Picture Format — Wide Screen, 4:3
  - Brightness — 0~100
  - Contrast — 0~100
  - SmartResponse — Off, Fast, Faster, Fastest
  - SmartContrast — On, Off
  - Pixel Orbiting — On, Off
  - Over Scan — On, Off
  - (available for selective models)
- Audio
  - Volume — 0~100
  - Mute — On, Off
  - Audio Source — Audio In, HDMI, DisplayPort
  - (available for selective models)
- Color
  - Color Temperature — 6500K, 9300K
  - sRGB
  - User Define
    - Red: 0~100
    - Green: 0~100
    - Blue: 0~100
- Language — English , Español, Français, Deutsch, Italiano, Português, Русский , 简体中文, Türkçe, Nederlands, Svenska, Suomi, Polski, Čeština 한국어, 日本語, Maryar, Українська, Português do Brazil, Ελληνική (προαιρετικός), 繁體中文(可選)
- OSD Settings
  - Horizontal — 0~100
  - Vertical — 0~100
  - Transparency — Off, 1, 2, 3, 4
  - OSD Time Out — 5s, 10s, 20s, 30s, 60s
- Setup
  - Auto
  - H. Position — 0~100
  - V. Position — 0~100
  - Phase — 0~100
  - Clock — 0~100
  - Resolution Notification — On, Off
  - Reset — Yes, No
  - Information

4. Input/ Output Specification

4.1 Input Signal Connector

D-sub Connector

Pin No.	Signal Name
1	Red
2	Green/ SOG
3	Blue
4	Sense (GND)
5	Cable Detect (GND)
6	Red GND
7	Green GND
8	Blue GND
9	DDC +3.3V or +5V
10	Logic GND
11	Sense (GND)
12	Bi-directional data
13	H/H+V sync
14	V-sync
15	Data clock

DVI Connector

Pin No.	Signal Name
1	T.M.D.S. data2-
2	T.M.D.S. data2+
3	T.M.D.S. data2 shield
4	No Connect
5	No Connect
6	DDC clock
7	DDC data
8	No Connect
9	T.M.D.S. data1-
10	T.M.D.S. data1+
11	T.M.D.S. data1 shield
12	No Connect
13	No Connect
14	+5V Power
15	Ground (for +5V)
16	Hot plug detect
17	T.M.D.S. data0-
18	T.M.D.S. data0+
19	T.M.D.S. data0 shield
20	No Connect
21	No Connect
22	T.M.D.S clock shield
23	T.M.D.S. clock+
24	T.M.D.S. clock-

4.2 Resolution & Preset Modes

Maximum Resolution

1920 x 1080 at 60 Hz (analog input)

1920 x 1080 at 60 Hz (digital input)

Recommended Resolution

1920 x 1080 at 60 Hz (digital input)

H. freq (kHz)	Resolution	V. freq (Hz)
31.47	720 × 400	70.09
31.47	640 × 480	59.94
35.00	640 × 480	66.67
37.86	640 × 480	72.81
37.50	640 × 480	75.00
37.88	800 × 600	60.32
46.88	800 × 600	75.00
48.36	1024 × 768	60.00
60.02	1024 × 768	75.03
44.77	1280 × 720	59.86
63.89	1280 × 1024	60.02
79.98	1280 × 1024	75.03
55.94	1440 × 900	59.89
70.64	1440 × 900	74.98
65.29	1680 × 1050	59.95
67.50	1920 × 1080	60.00

Note:

Please notice that your display works best at native resolution of 1920 x 1080@60Hz. For best display quality, please follow this resolution recommendation.

Power Management Definition

If you have VESA DPM compliance display card or software installed in your PC, the monitor can automatically reduce its power consumption when not in use. If an input from a keyboard, mouse or other input device is detected, the monitor will 'wake up' automatically. The following table shows the power consumption and signaling of this automatic power saving feature:

246V5LSB:

Power Management Definition					
VESA Mode	Video	H-sync	V-sync	Power Used	LED Color
Active	ON	Yes	Yes	24.6 W (typ.) 26.45W (max.)	White
Sleep (Standby)	OFF	No	No	< 0.5W (typ.)	White (blink)
Switch Off	OFF	-	-	< 0.3W (typ.)	OFF

246V5LAB:

Power Management Definition					
VESA Mode	Video	H-sync	V-sync	Power Used	LED Color
Active	ON	Yes	Yes	26.21W (typ.) 33.41W (max.)	White
Sleep (Standby)	OFF	No	No	< 0.5W (typ.)	White (blink)
Switch Off	OFF	-	-	< 0.3W (typ.)	OFF

The following setup is used to measure power consumption on this monitor.

·Native resolution:1920×1080

·Contrast: 50%

·Brightness: 250 nits

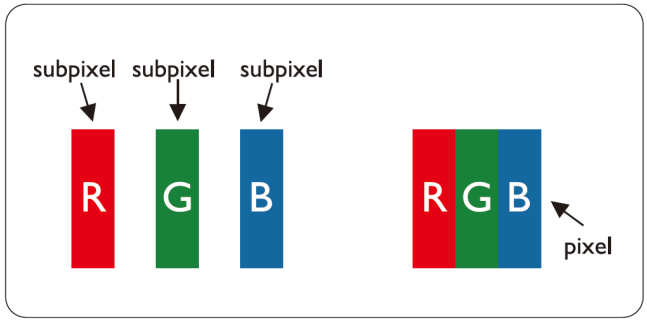
·Color temperature:6500k with full white pattern

Note:

This data is subject to change without notice.

4.3 Pixel Defect Policy

Philips strives to deliver the highest quality products. We use some of the industry's most advanced manufacturing processes and practice stringent quality control. However, pixel or sub pixel defects on the TFT Monitor panels used in flat panel monitors are sometimes unavoidable. No manufacturer can guarantee that all panels will be free from pixel defects, but Philips guarantees that any monitor with an unacceptable number of defects will be repaired or replaced under warranty. This notice explains the different types of pixel defects and defines acceptable defect levels for each type. In order to qualify for repair or replacement under warranty, the number of pixel defects on a TFT Monitor panel must exceed these acceptable levels. For example, no more than 0.0004% of the sub pixels on a monitor may be defective. Furthermore, Philips sets even higher quality standards for certain types or combinations of pixel defects that are more noticeable than others. This policy is valid worldwide.



Pixels and Sub pixels

A pixel, or picture element, is composed of three sub pixels in the primary colors of red, green and blue. Many pixels together form an image. When all sub pixels of a pixel are lit, the three colored sub pixels together appear as a single white pixel. When all are dark, the three colored sub pixels together appear as a single black pixel. Other combinations of lit and dark sub pixels appear as single pixels of other colors.

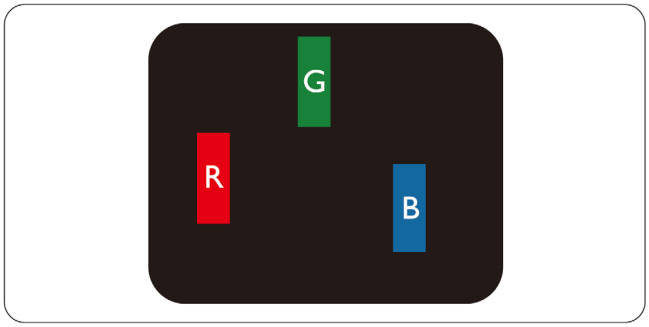
Types of Pixel Defects

Pixel and sub pixel defects appear on the screen in different ways. There are two categories of pixel defects and several types of sub pixel defects within each category.

Bright Dot Defects

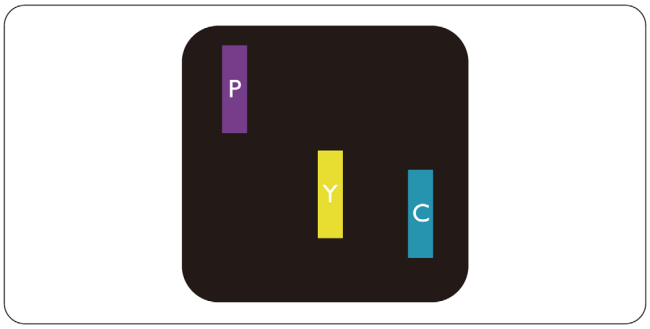
Bright dot defects appear as pixels or sub pixels that are always lit or 'on'. That is, a bright dot is a sub-pixel that stands out on the screen when the monitor displays a dark pattern. There are the types of bright dot defects.

One lit red, green or blue sub pixel

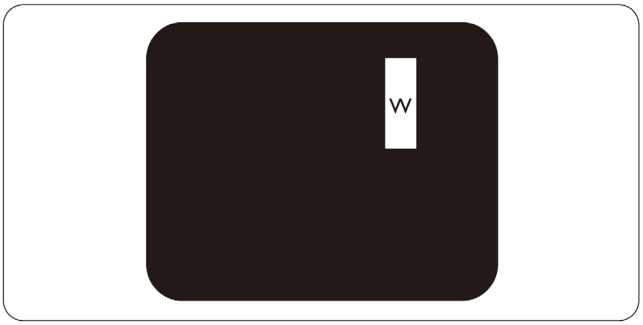


Two adjacent lit sub pixels:

- Red + Blue = Purple
- Red + Green = Yellow
- Green + Blue = Cyan (Light Blue)



Three adjacent lit sub pixels (one white pixel)

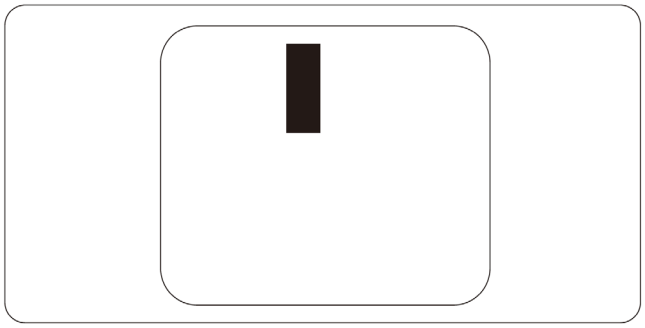


Note:

A red or blue bright dot must be more than 50 percent brighter than neighboring dots while a green bright dot is 30 percent brighter than neighboring dots.

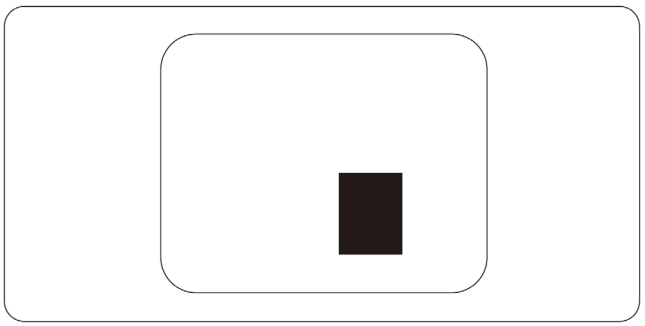
Black Dot Defects

Black dot defects appear as pixels or sub pixels that are always dark or 'off'. That is, a dark dot is a sub-pixel that stands out on the screen when the monitor displays a light pattern. These are the types of black dot defects.



Proximity of Pixel Defects

Because pixel and sub pixels defects of the same type that are near to one another may be more noticeable, Philips also specifies tolerances for the proximity of pixel defects.



Pixel Defect Tolerances

In order to qualify for repair or replacement due to pixel defects during the warranty period, a TFT LCD panel in a Philips flat panel monitor must have pixel or sub pixel defects exceeding the tolerances listed in the following tables.

BRIGHT DOT DEFECTS	ACCEPTABLE LEVEL
1 lit subpixel	3
2 adjacent lit subpixels	1
3 adjacent lit subpixels (one white pixel)	0
Distance between two bright dot defects*	>15mm
Total bright dot defects of all types	3

BLACK DOT DEFECTS	ACCEPTABLE LEVEL
1 dark subpixel	5 or fewer
2 adjacent dark subpixels	2 or fewer
3 adjacent dark subpixels	0
Distance between two black dot defects*	>15mm
Total black dot defects of all types	5 or fewer

TOTAL DOT DEFECTS	ACCEPTABLE LEVEL
Total bright or black dot defects of all types	5 or fewer

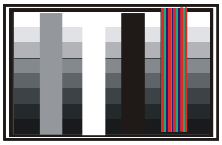
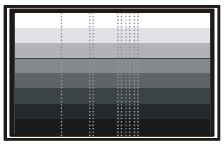
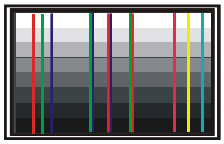
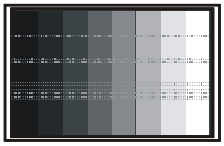
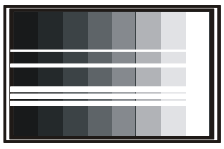
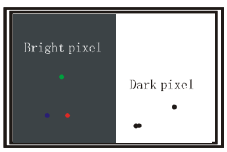
Note:

1. 1 or 2 adjacent sub pixel defects = 1 dot defect.
2. This monitor is ISO9241-307 compliant, Class-I compliant.(ISO9241-307: Ergonomic requirement , analysis and compliance test methods for electronic visual displays)
3. ISO9241-307 is the successor of formerly known ISO13406 standard, which is withdrawn by the International Organisation for Standardisation (ISO) per: 2008-11-13.

4.4 Failure Mode Of Panel

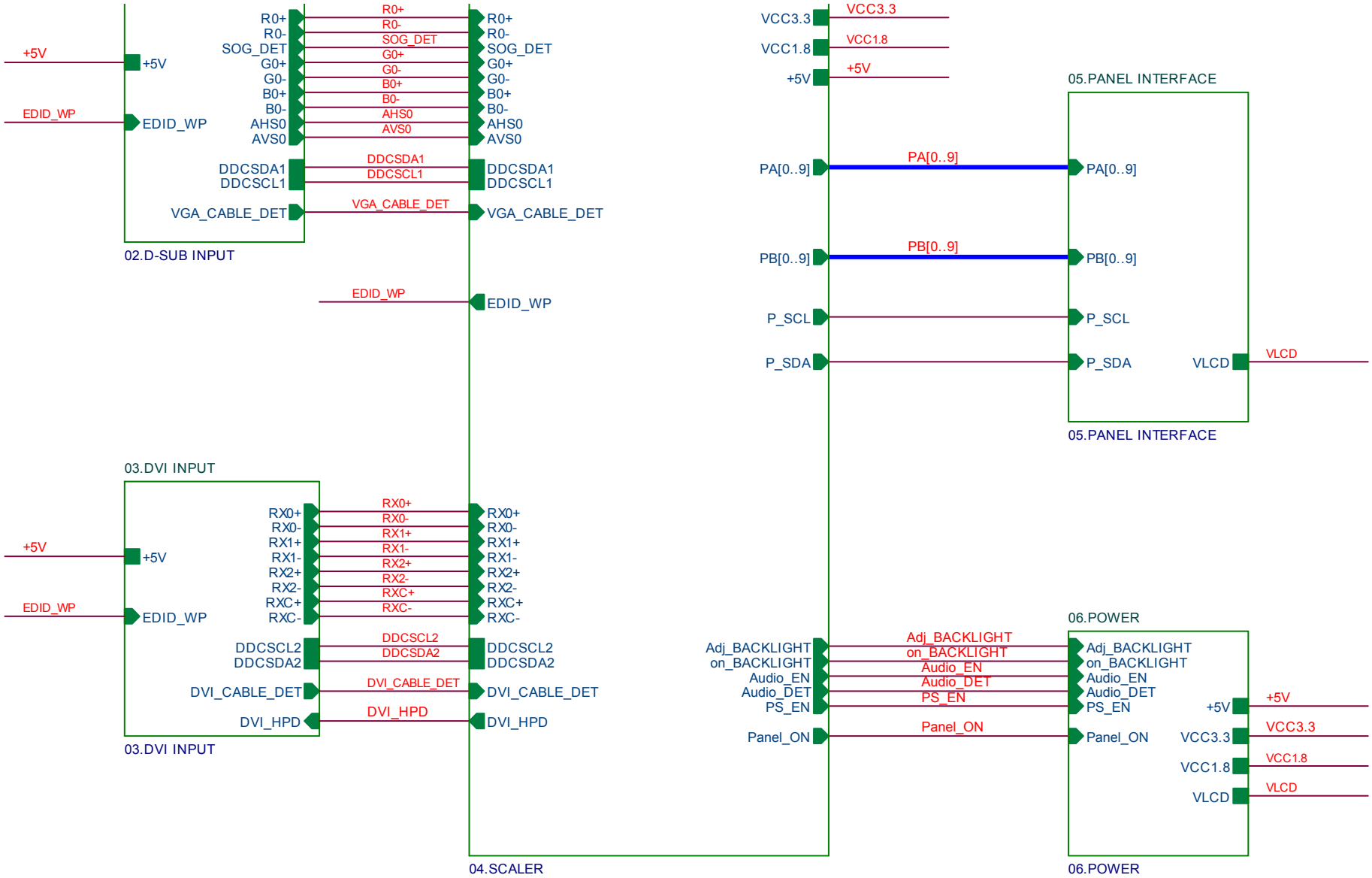
Quick reference for failure mode of LCD panel

this page presents problems that could be made by LCD panel.
It is not necessary to repair circuit board. Simply follow the mechanical instruction on this manual to eliminate failure by replace LCD panel.

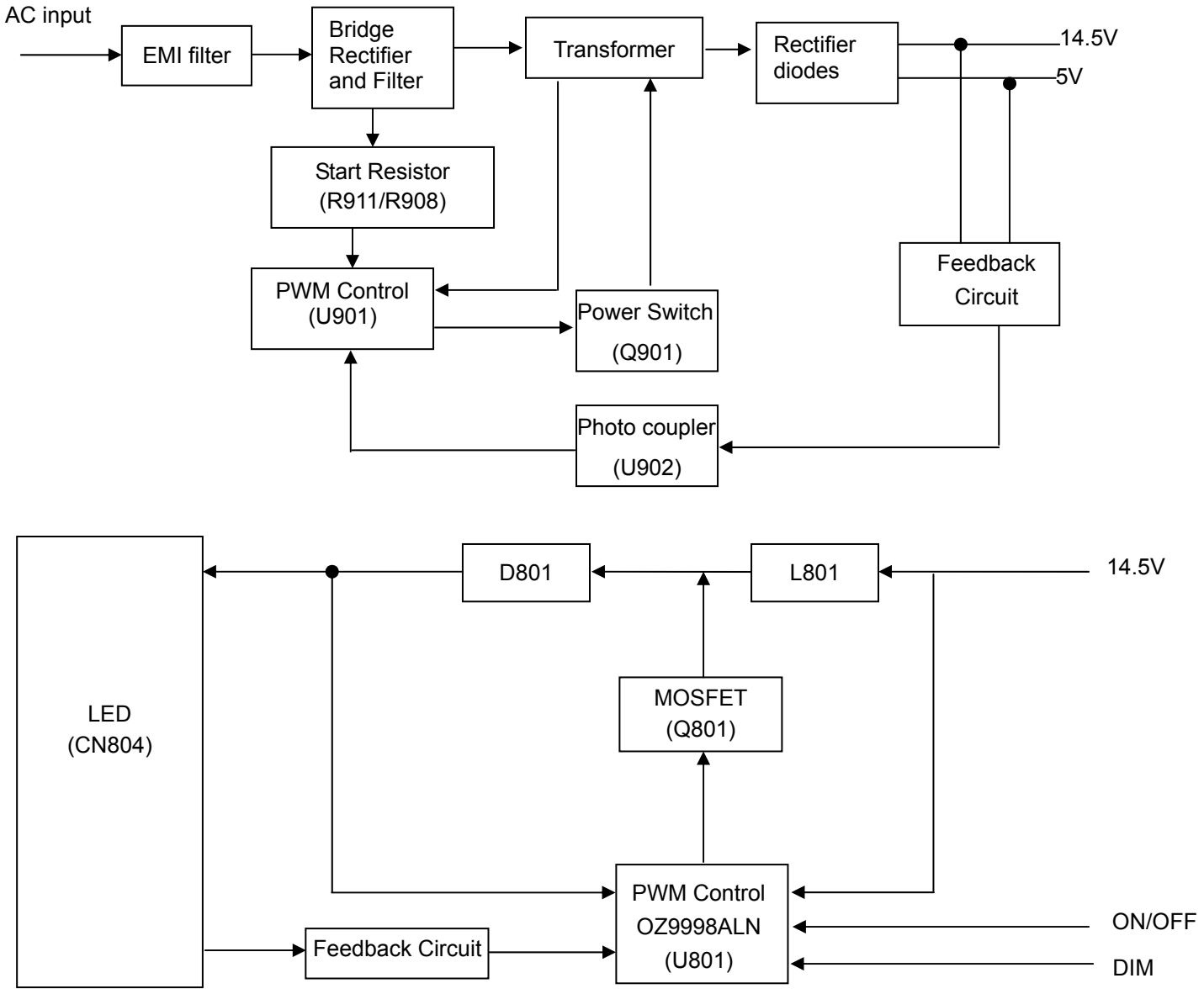
Failure description	Phenomenon
Vertical block defect	
Vertical dim lines	
Vertical lines defect (Always bright or dark)	
Horizontal block defect	
Horizontal dim lines	
Horizontal lines defect (Always bright or dark)	
Has bright or dark pixel	
Polarizer has bubbles	
Polarizer has bubbles	
Foreign material inside polarizer. It shows liner or dot shape.	
Concentric circle formed	
Bottom back light of LCD is brighter than normal	
Back light un-uniformity	
Backlight has foreign material. Black or white color, liner or circular type	

5. Block Diagram

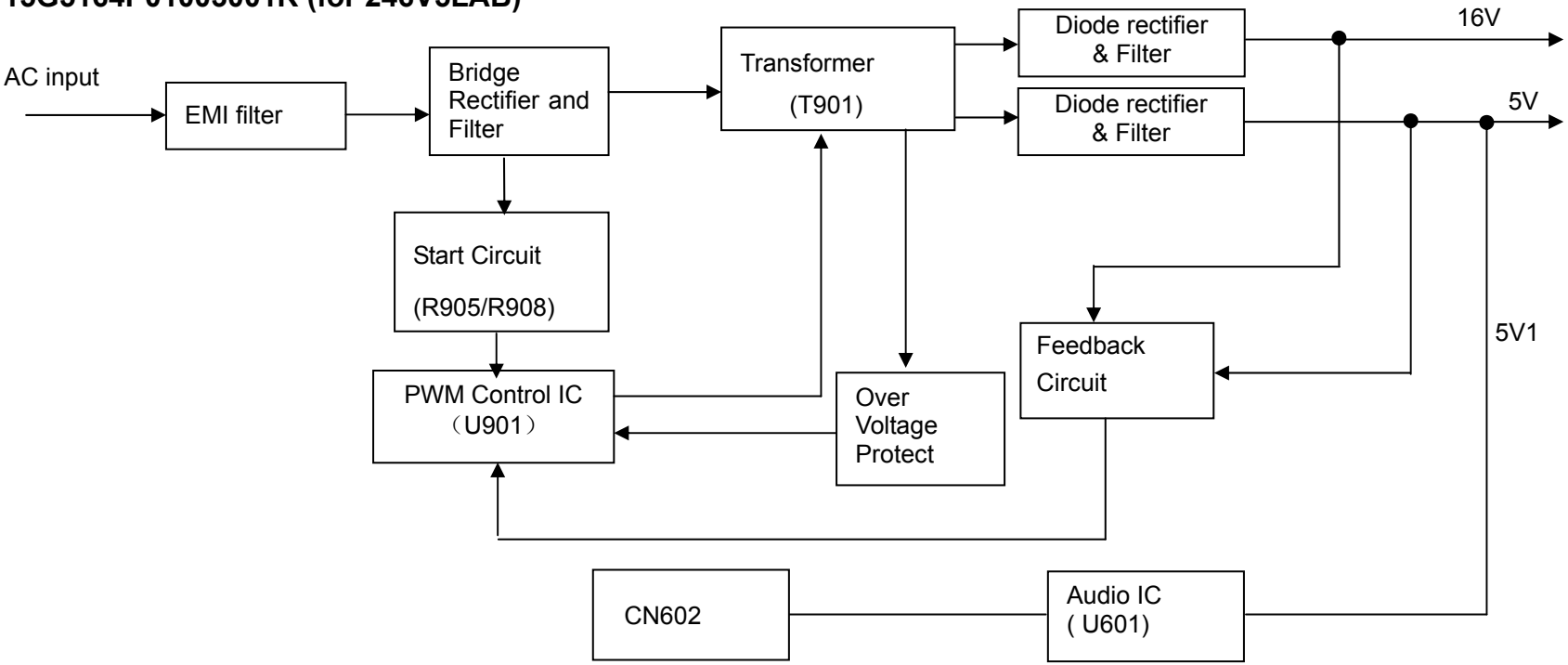
5.1 Scaler Board

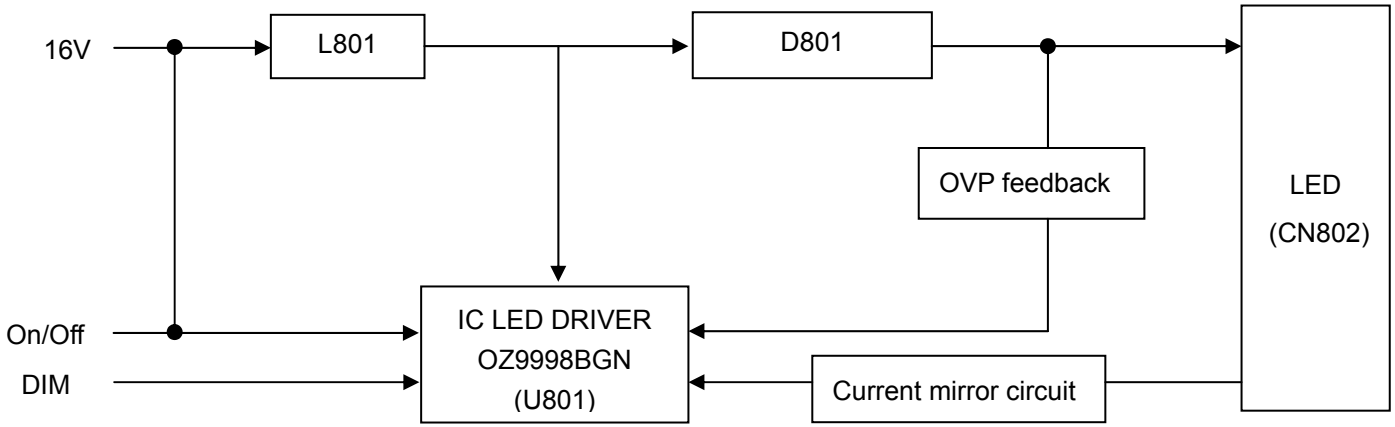


5.2 Power Board （for 246V5LSB）



715G5164P01003001R (for 246V5LAB)



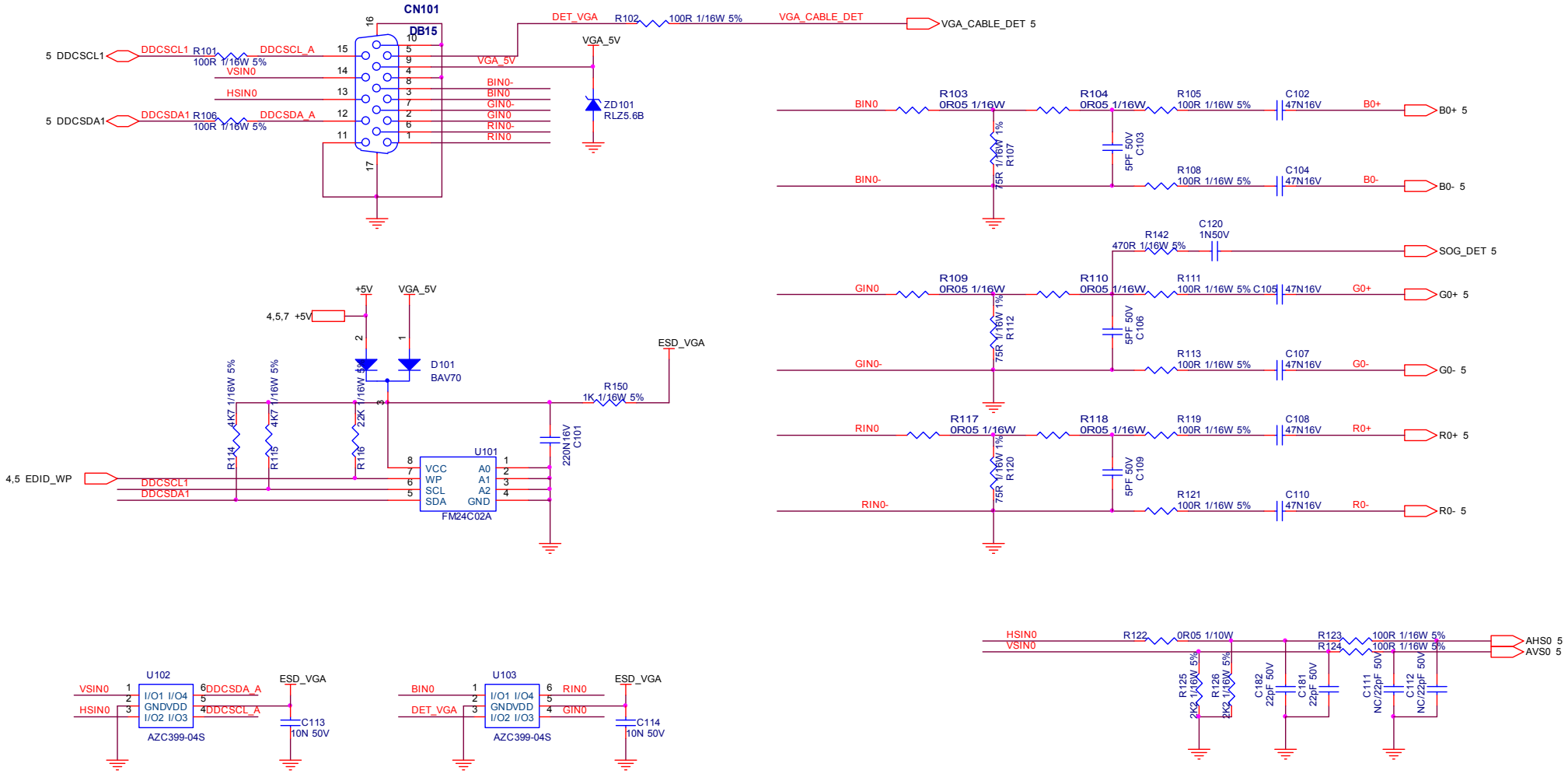


6. Schematic

6.1 Scaler Board (715G4401M04000004K)

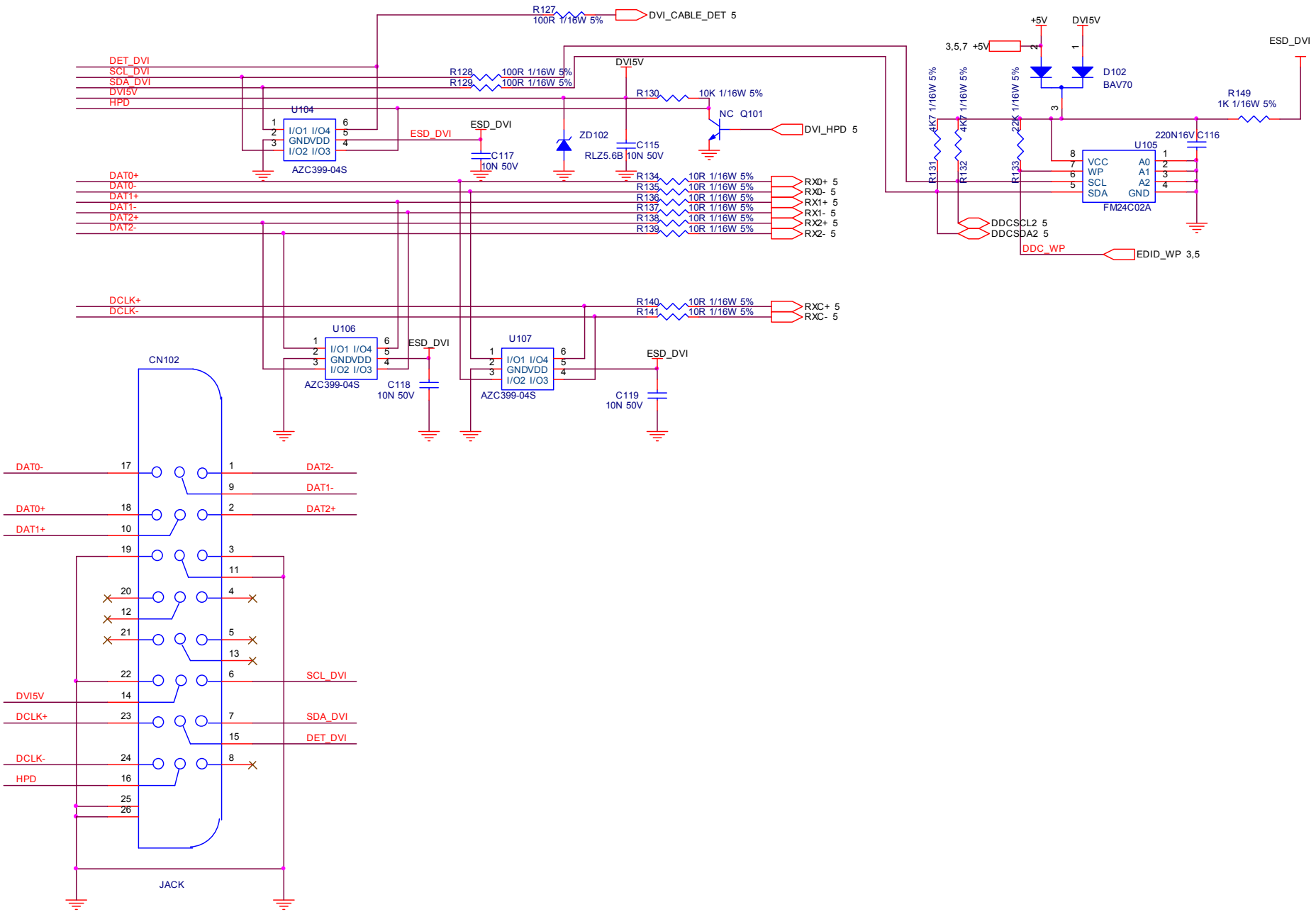
Remark: Parts position can be searched by using FIND function in PDF.

D-SUB I/O



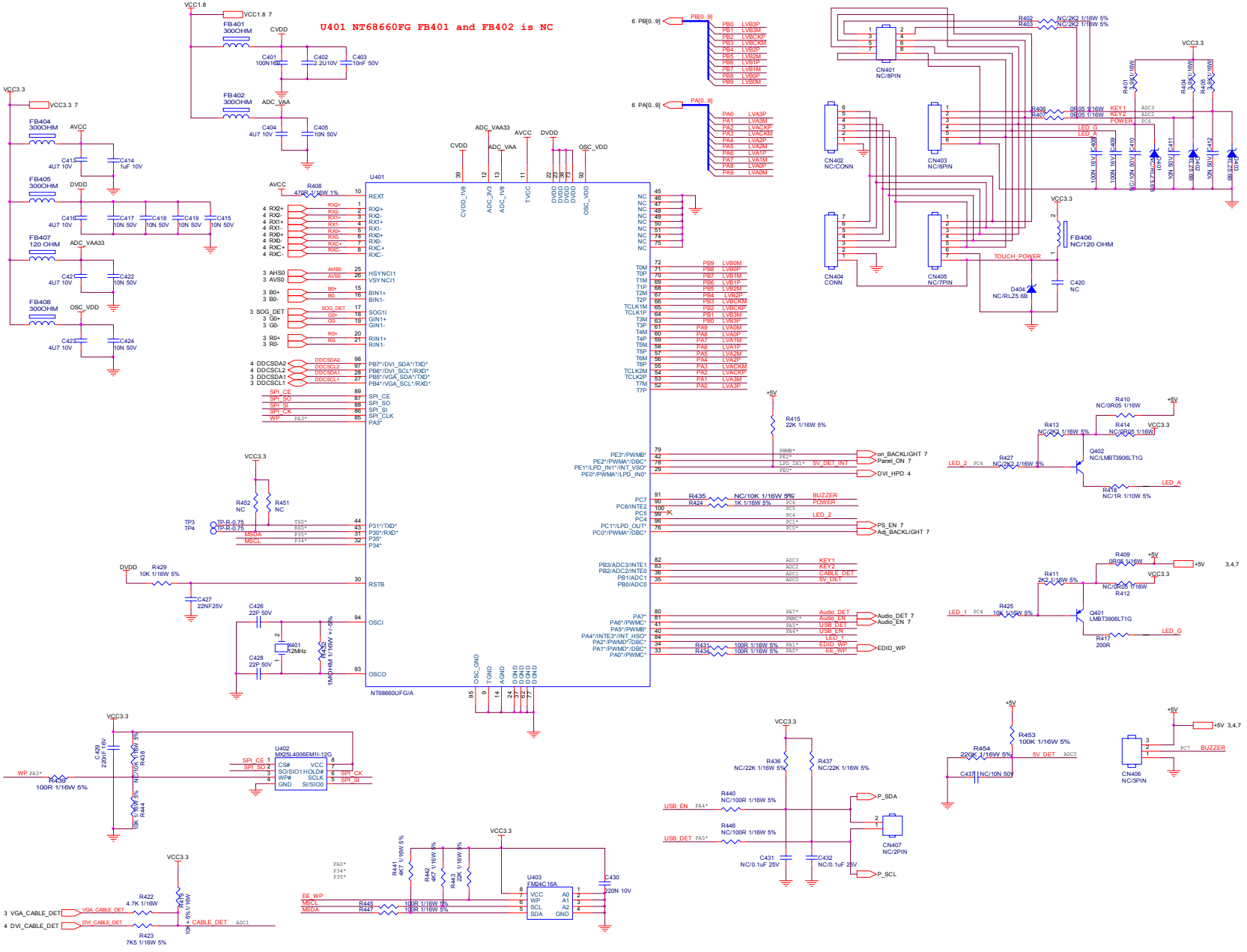
Remark: Parts position can be searched by using FIND function in PDF.

DVI



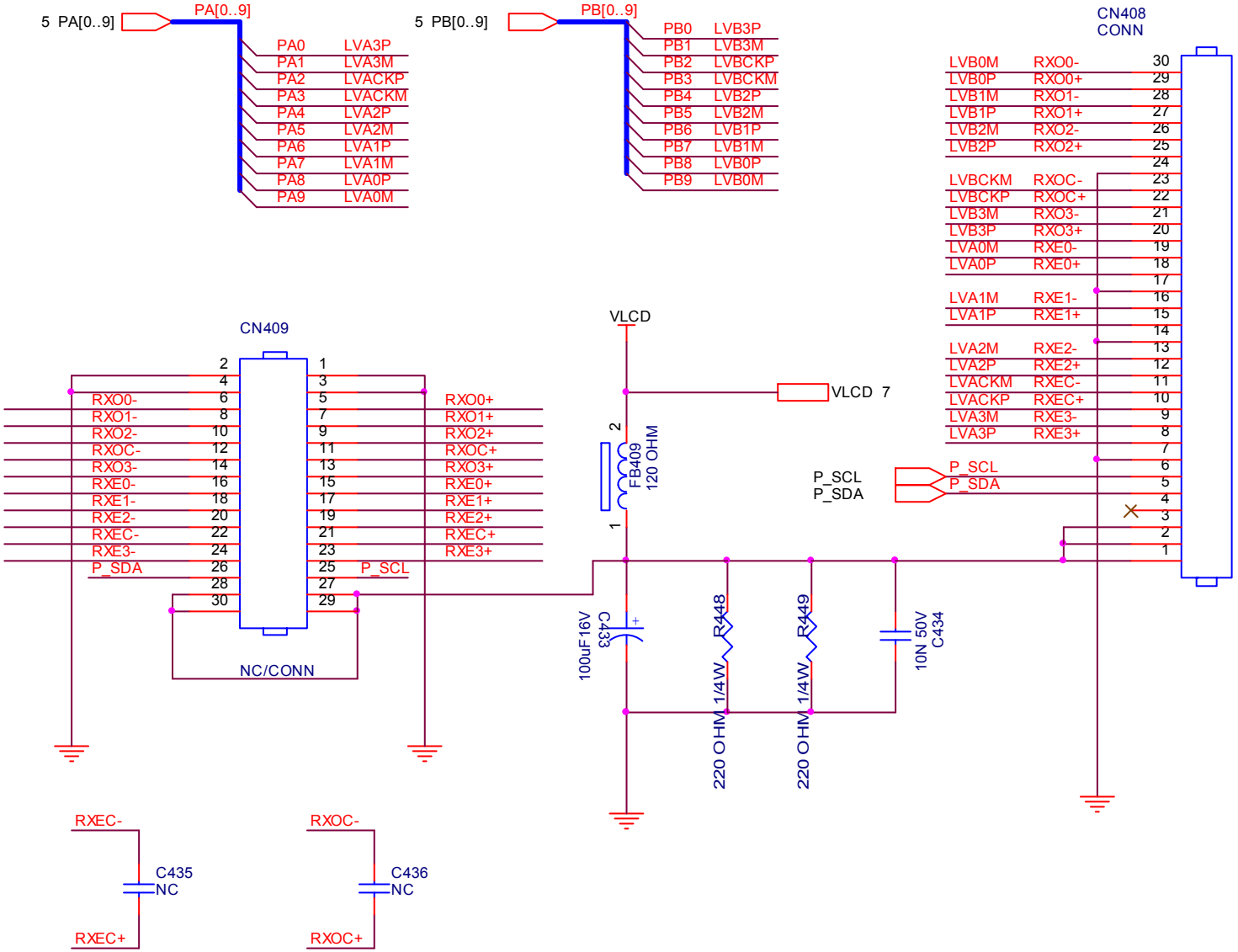
Remark: Parts position can be searched by using FIND function in PDF.

Scaler



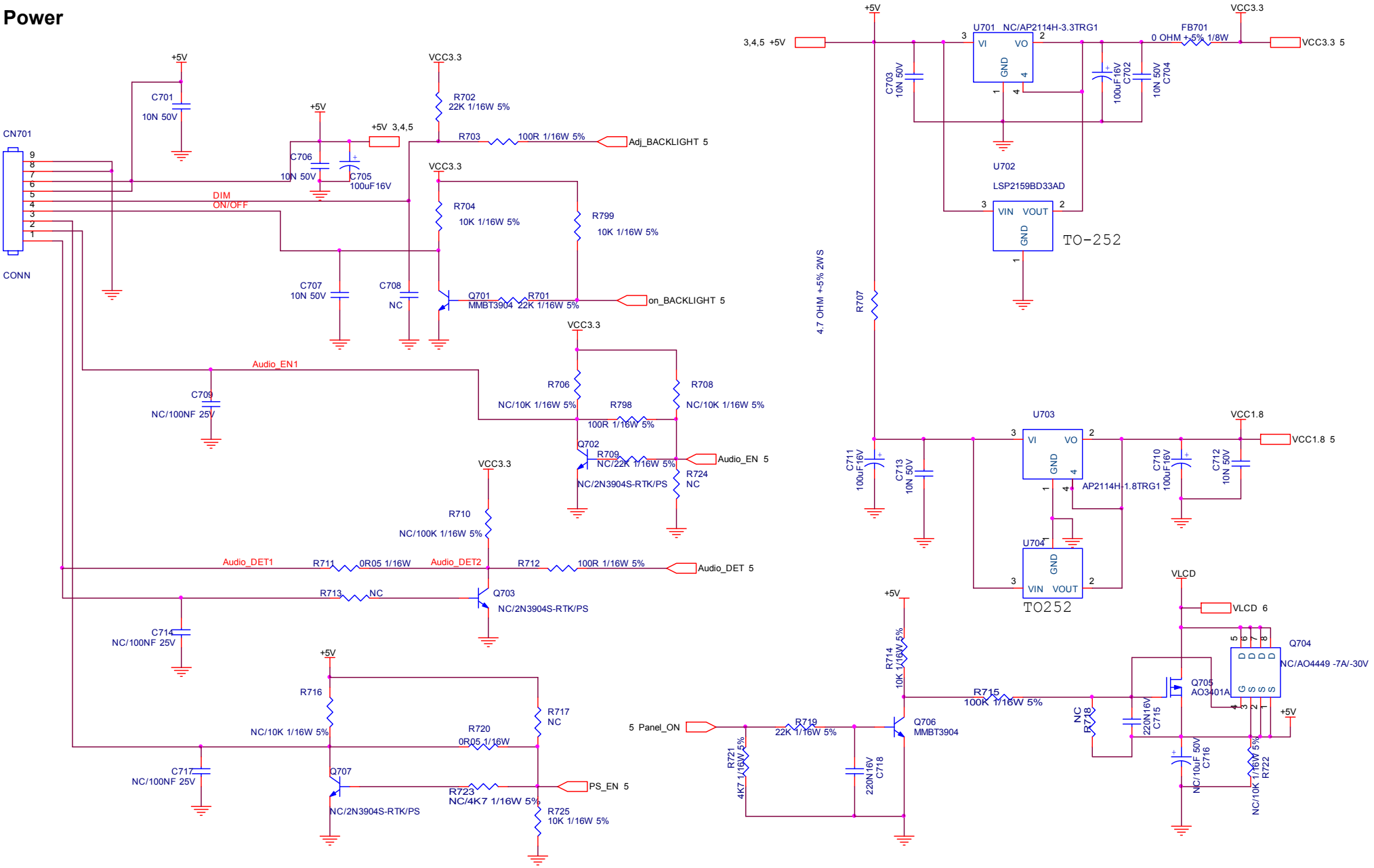
Remark: Parts position can be searched by using FIND function in PDF.

Panel Interface



Remark: Parts position can be searched by using FIND function in PDF.

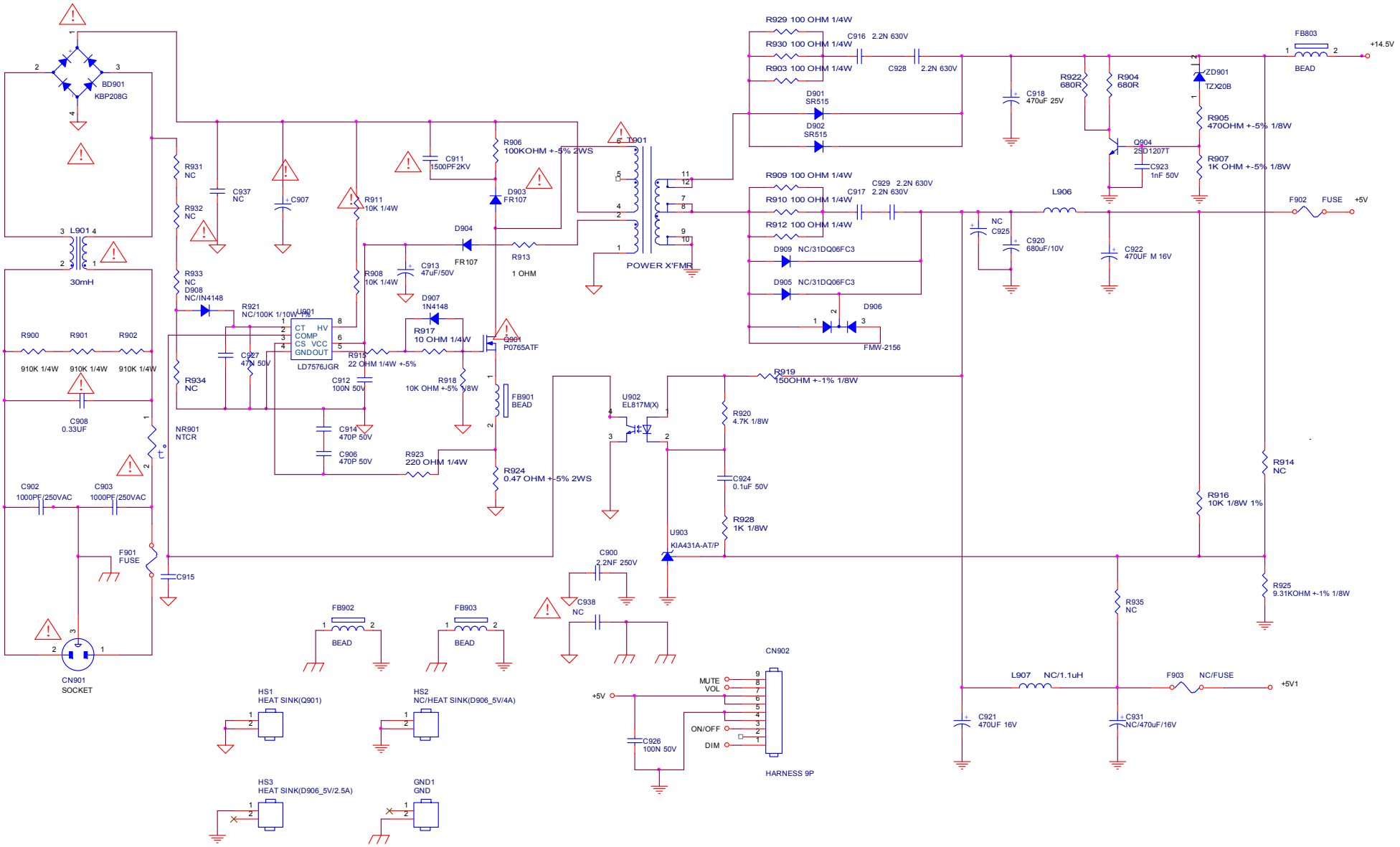
Power



6.2 Power Board (715G4497P05000001M) （for 246V5LSB）

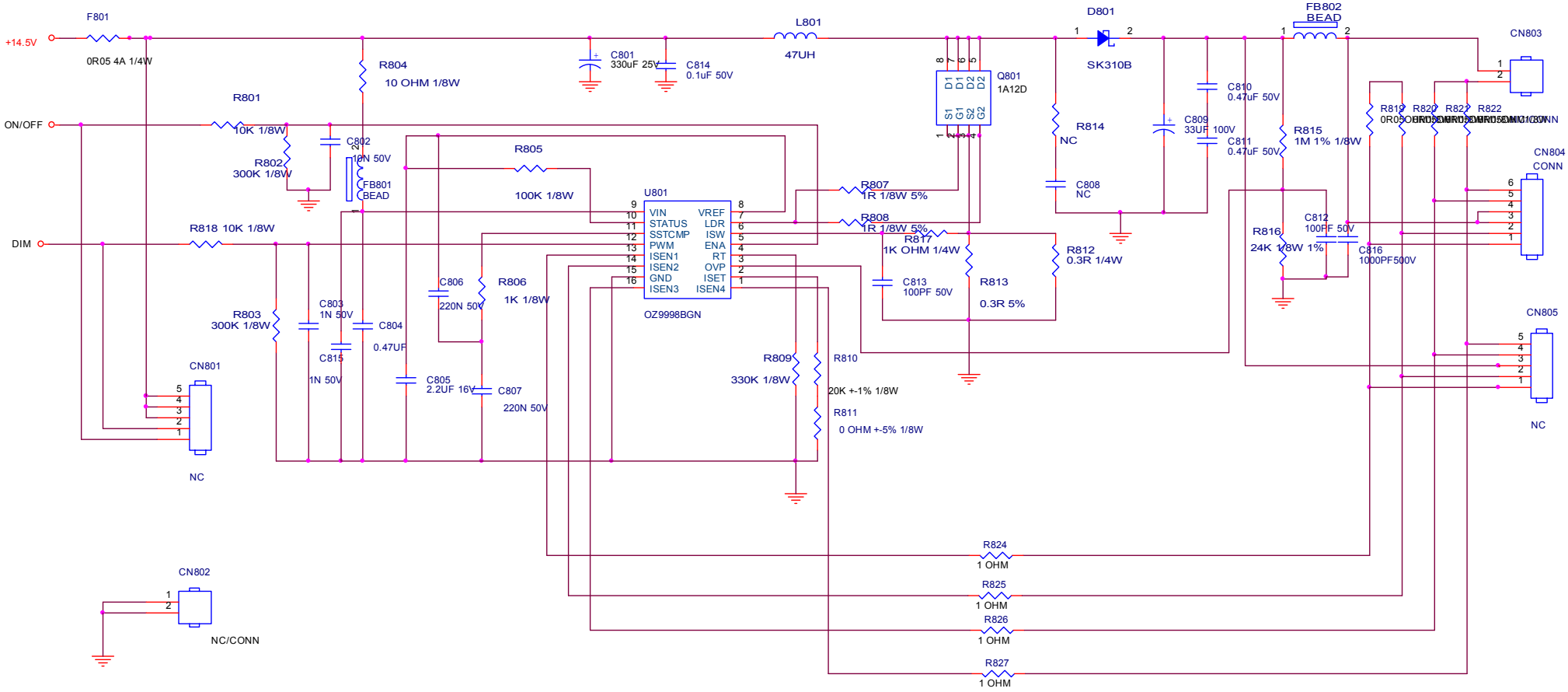
Remark: Parts position can be searched by using FIND function in PDF.

Power



Remark: Parts position can be searched by using FIND function in PDF.

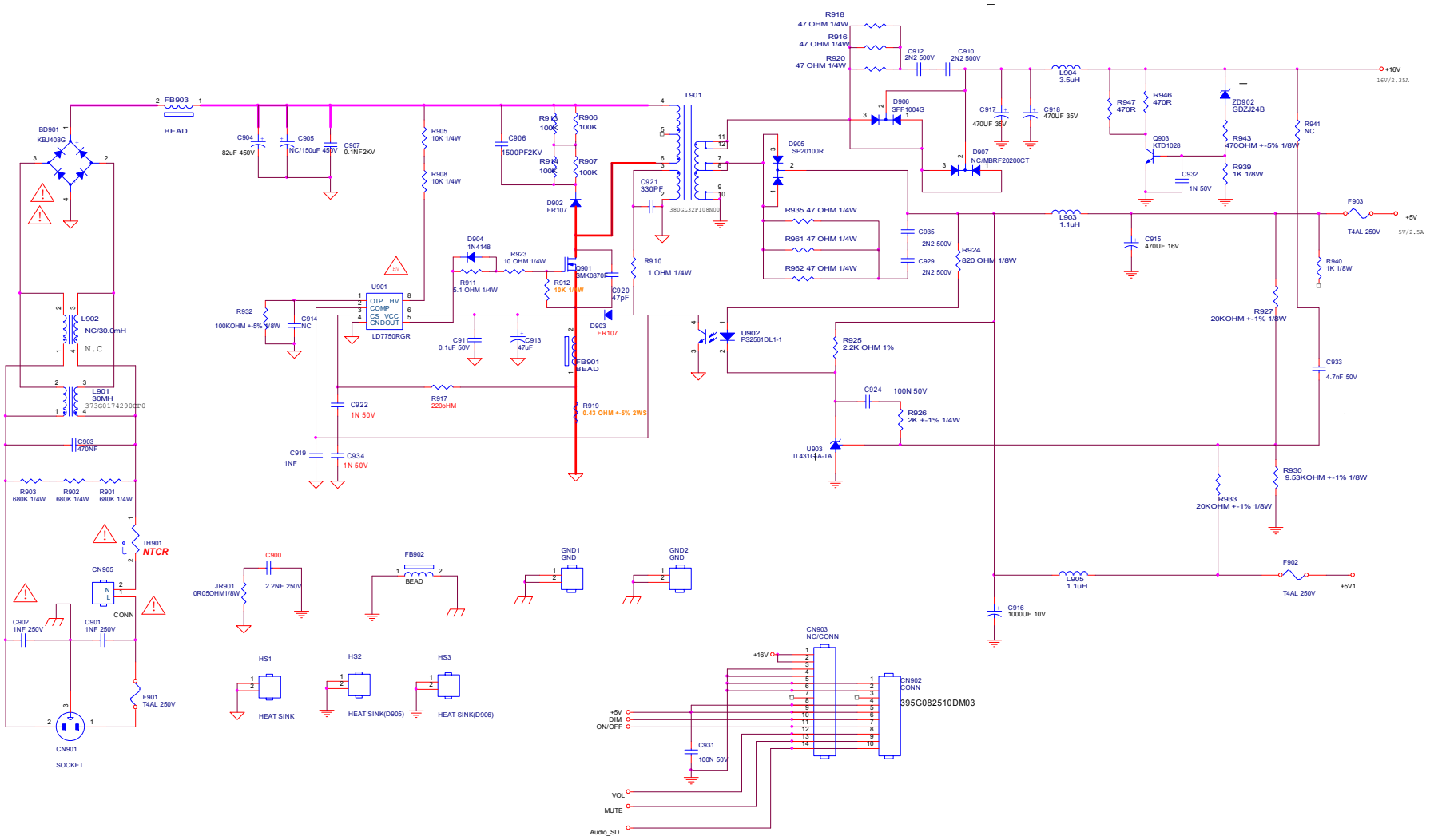
Converter



715G5164P01003001R (for 246V5LAB)

Remark: Parts position can be searched by using FIND function in PDF.

POWER



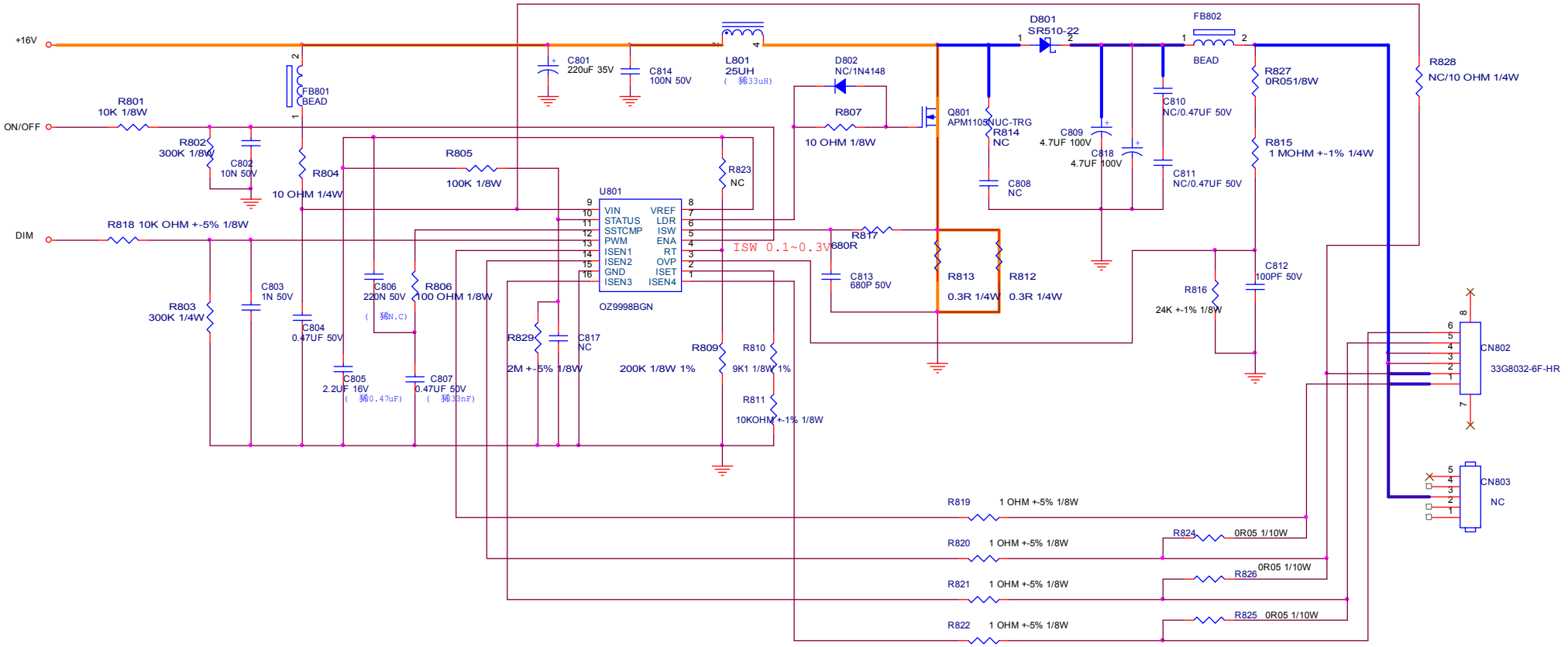
layout 網路耐壓與沿面間距標準			
序號	電壓值 (Vdc or Vrms)	最少銅箔間距 (mm)	綫路圖顏色
1	40V 以	0.30	無標示
2	40V-100V	0.75	
3	100V-200V	1.5	
4	200V-400V	2.0	
5	400V-600V	3.0	
6	600V-1000V	5.0	

Layout trace 電流與 trace 寬度，1A=最少 1mm 以上寬度 銅厚:1(Oz)			
序號	電流值 (Idc or Irms)	最少銅寬(mm)	綫路圖顏色
1		綫路圖上標示	

TPV (Top Victory Electronics Co., Ltd.)		OEM MODEL		Size	Custom
結構名稱版		TPV MODEL		Rev	A
Key Component	02.POWER	PCB NAME		標準	ODM MODEL
Date	Wednesday, January 09, 2013	Sheet	3 of 3		

Remark: Parts position can be searched by using FIND function in PDF.

CONVERTER

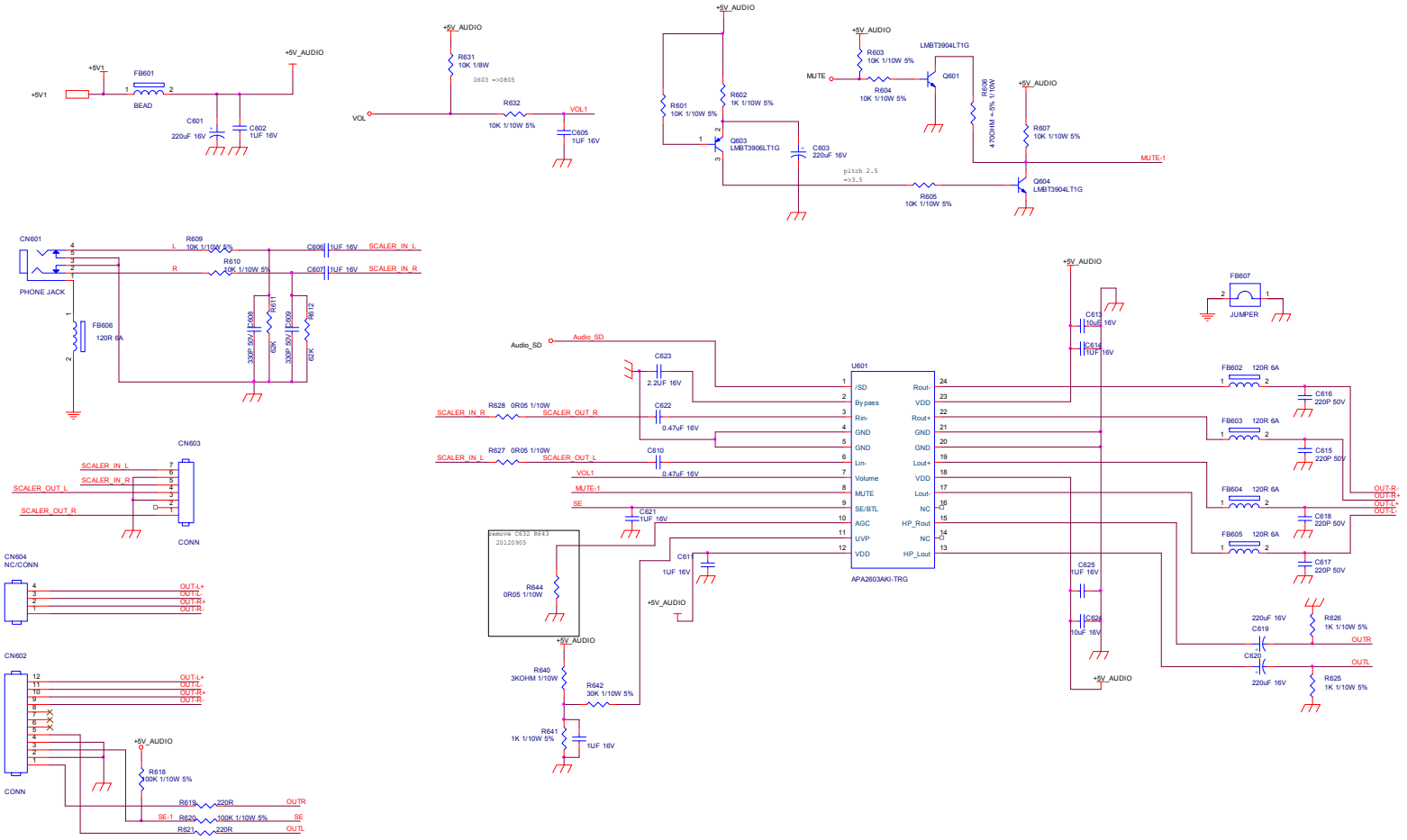


	MMD 246V5LAB TPM240WF1 65mA/51.2V typ 68mA/58.8V max 6 pin 4string	
R816	30K	
R810	9.1K	
R811	9.1K	

TPV (Top Victory Electronics Co., Ltd.)		OEM MODEL		Size	Custom
结隔瓜细腹		TPV MODEL		Rev	A
Key Component	03.COVERTER	PCB NAME	P0A-000-0010	称爹	ODM MODEL
Date	Wednesday, January 09, 2013	Sheet	2 of 4		

Remark: Parts position can be searched by using FIND function in PDF.

AUDIO

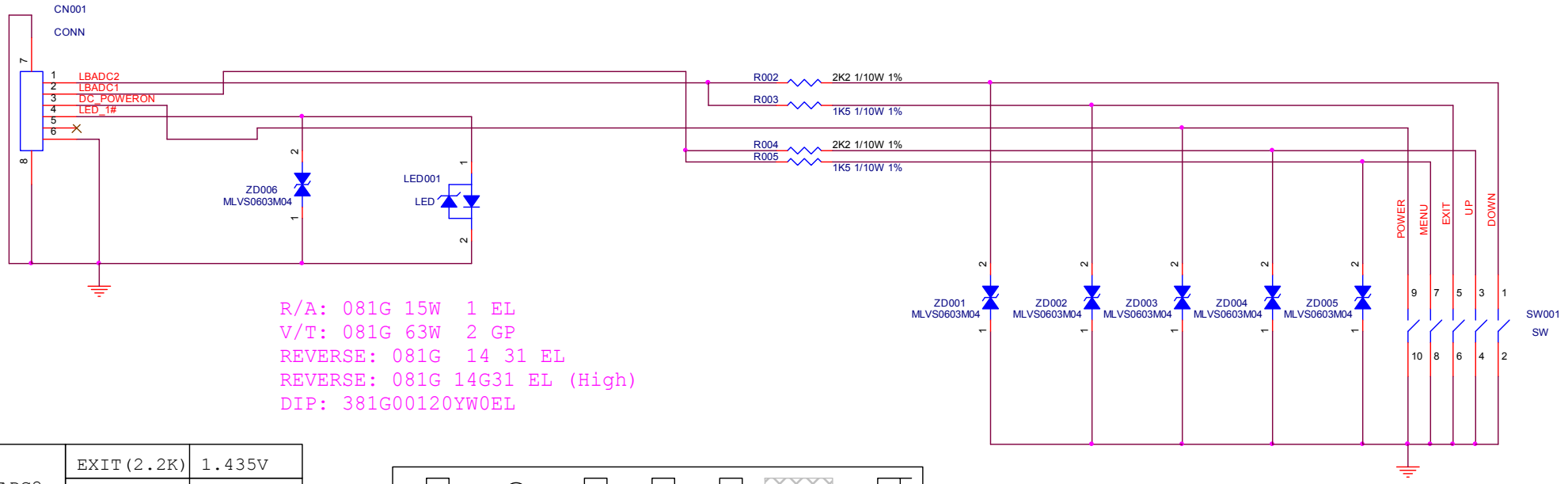


T.P.V (Top Victory Electronics Co., Ltd.)		OEM MODEL		Size	C
威強電股份有限公司		TPV MODEL		Rev	A
Key Component	4.AUDIO	PCB NAME		名稱	ODM MODEL
Date	Wednesday, January 09, 2013	Sheet	4 of 4		

6.3 Key Board (715G5620K01000004K)

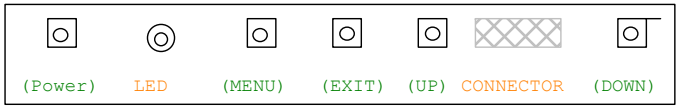
Remark: Parts position can be searched by using FIND function in PDF.

KEY-METAL DOME SWITCH_LED



R/A: 081G 15W 1 EL
V/T: 081G 63W 2 GP
REVERSE: 081G 14 31 EL
REVERSE: 081G 14G31 EL (High)
DIP: 381G00120YW0EL

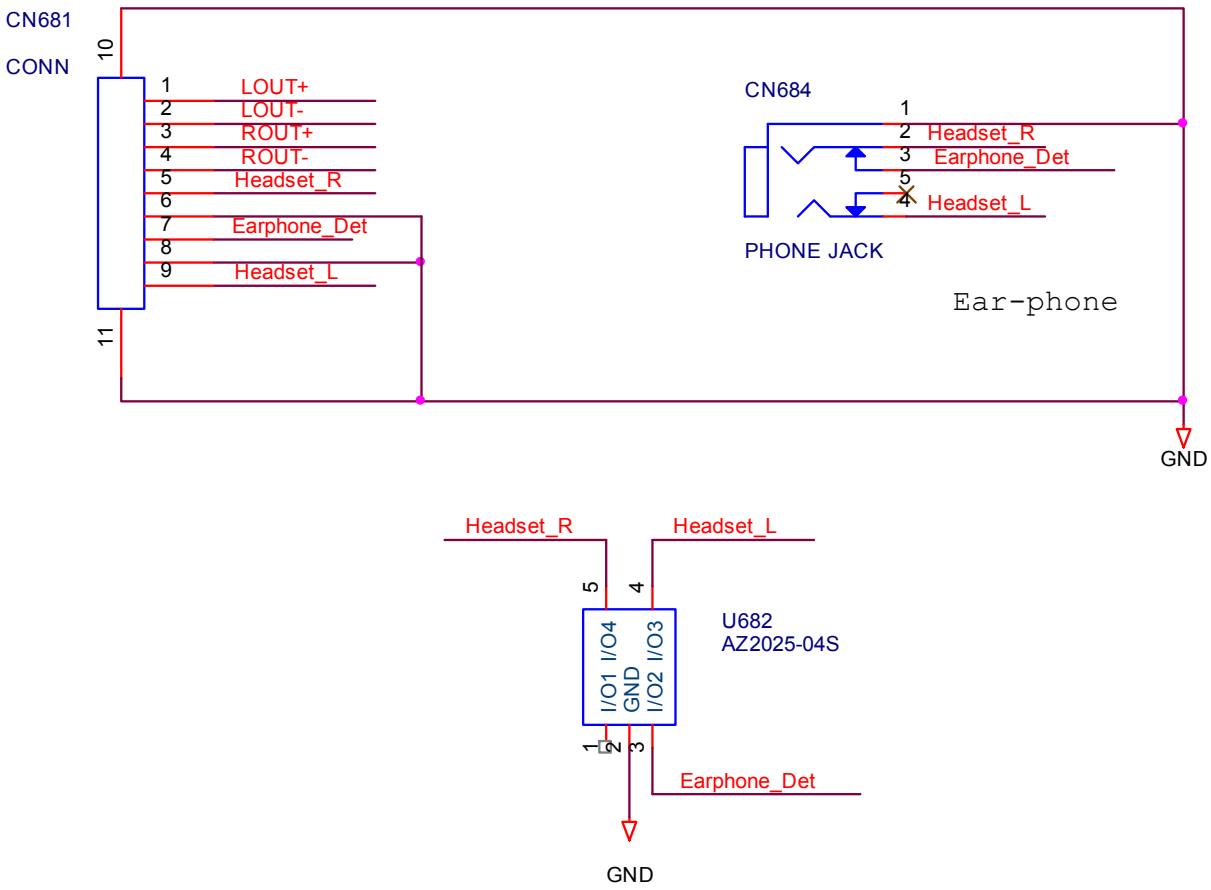
LBADC2	EXIT(2.2K)	1.435V
	UP (1.5K)	1.042V
LBADC1	DOWN(2.2K)	1.435V
	MENU(1.5K)	1.042V

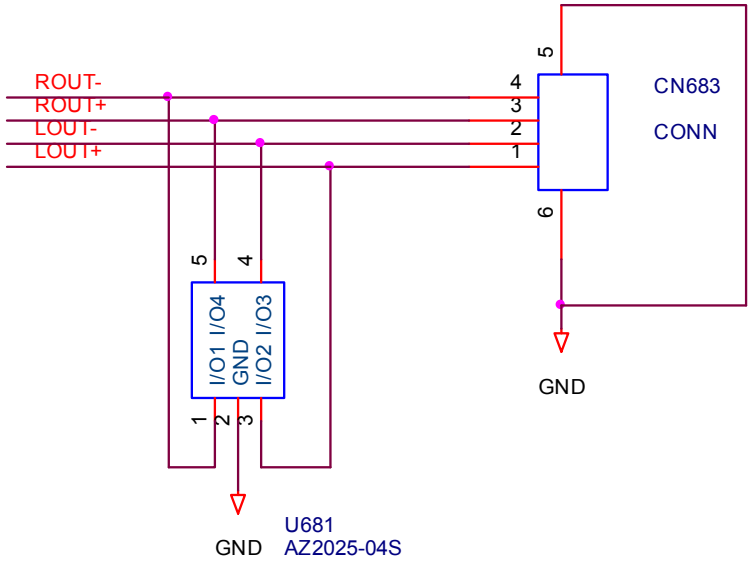


6.4 Head Phone Jack Board (715G5462T01000004Q) (Only for 246V5LAB)

REMARK: PARTS POSITION CAN BE SEARCHED BY USING FIND FUNCTION IN PDF.

Head Phone Jack

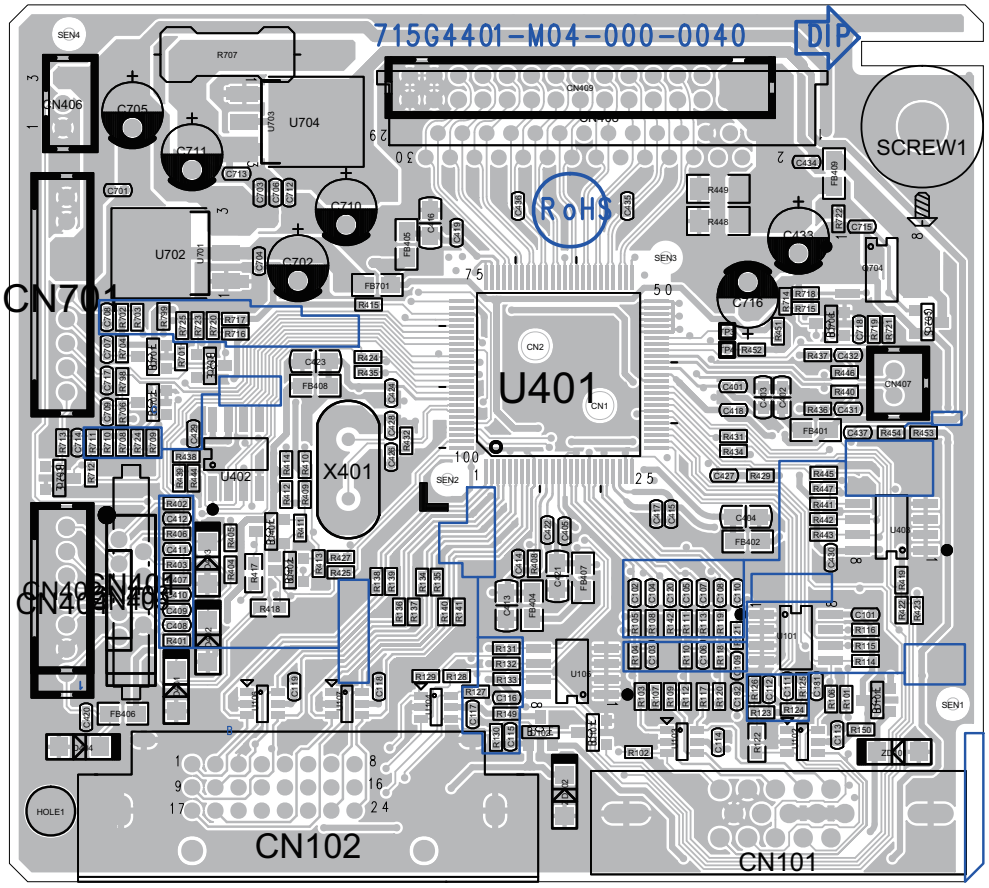




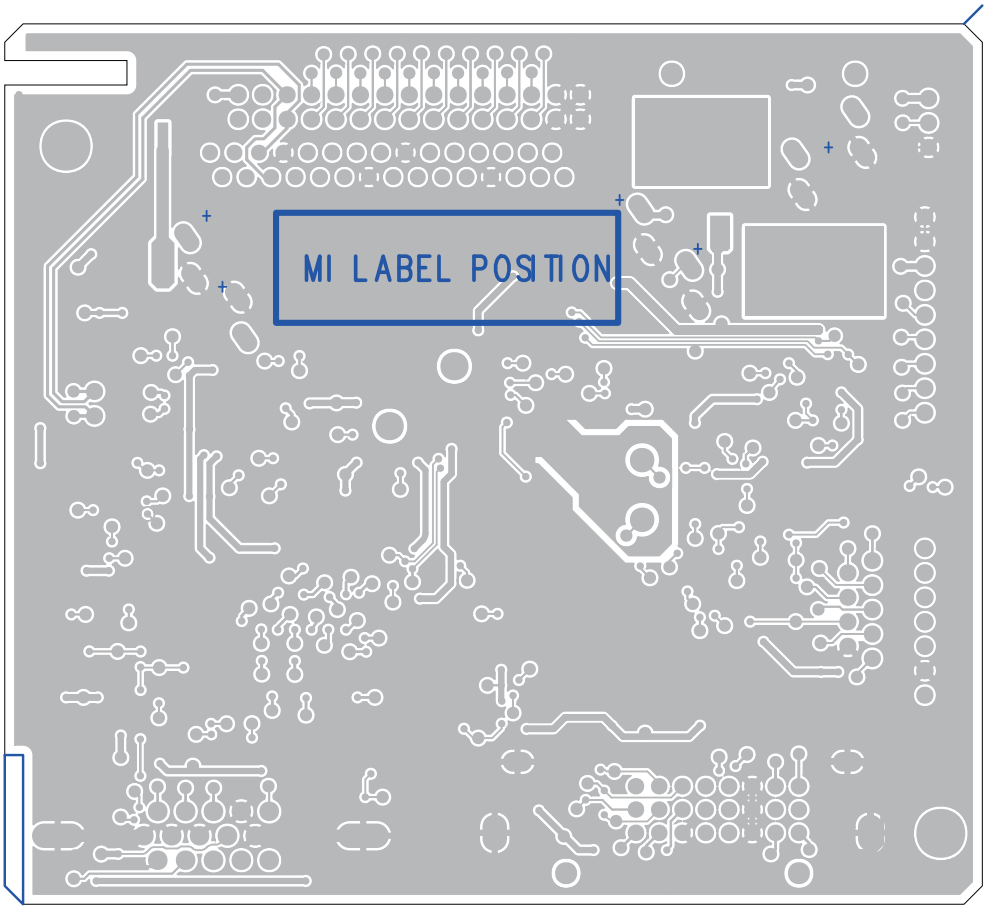
7. PCB Layout

7.1 Scaler Board (715G4401M04000004K)

Remark: Parts position can be searched by using FIND function in PDF.

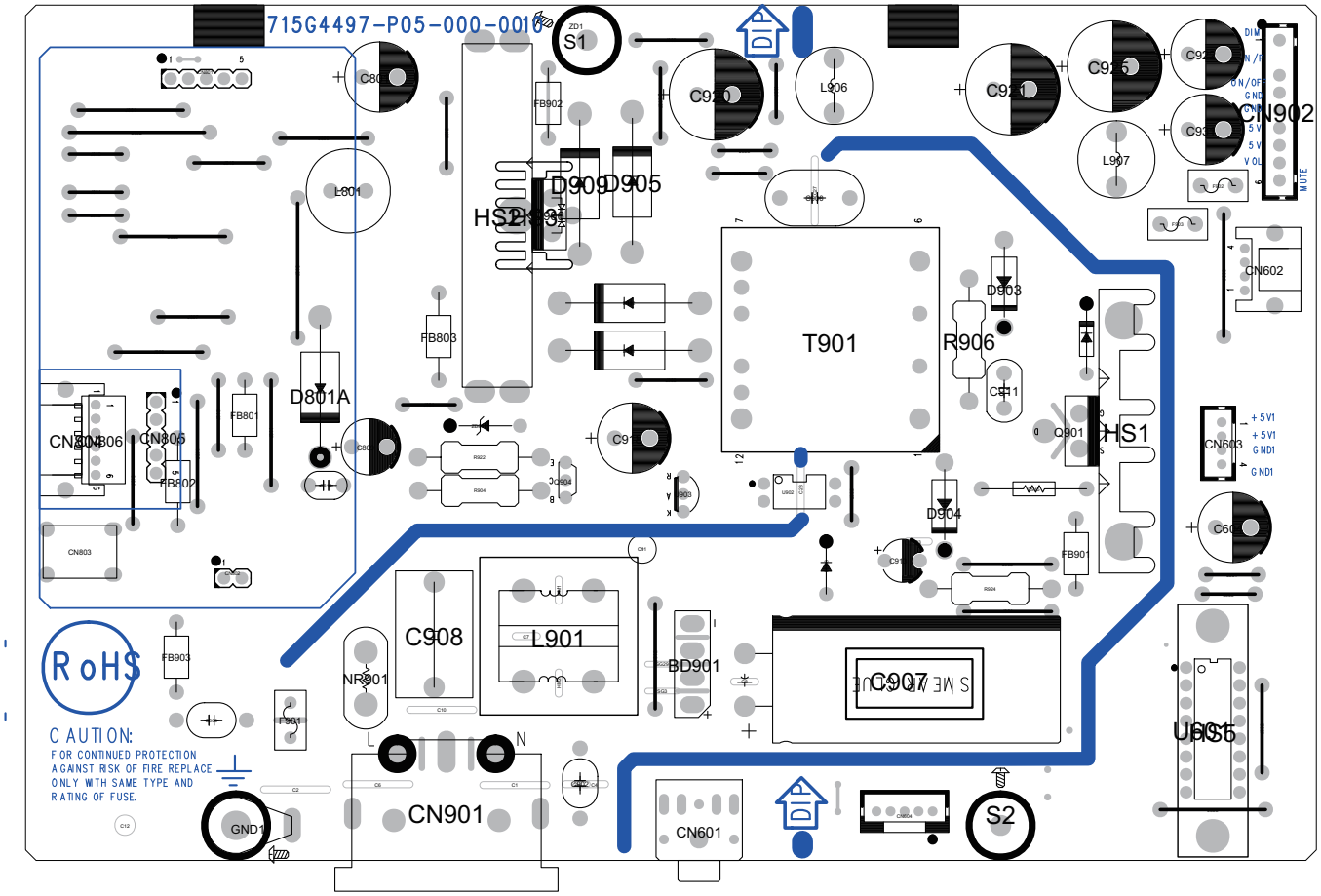


Remark: Parts position can be searched by using FIND function in PDF.

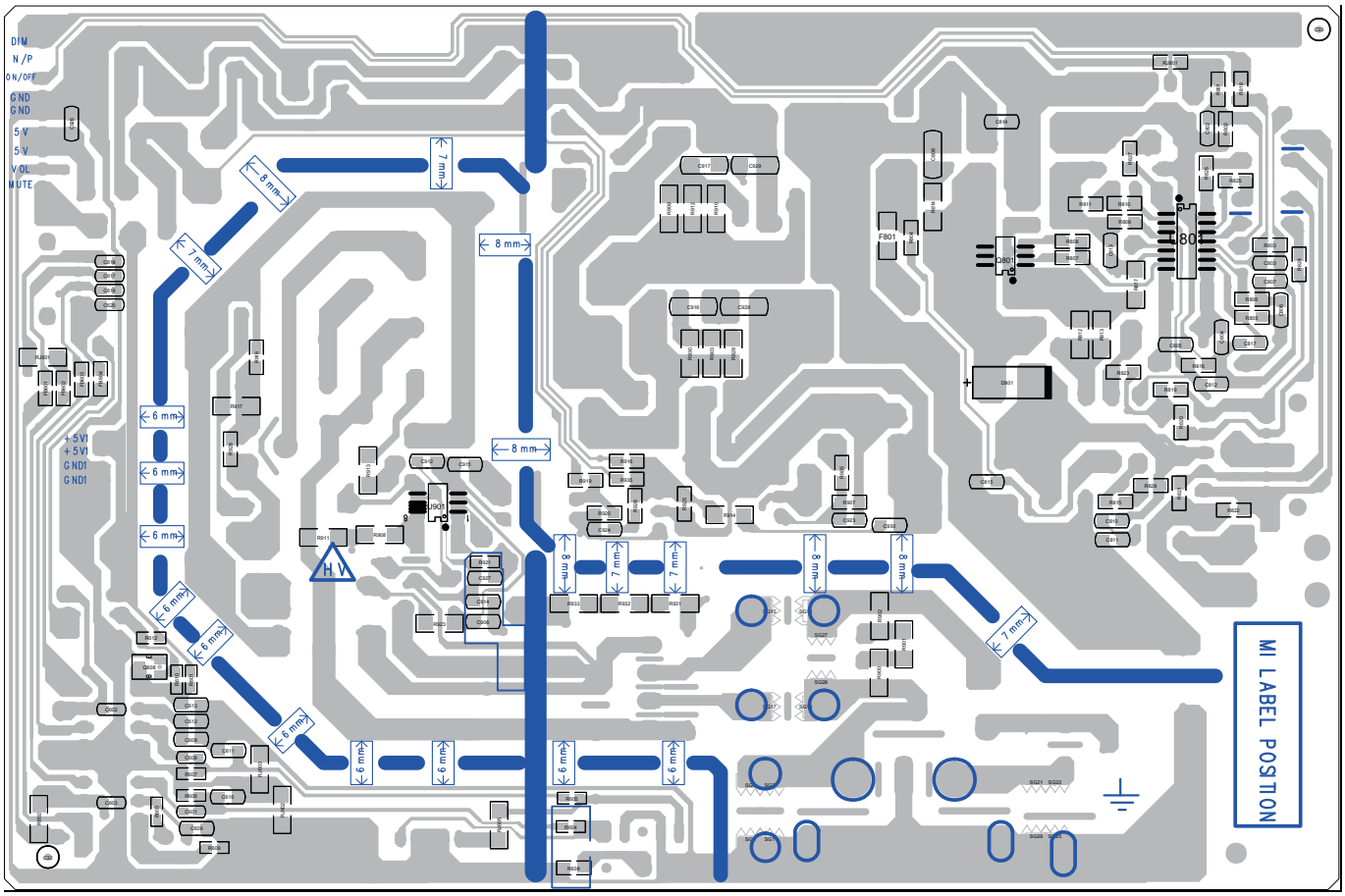


7.2 Power Board (715G4497P05000001M) （for 246V5LSB）

Remark: Parts position can be searched by using FIND function in PDF.

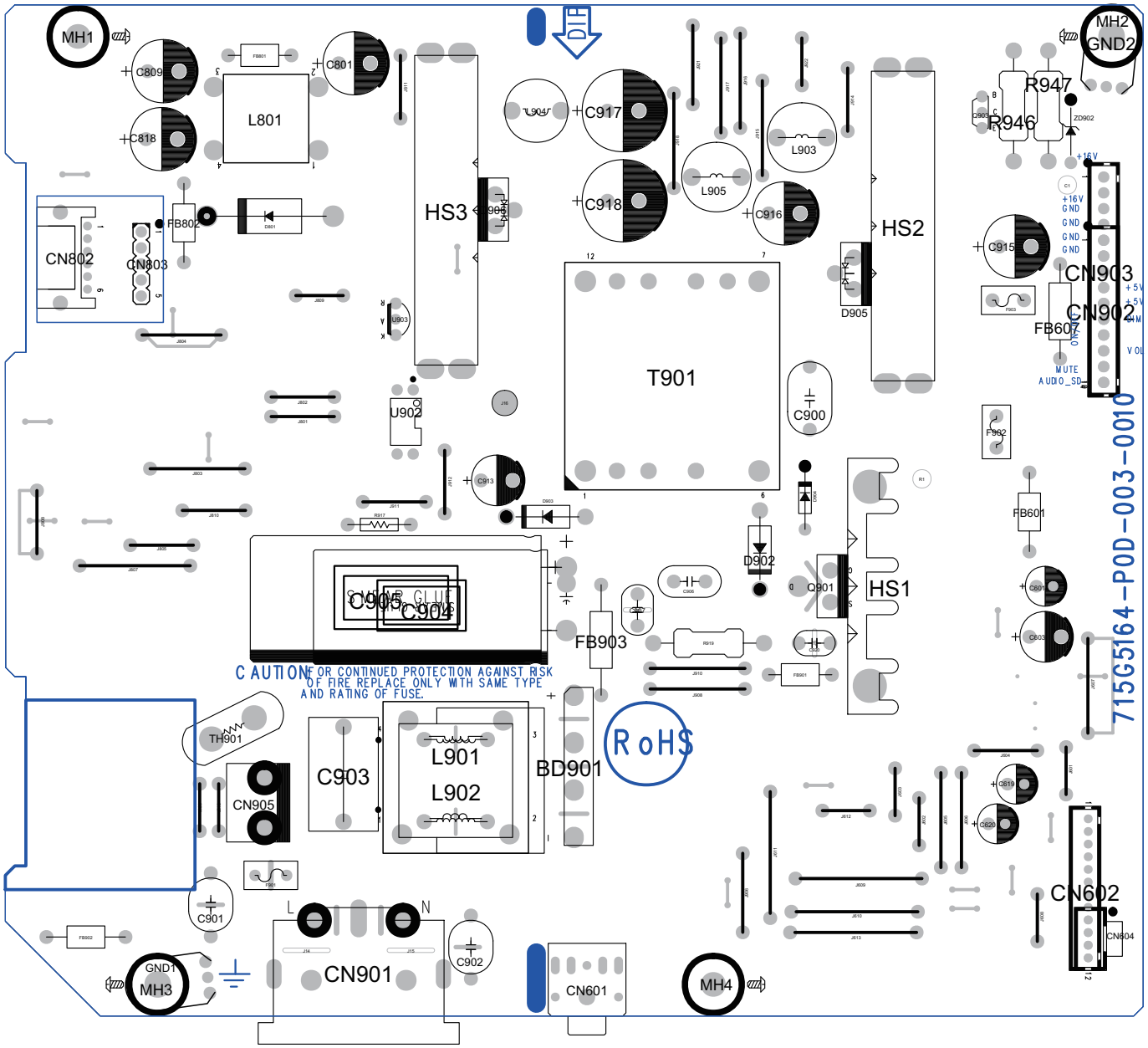


Remark: Parts position can be searched by using FIND function in PDF.

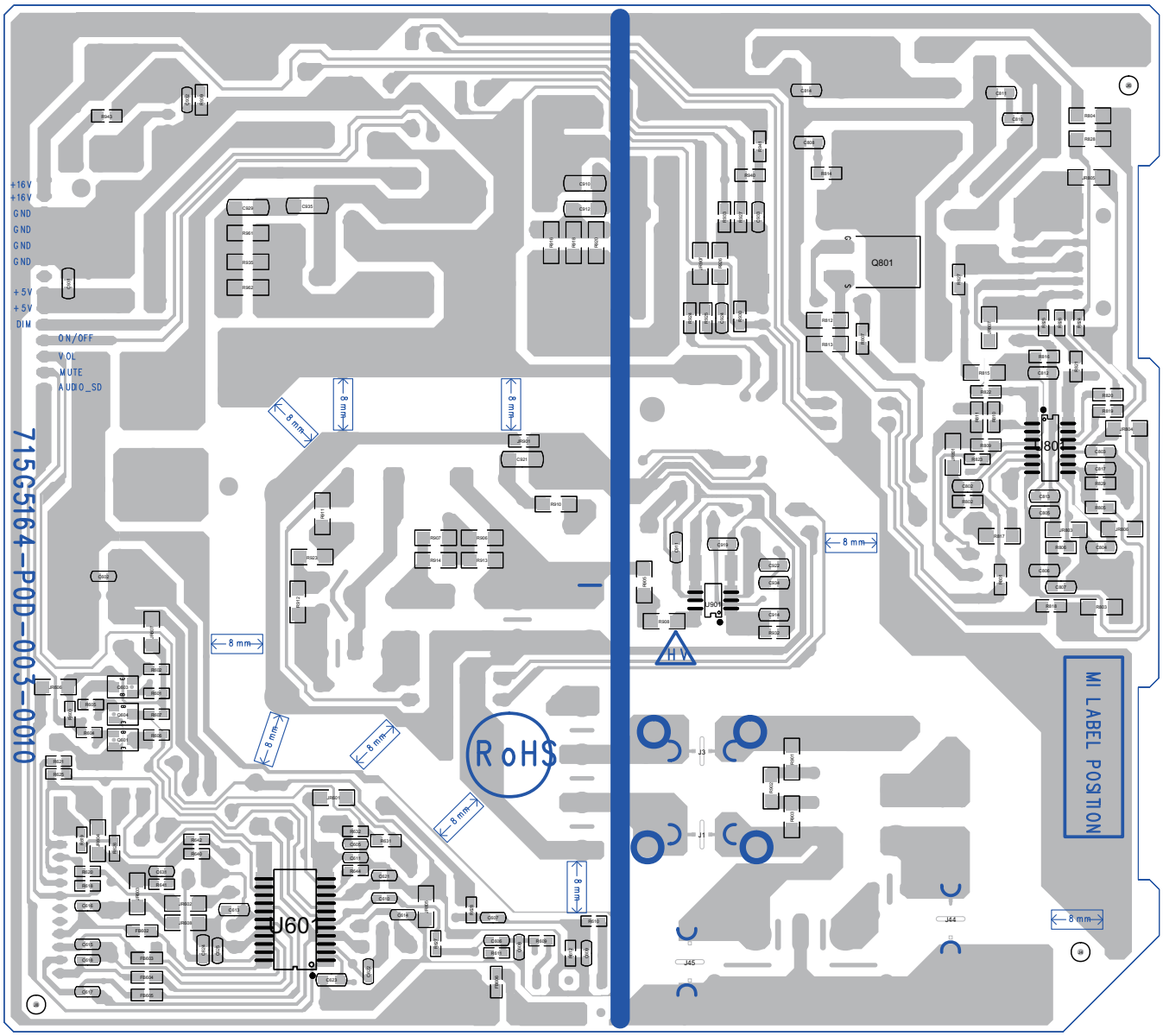


715G5164P01003001R (for 246V5LAB)

Remark: Parts position can be searched by using FIND function in PDF.

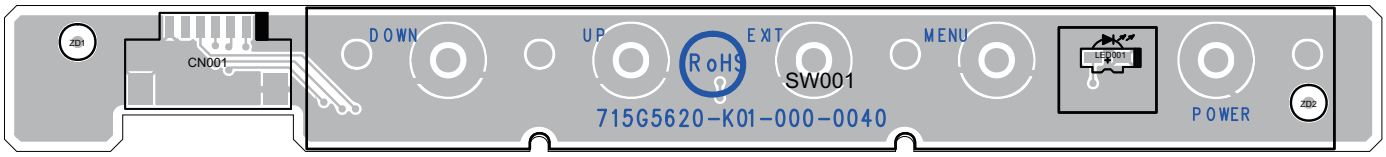


Remark: Parts position can be searched by using FIND function in PDF.

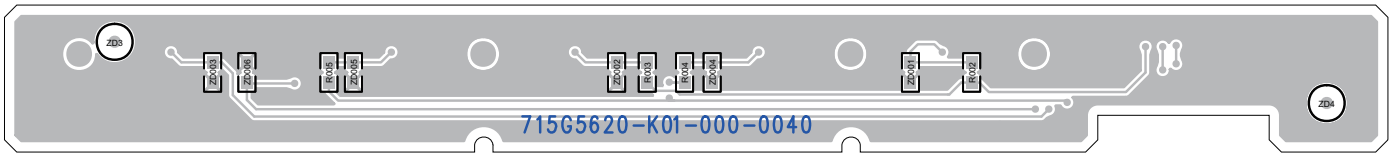


7.3 Key Board (715G5620K01000004K)

Remark: Parts position can be searched by using FIND function in PDF.

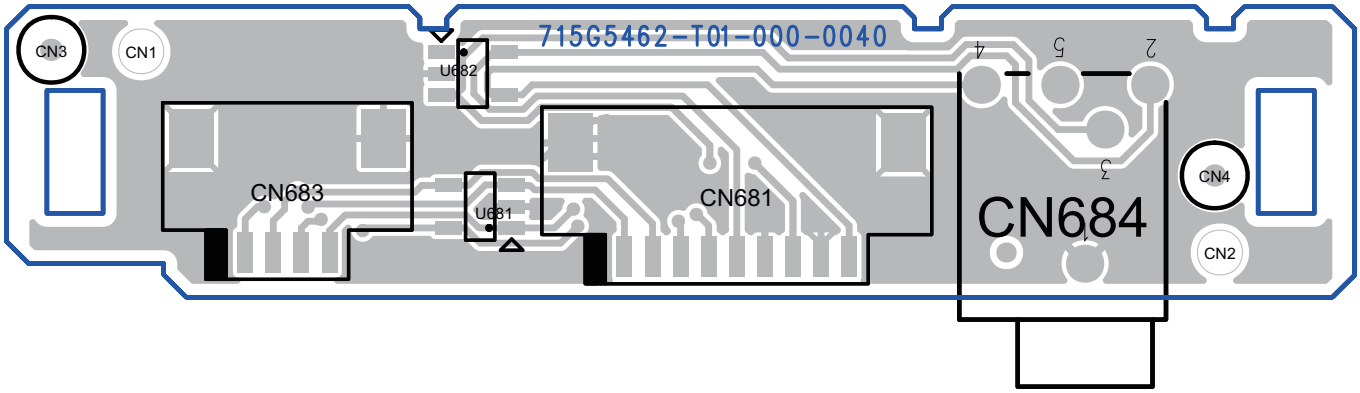


Remark: Parts position can be searched by using FIND function in PDF.

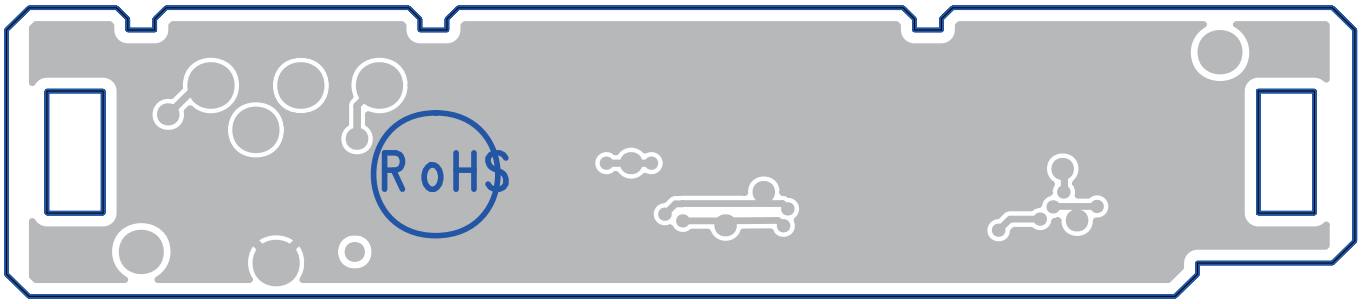


7.4 Head Phone Jack Board (715G5462T01000004Q) (Only for 246V5LAB/00)

Remark: Parts position can be searched by using FIND function in PDF.

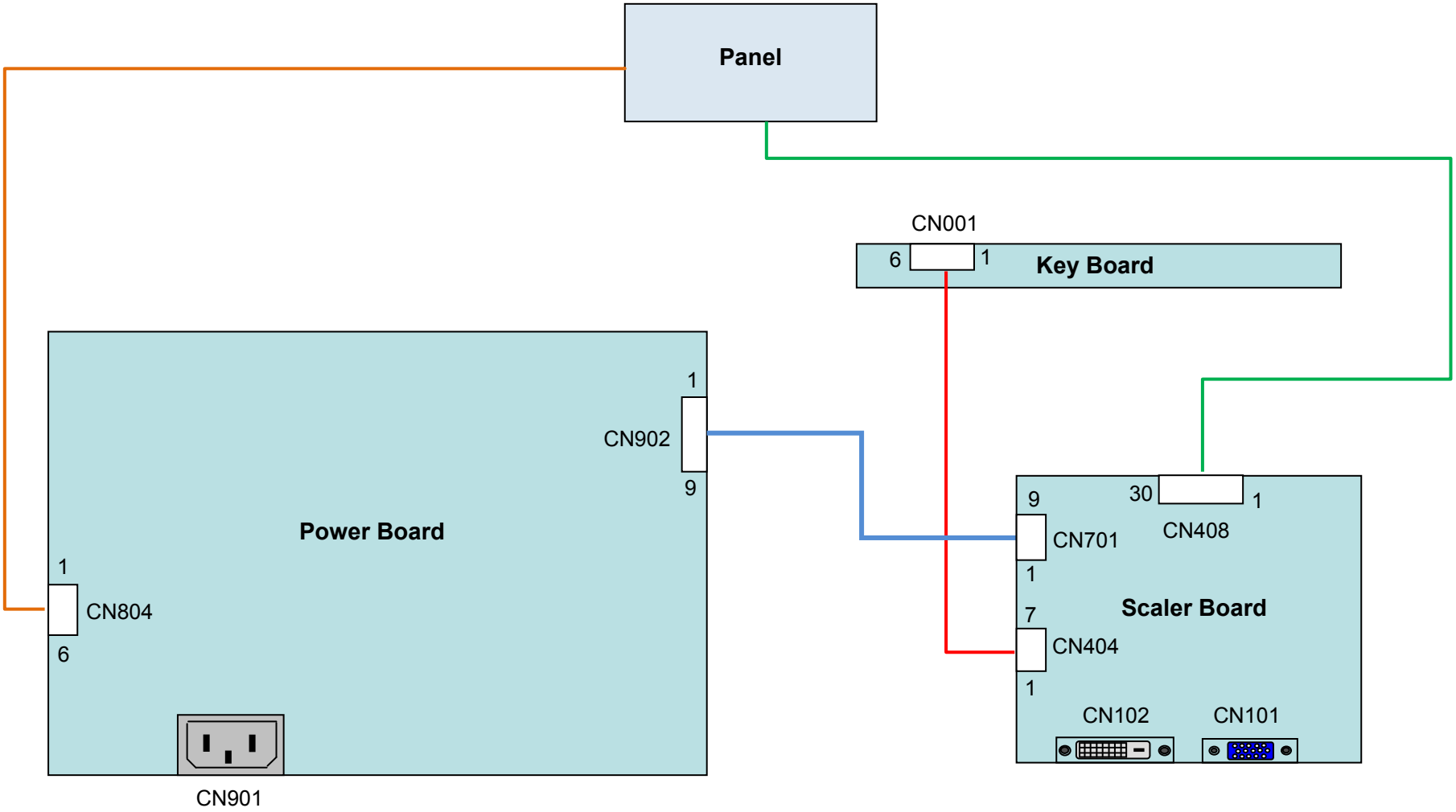


Remark: Parts position can be searched by using FIND function in PDF.

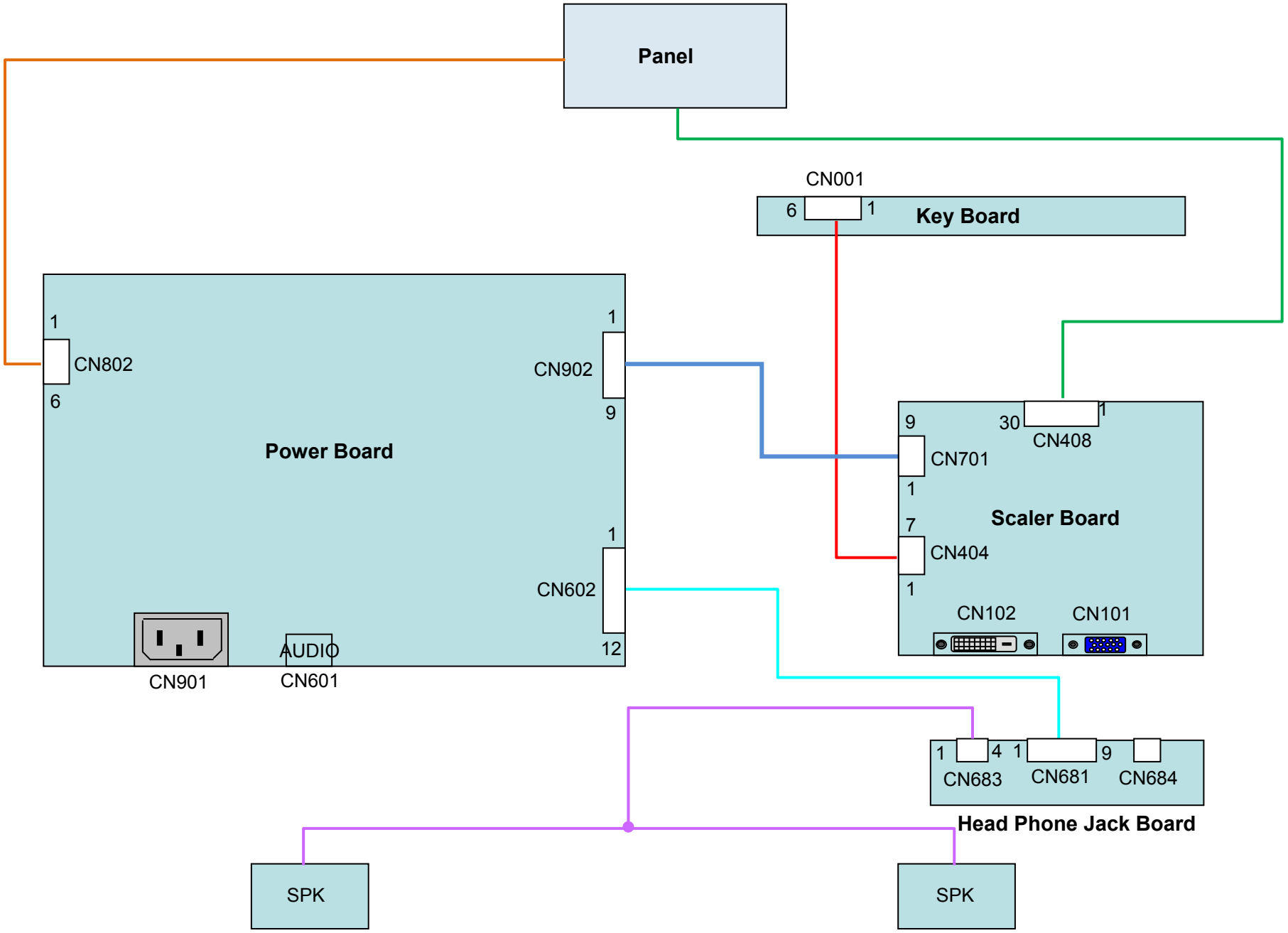


8. Wring Diagram

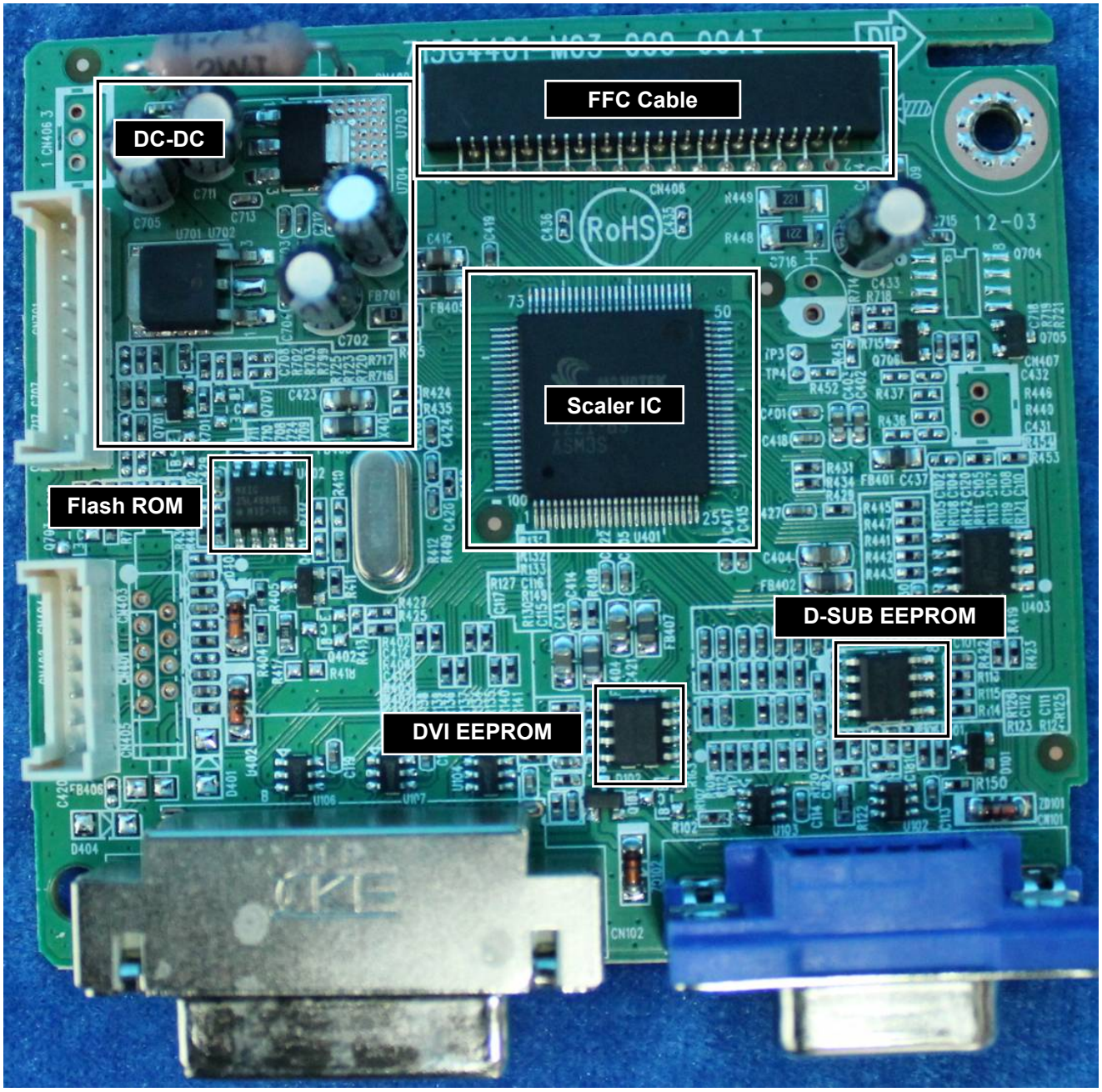
246V5LSB



246V5LAB


Panel
CN001
6
1
Key Board
1
CN802
6
Power Board
1
CN902
9
1
CN602
12
CN901
AUDIO
CN601
9
30
1
CN408
CN701
1
Scaler Board
7
CN404
1
CN102
CN101
1
4
1
9
CN683
CN681
CN684
Head Phone Jack Board
SPK
SPK

9. Scaler Board Overview

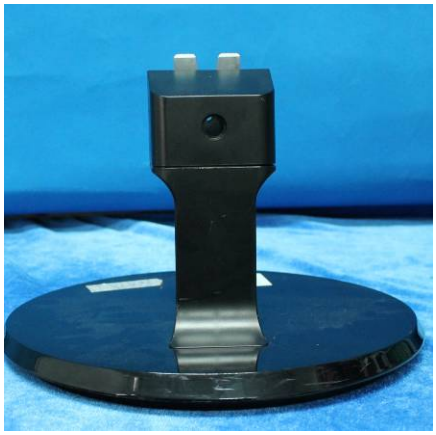


10. Mechanical Instructions

246V5LSB

Step 1: Remove the base

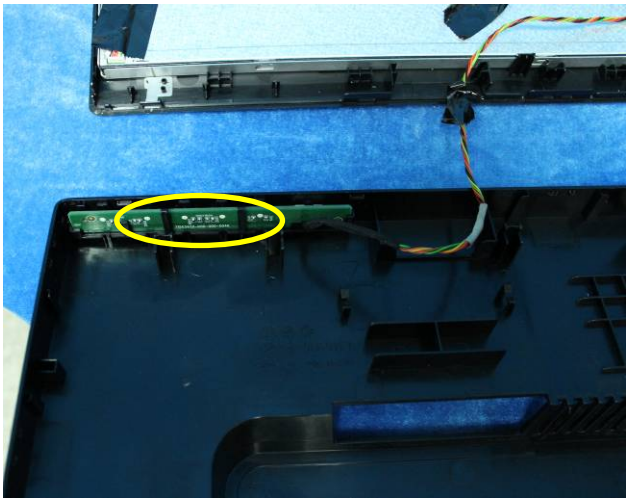
1. Remove the screw to separate the base and the rear cover.



Step 2: Separate the bezel and the rear cover.

1. Use disassembly tool to open all the latches along the edge of the Rear Cover.

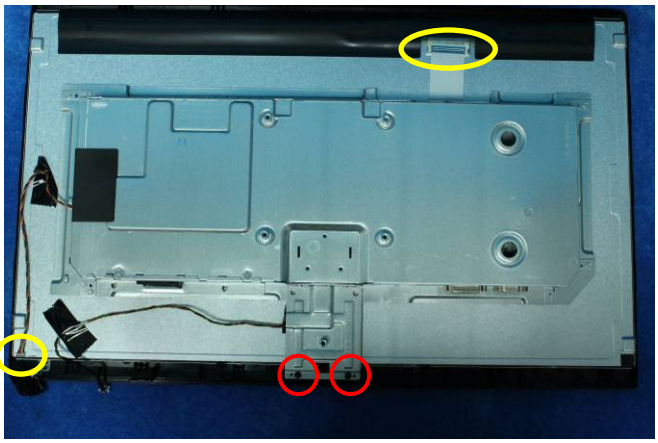
2. Gently push inwards the two clips at the rear cover. Take the key board out from the rear cover. Unplug the connector from the key board.



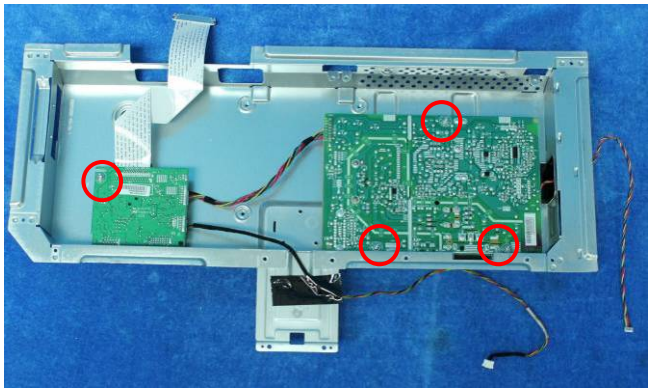
The key board

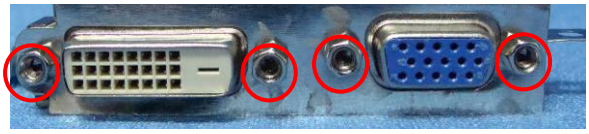
Step 3: Remove the boards.

1. Unplug the connectors and remove the screws to remove the mainframe.

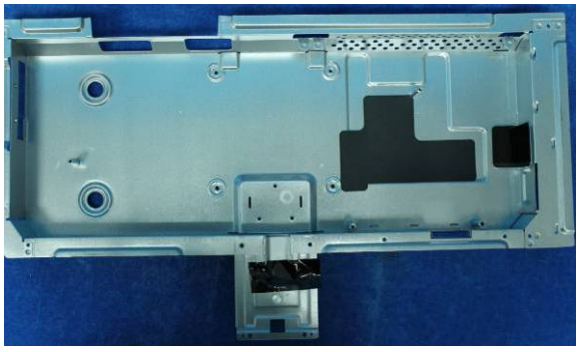


2. Remove the screws to separate the mainframe with the scalar board and the power board.

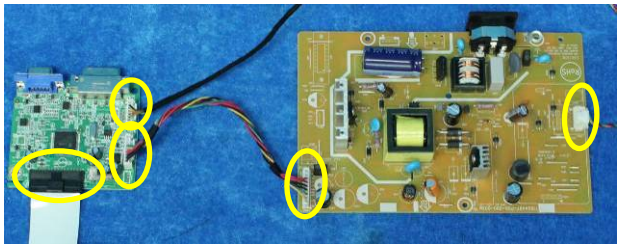




The mainframe



3. Unplug the connectors.



The scalar board.

The power board

Step 4: The panel and the bezel.

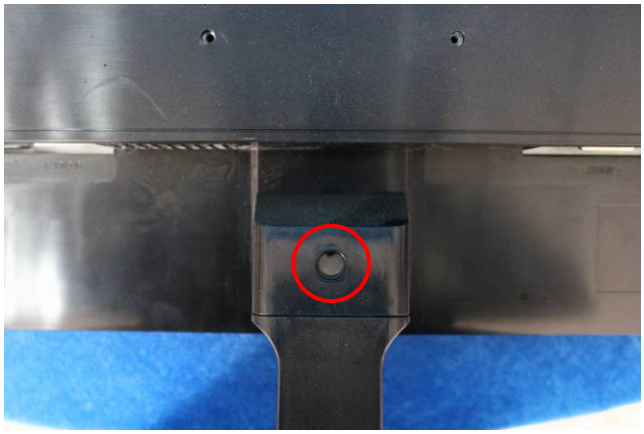
The panel

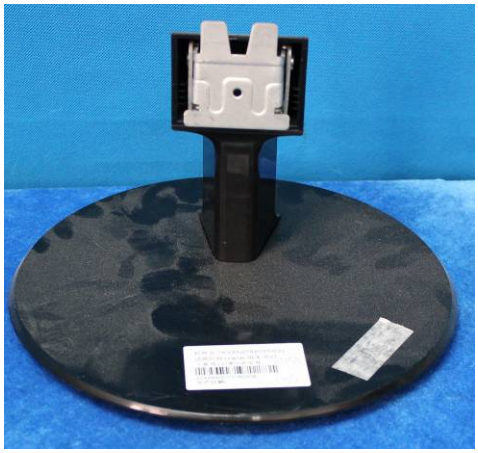
The bezel

246V5LAB

Step 1: Remove the base

1. Remove the screw to separate the base and the rear cover.

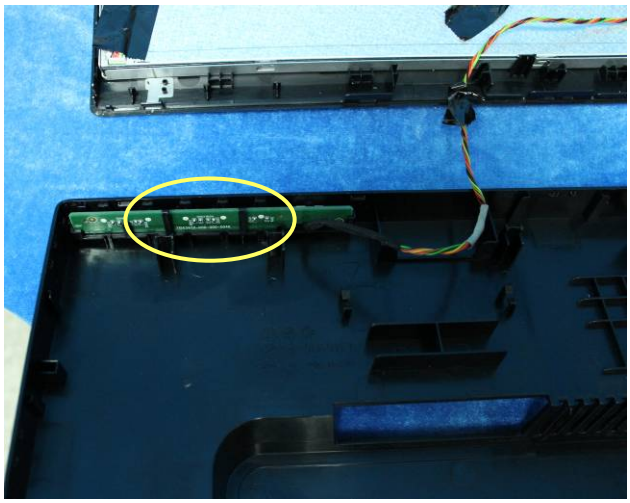




Step 2: Separate the bezel and the rear cover.

1. Use disassembly tool to open all the latches along the edge of the Rear Cover.

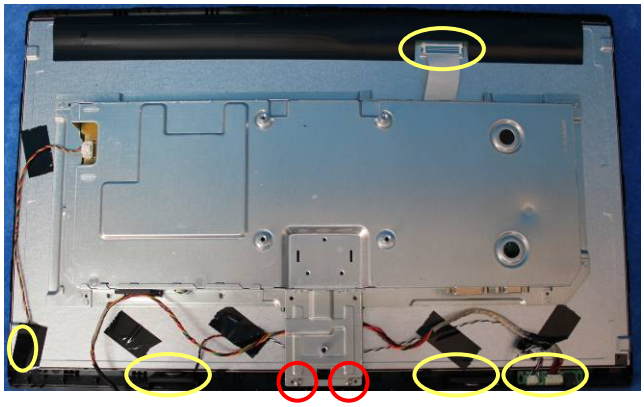
2. Gently push inwards the two clips at the rear cover. Take the key board out from the rear cover. Unplug the connector from the key board.



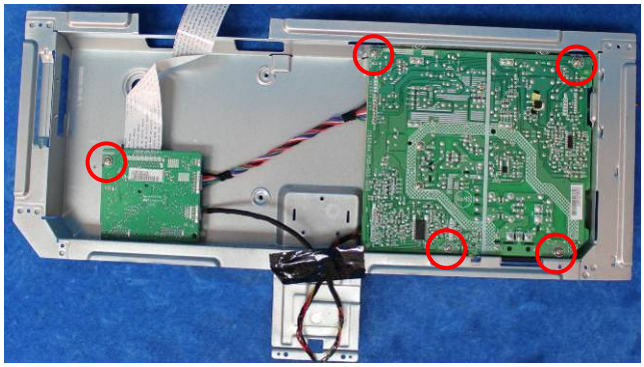
The Key Board

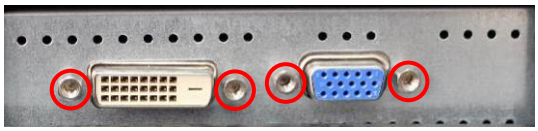
Step 3: Remove the boards and speakers.

1. Unplug the connectors and remove the screws to remove the mainframe and remove the speakers.

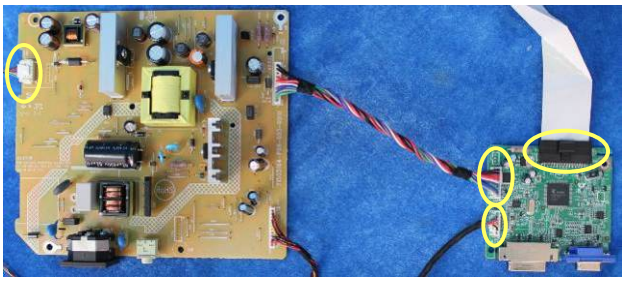


2. Remove the screws to separate the mainframe with the scalar board and the power board.



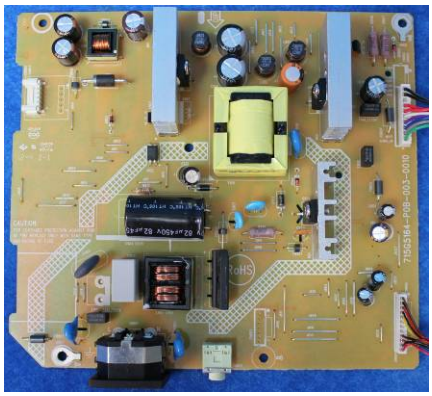


3. Unplug the connectors.



The Scaler Board

The Power Board

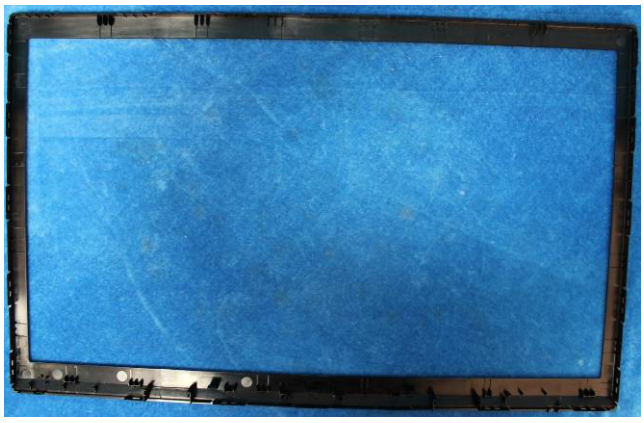


The Head Phone Jack Board

Step 4: The panel and the bezel.

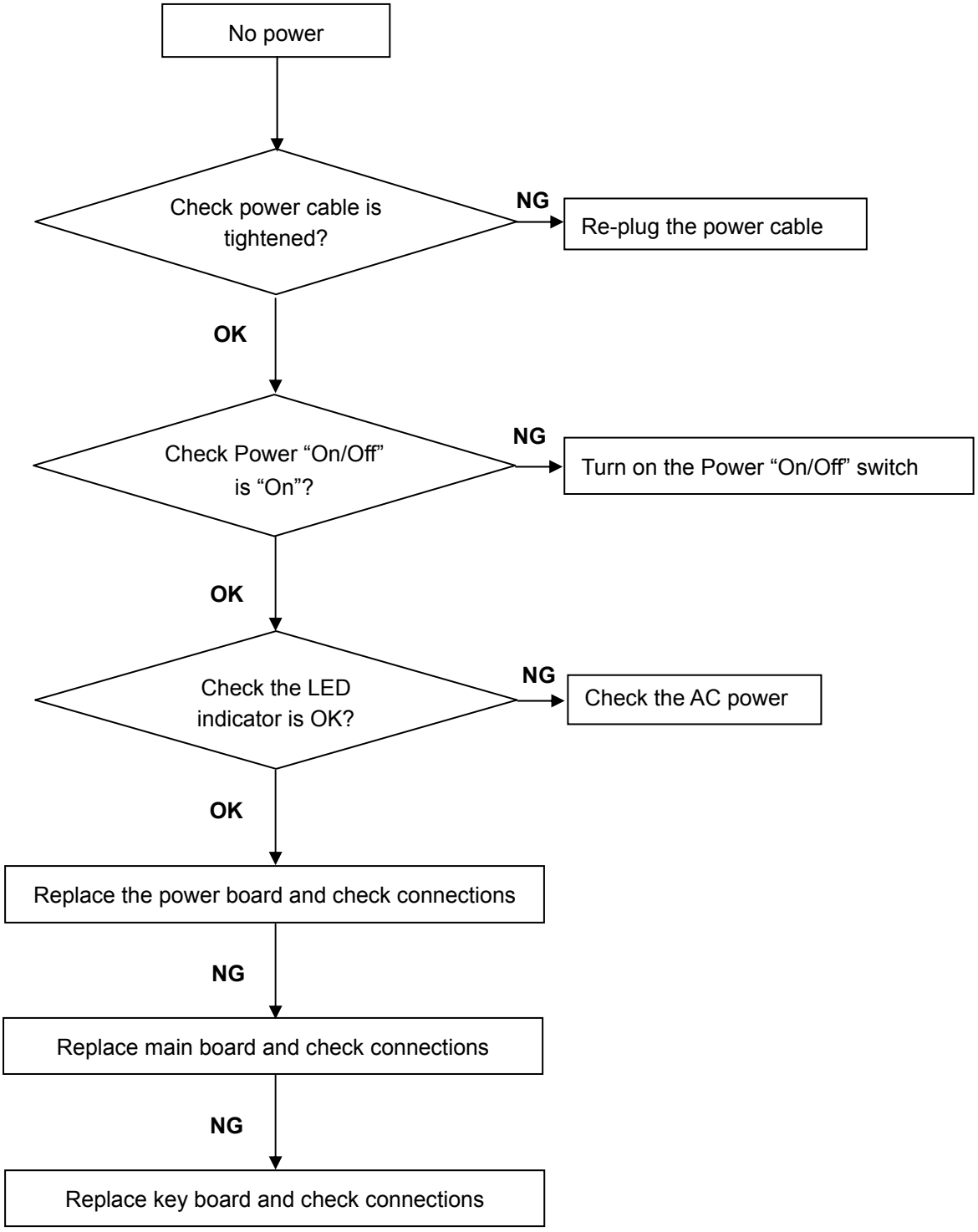
The Panel

The Bezel

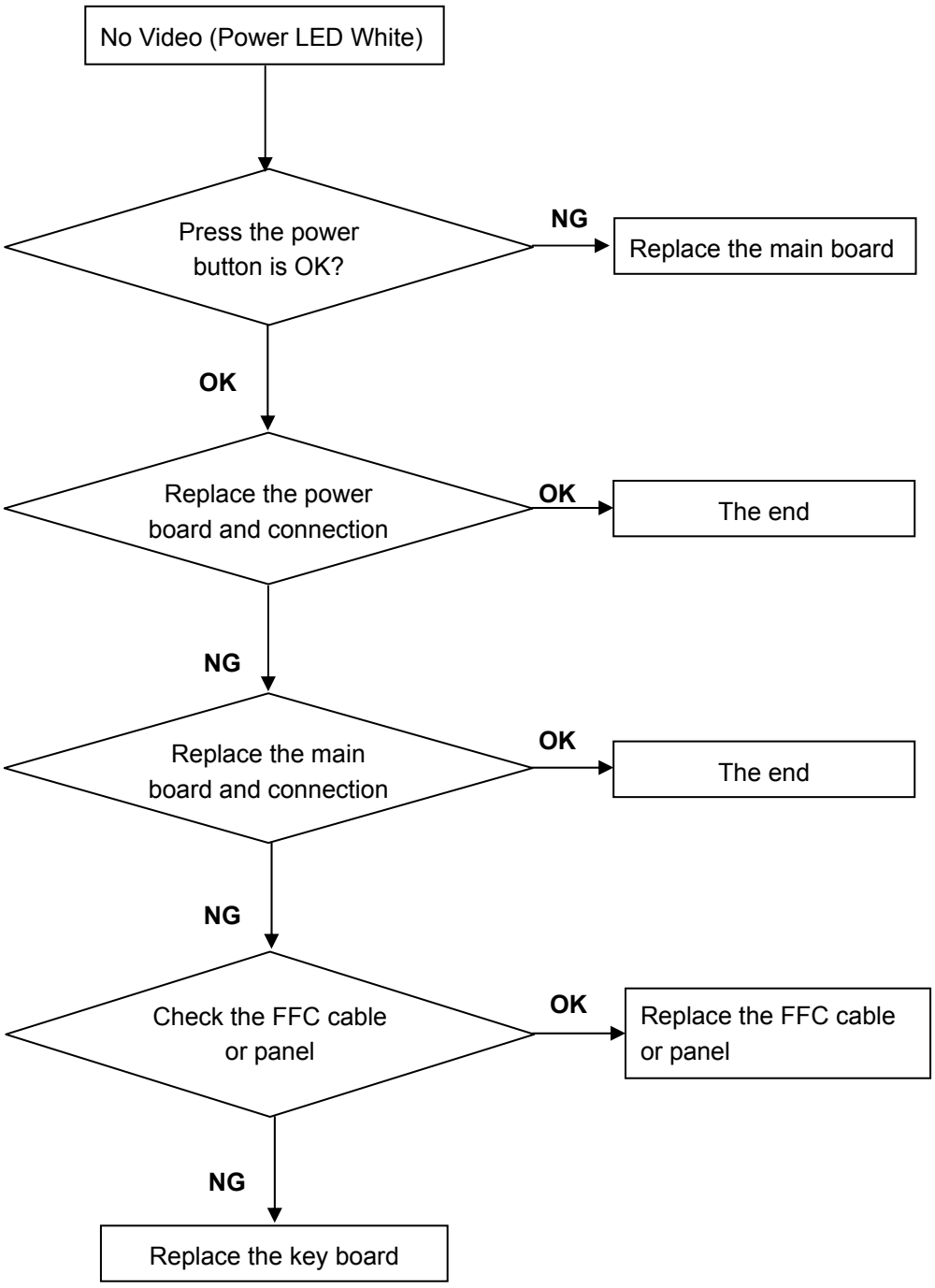


11. Repair Flow Chart

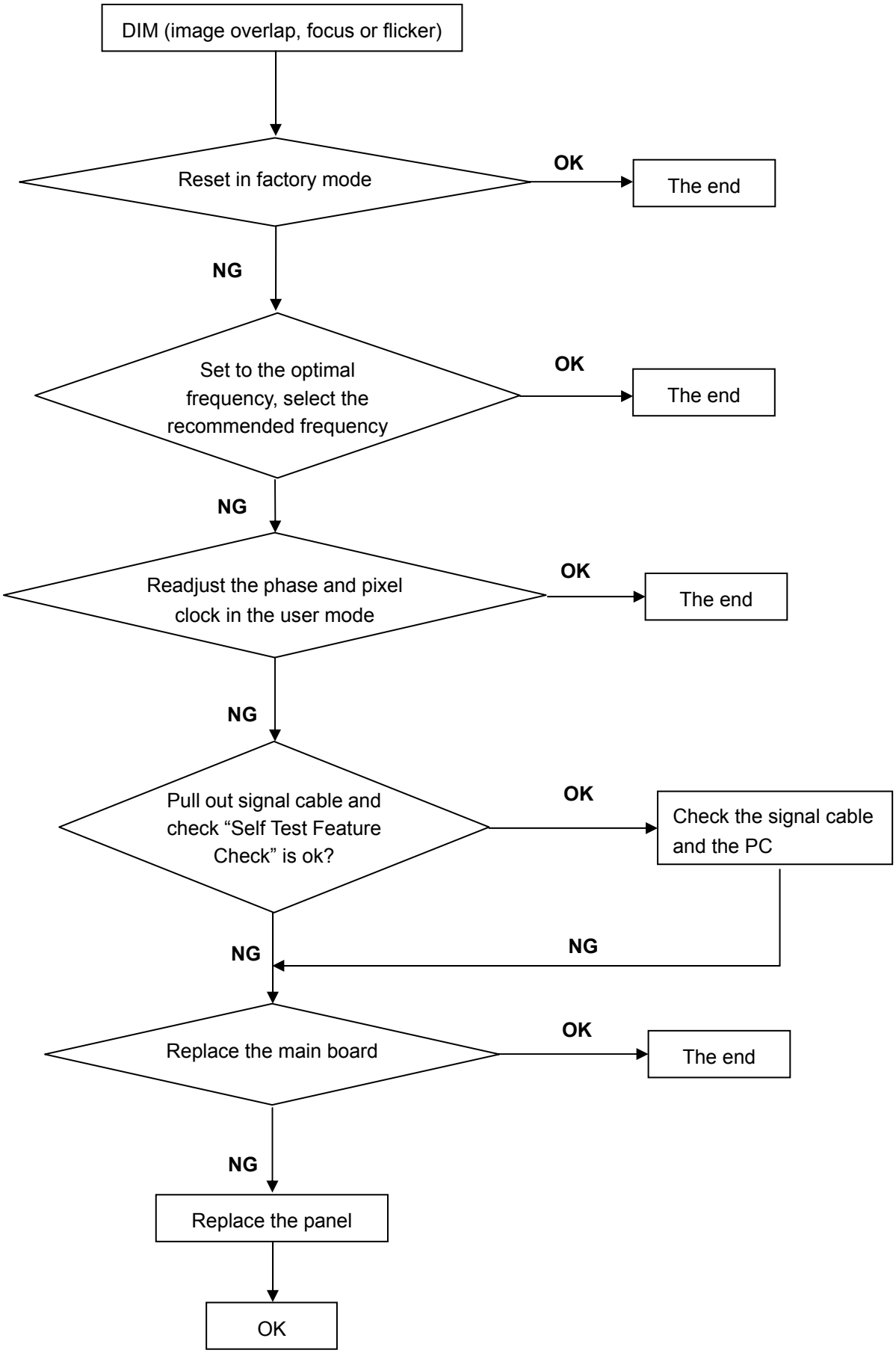
1. No Power



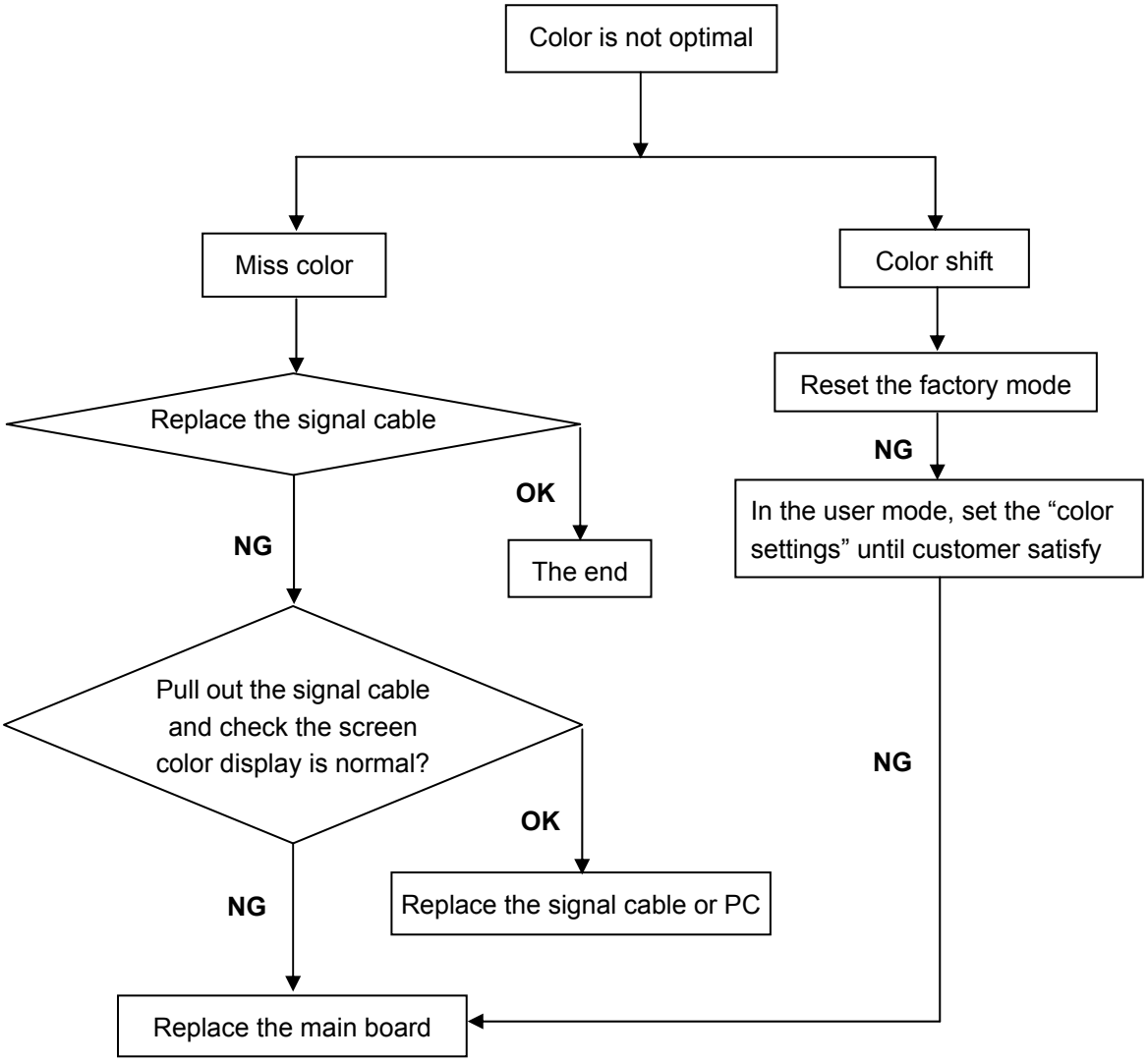
2. Video (Power LED White)



3. DIM


DIM (image overlap, focus or flicker)
Reset in factory mode
OK
The end
NG
Set to the optimal frequency, select the recommended frequency
OK
The end
NG
Readjust the phase and pixel clock in the user mode
OK
The end
NG
Pull out signal cable and check “Self Test Feature Check” is ok?
OK
Check the signal cable and the PC
NG
NG
Replace the main board
OK
The end
NG
Replace the panel
OK

4. Color is not optimal



12. ISP Instruction

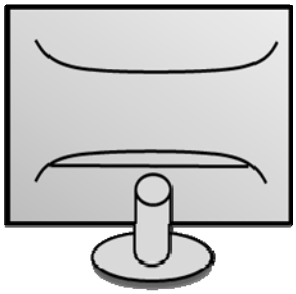
When do the parts, need the tools as follow:

ISP JIG: 715GT089-B/C

VGA cable

TPV P/N: 089G728 GAA DB

PC



Monitor

USB cable

TPV P/N: 089G1758 X

FTC100103(MSTAR) usb drive.rar

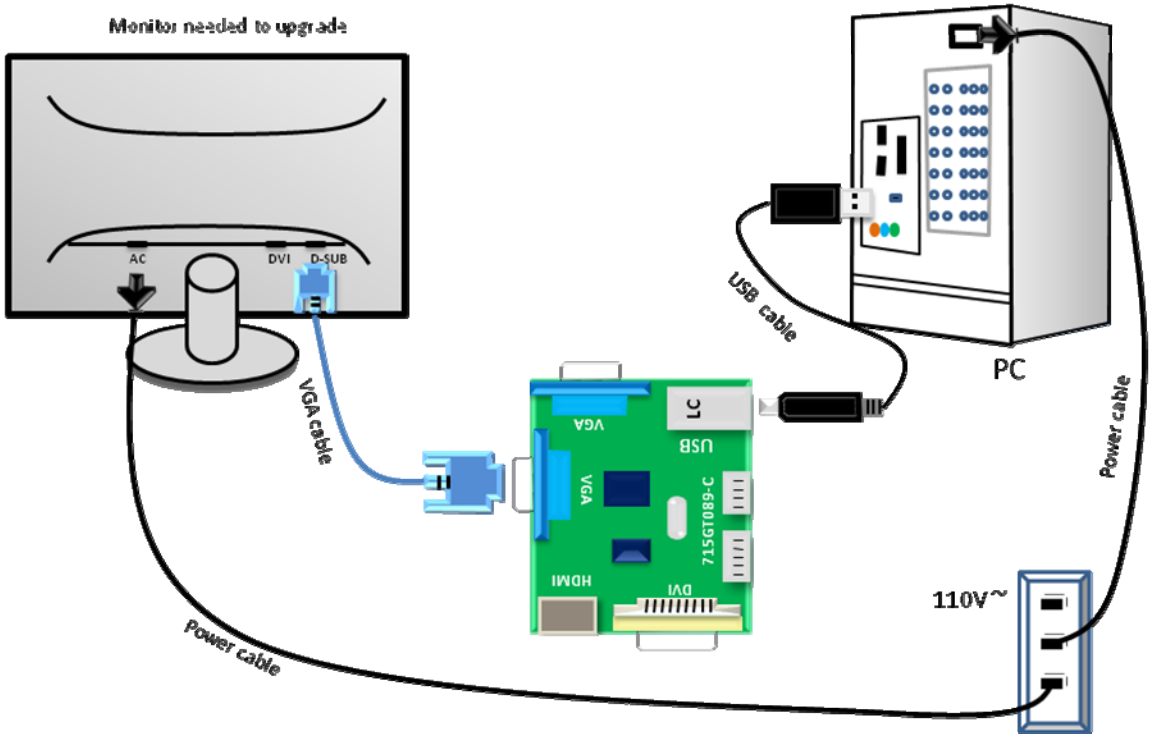
USB port driver

ISP tool

PH_246V5_LSB_AUO_M240HW01_VD_660_DU_121225_V100_B907.hex

New F/W

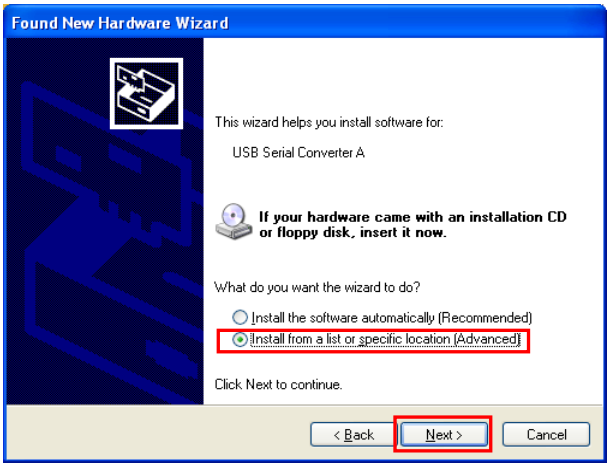
12.1. Connect the ISP board, PC and monitor as follow:

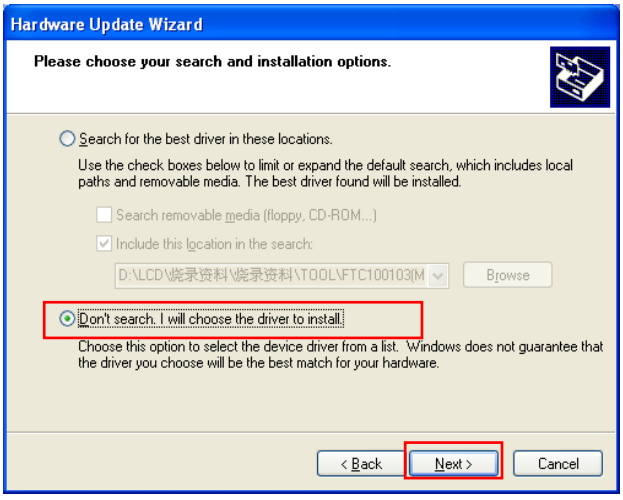


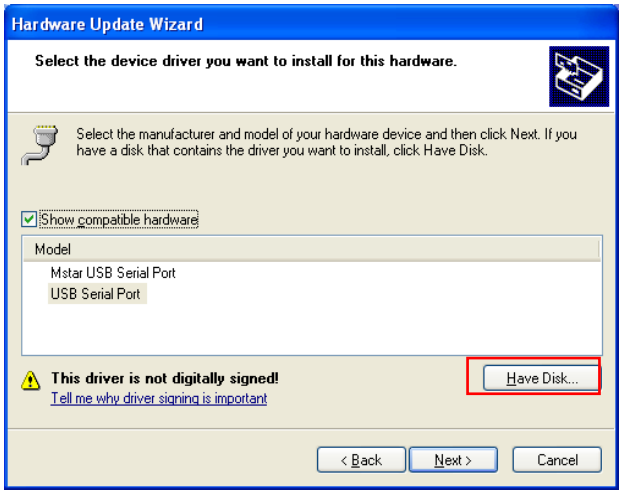
12.2 Install the USB driver.

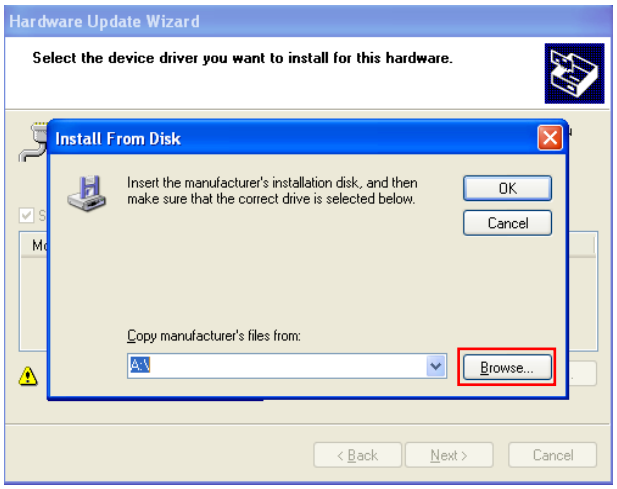
1. When insert the USB cable to PC USB port, will pop up a Hardware Wizard to help you install the USB driver if you use this ISP board first time. You can install it successfully as the below instruction step by step.

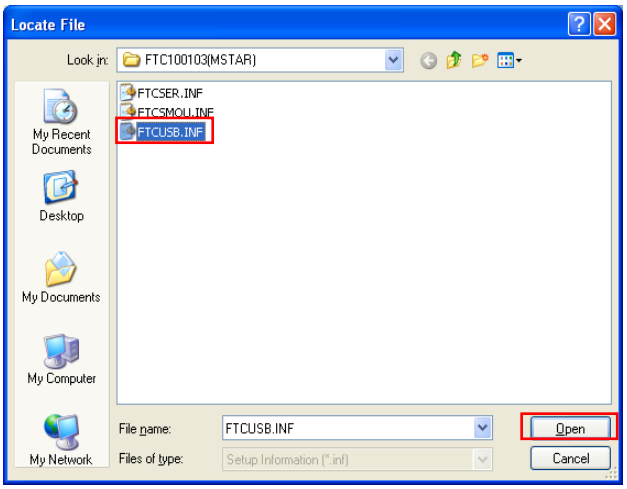
   Remark: The USB driver files path: D:\FTC100103(Mstar)\FTCUSB.INF

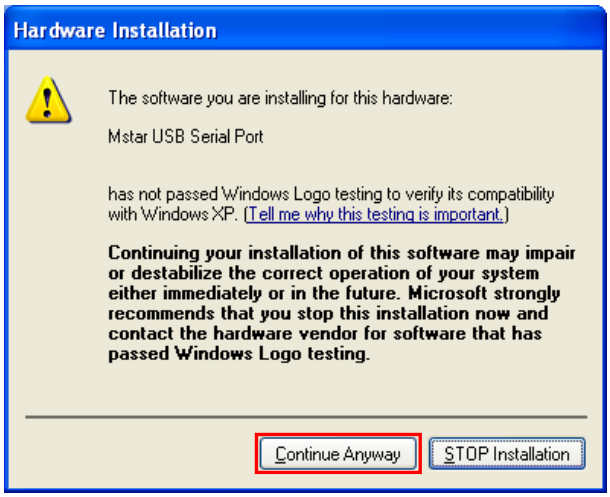


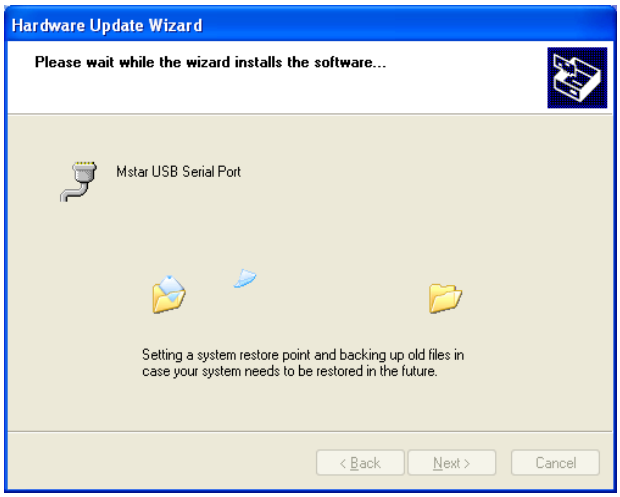


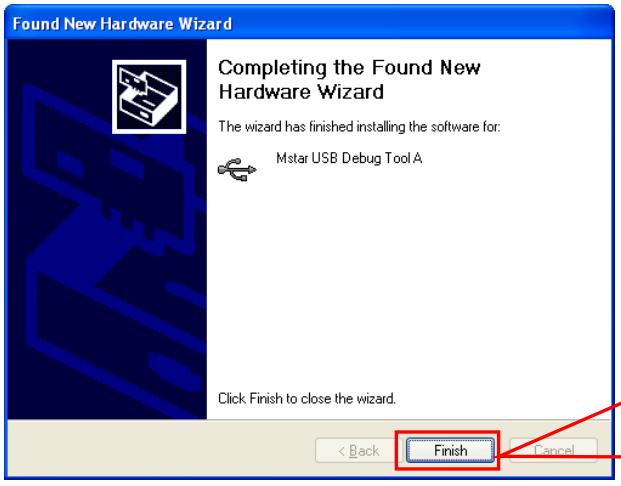






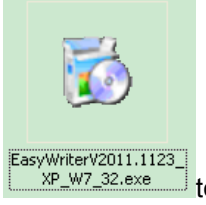






Click “Finish” to complete the USB serial port driver installation.

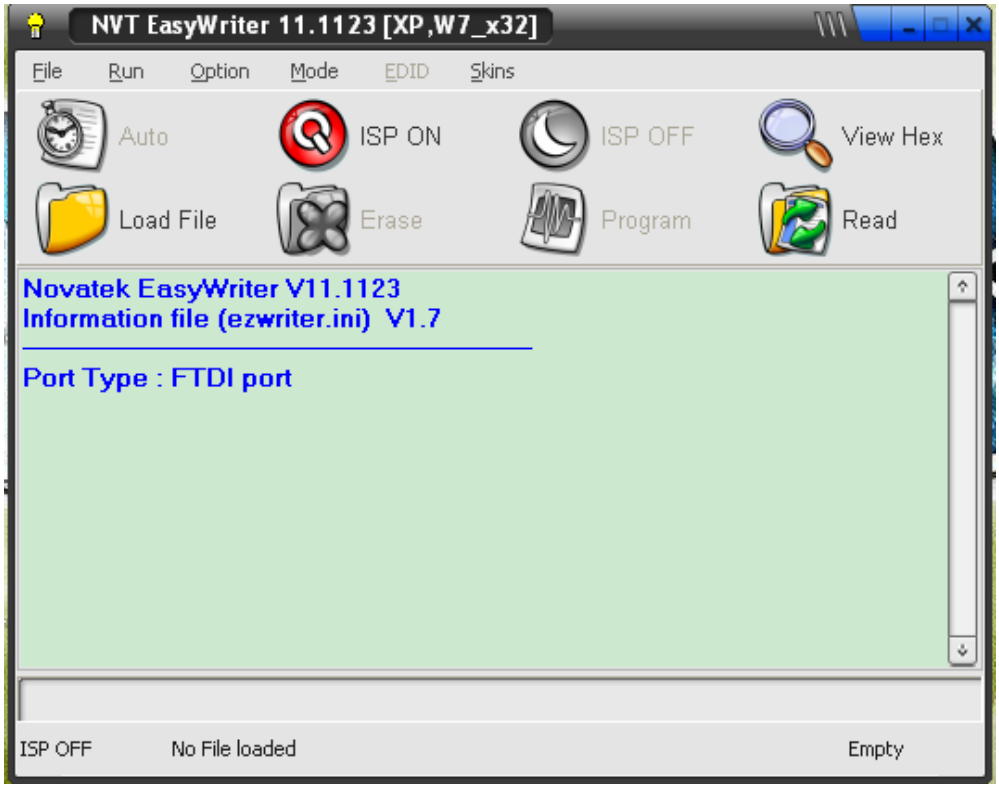
12.3 Install the ISP tool.

1. Double-click 

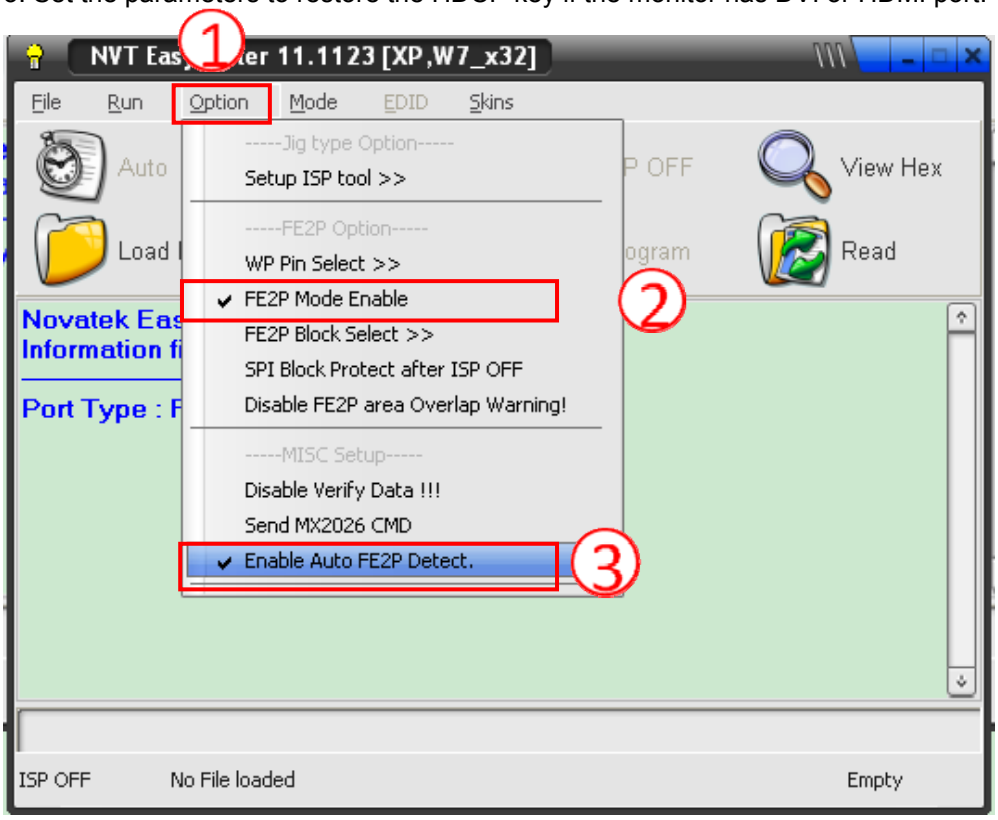
to install ISP program.

2. Double-click 

to run the ISP tool.



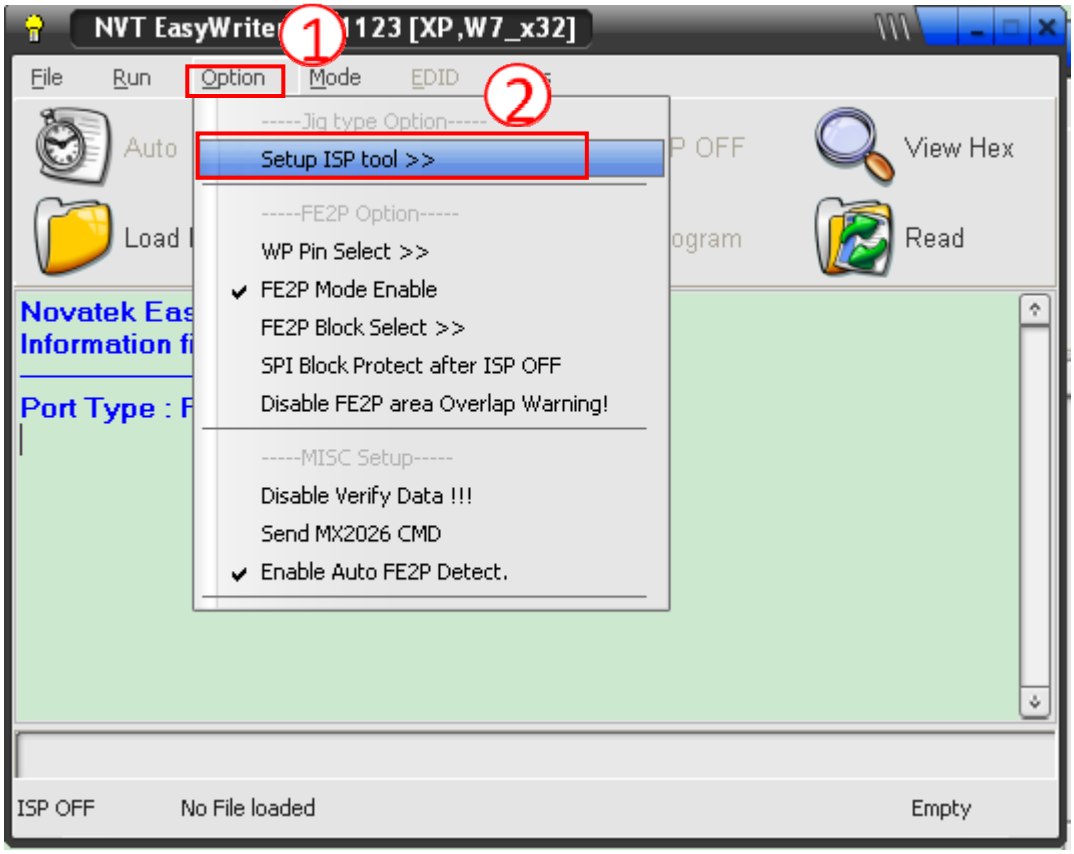
3. Set the parameters to restore the HDCP key if the monitor has DVI or HDMI port.



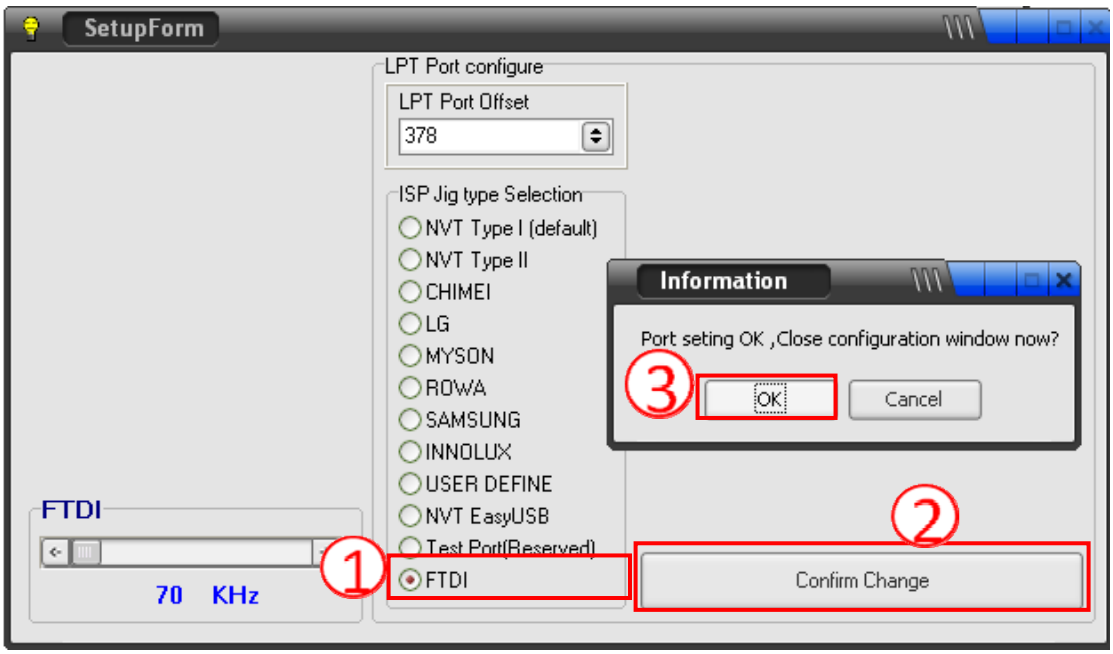
(1) Click the “Option” item.

(2) Tick “FE2P Mode Enable”.

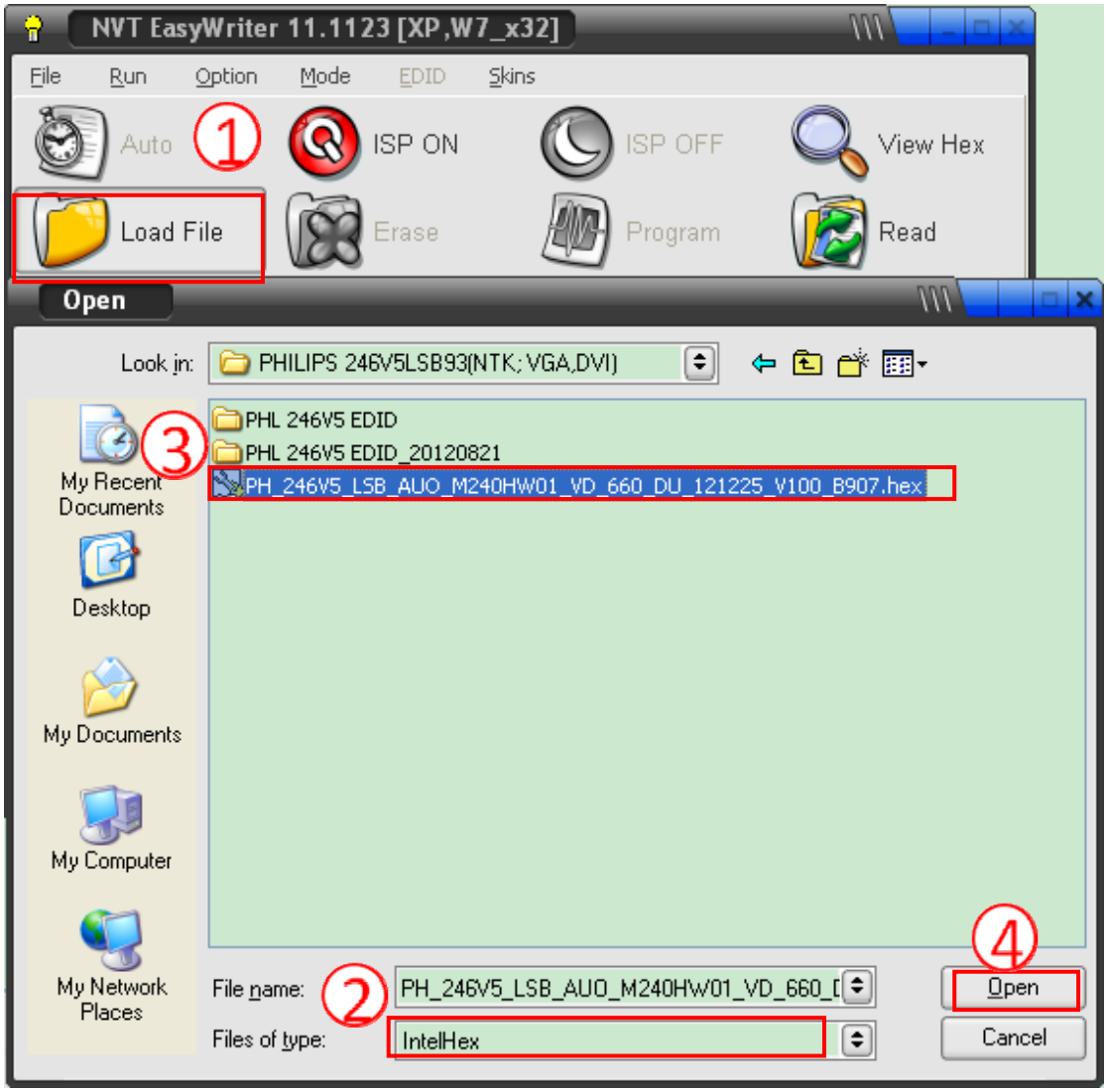
4. Setup ISP tool. Click “Setup ISP tool” to open the configuration window.



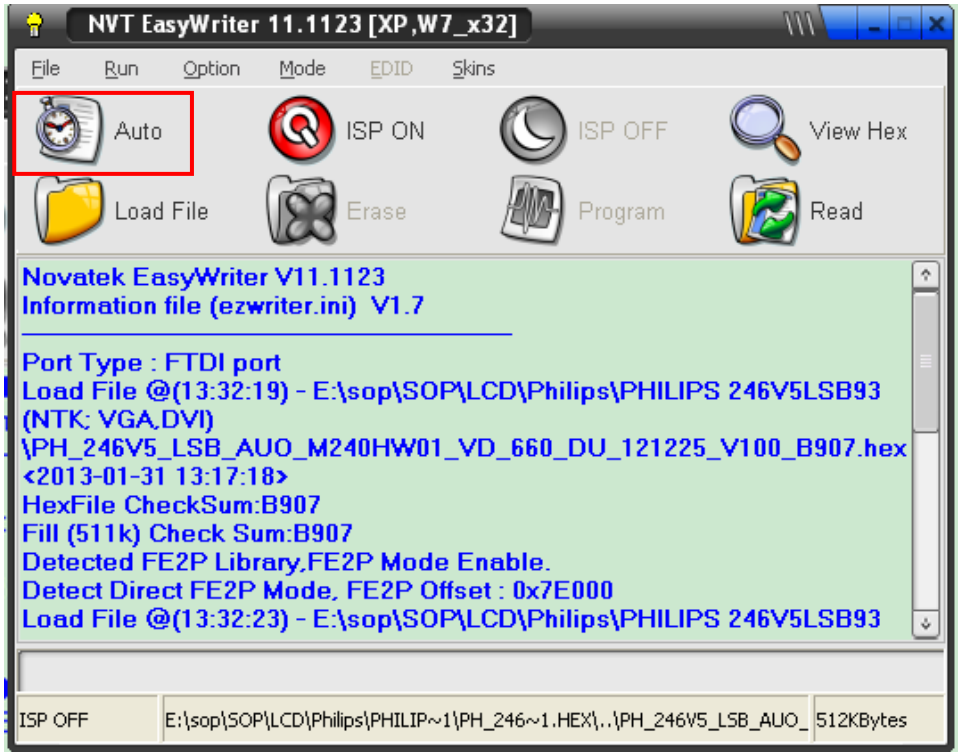
5. Configuration for ISP tool. Tick “FTDI”.



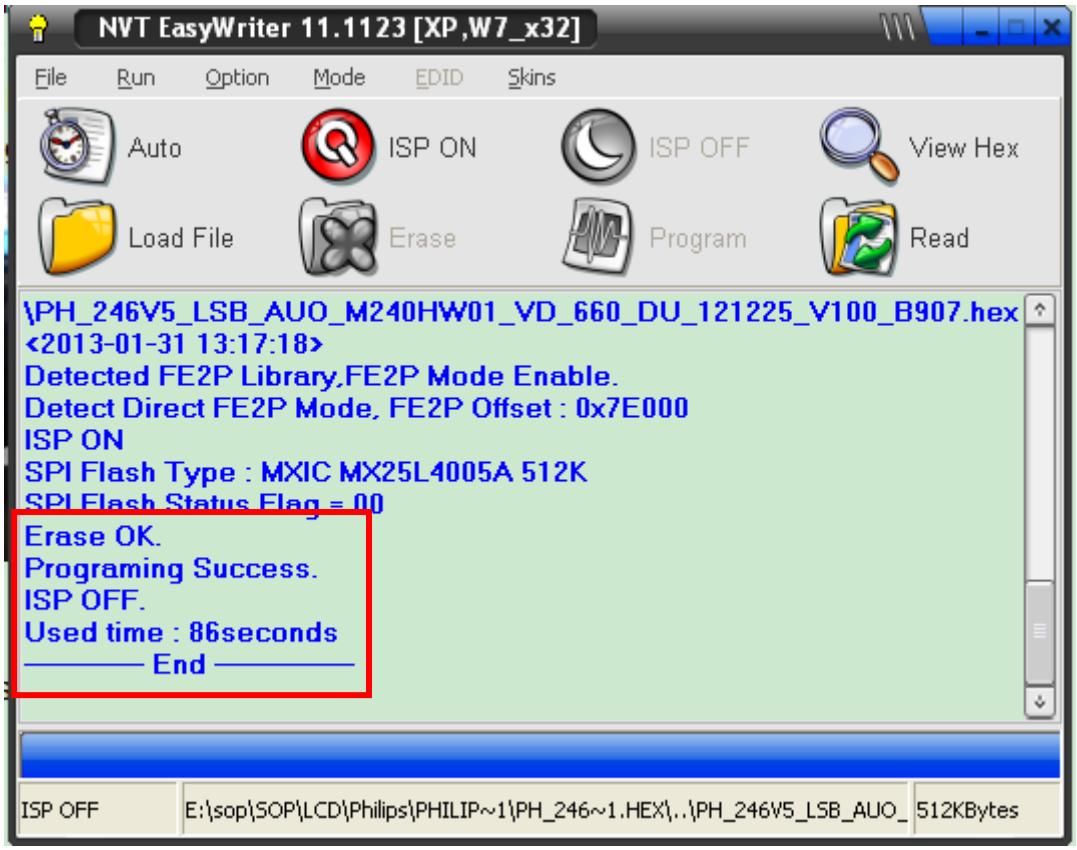
6. Load the F/W you want to upgrade.



7. Start to program. Click “Auto” to start programming.



8. Programing success. There will be the message in the red frame after successful programming.

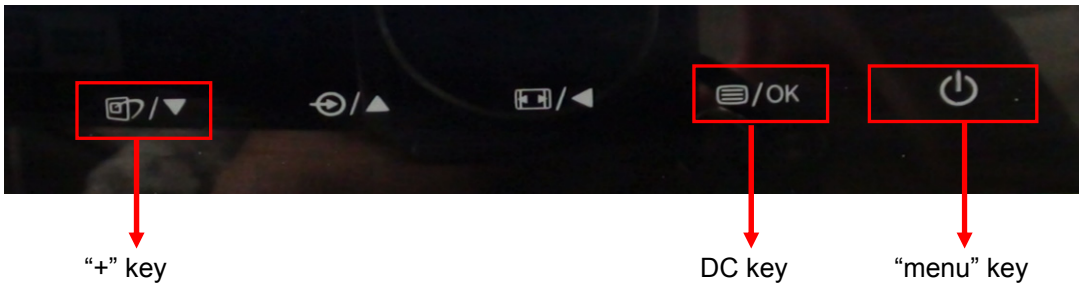


12.4. Check the FW version after upgrade.

1. The way to open factory menu.

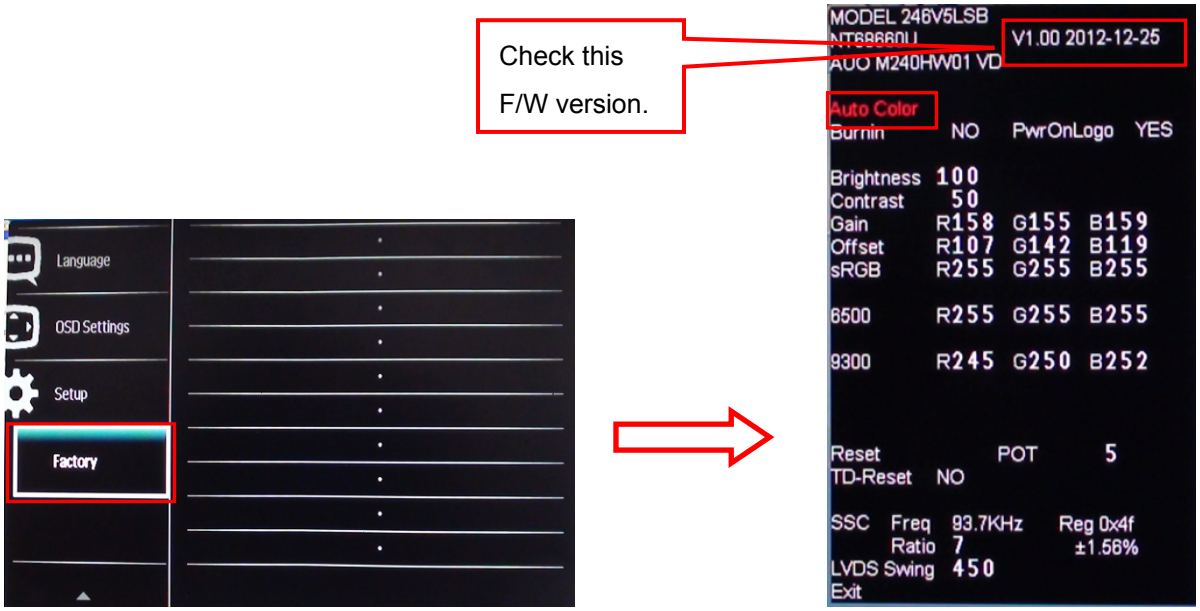
(1)Connect video source to monitor and AC on.

(2) The way to factory menu: Press “MENU” and “+” keys synchronously, and DC on. When the screen lights, release the two keys and press “MENU” again to open factory menu.



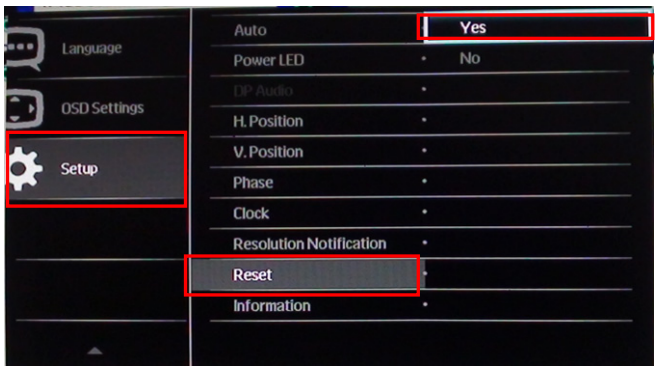
“+” key DC key “menu” key

(3)Select “factory” and press menu key to open factory menu as below.



(4)Please do “Auto Color” in factory menu after change main board and upgrade F/W.

2. Do factory reset in user menu. User menu – Setup – Reset - Yes.

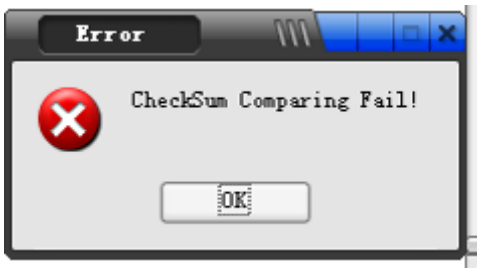


(1) Restart the monitor after open factory menu. And then open the user menu.

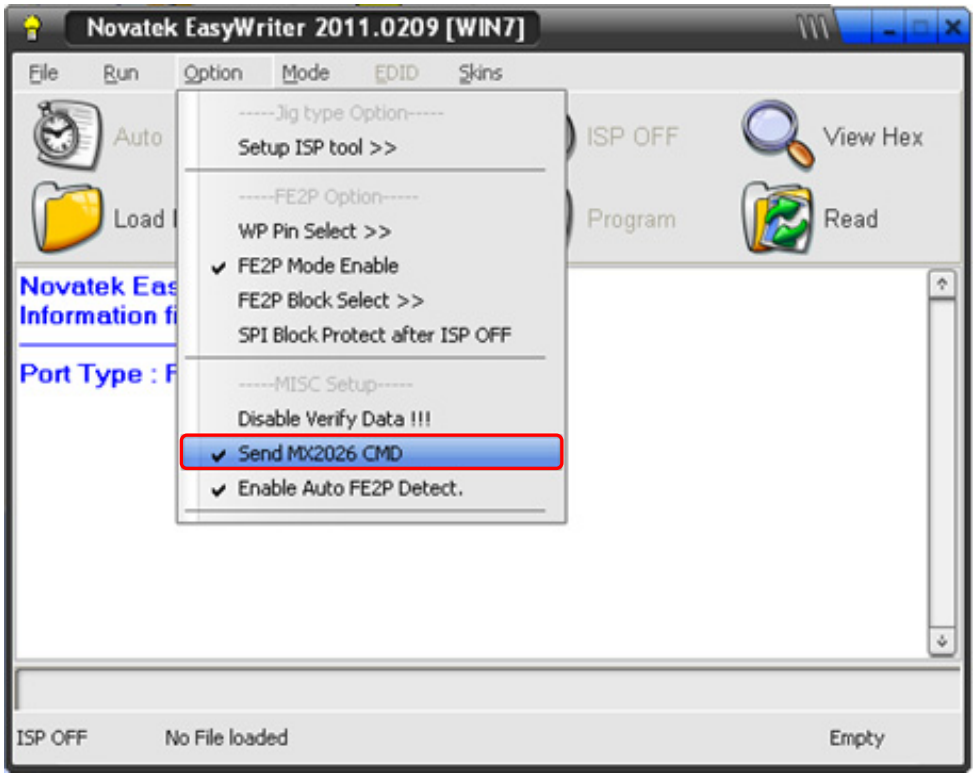
(2) Factory reset will turn off “Burn in” mode which screen color switches among red, green, blue and black.

12.5. Troubleshooting.

1. “CheckSum Comparing Fail!” error.



Method: Tick the “Send MX2060 CMD” at Option item.



2. When can’t upgrade, please retry below several ways to upgrade.

(1) When the tool appears erase error, you can change another version tool to try.

(2) The program must be in the monitor standby state, while the fail communication with monitor might result the monitor power off. In this situation, you may AC off the monitor for a while and then AC on to retry. Maybe the defect will be cured.

(3) Change ISP JIG or cable.

(4) Change PC

13. 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.

LPT cable (male to male)

TPV P/N: N/A

2 VGA cable

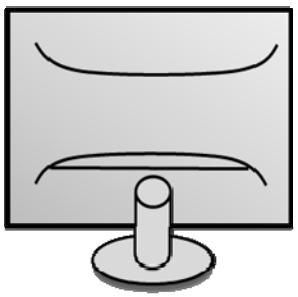
TPV P/N: 089G728 GAA DB

12V DC adapter

TPV P/N: ADPC12416BEP

ISP JIG: 715GT034-B

PC

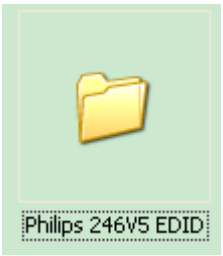


Monitor

PORT95NT.EXE

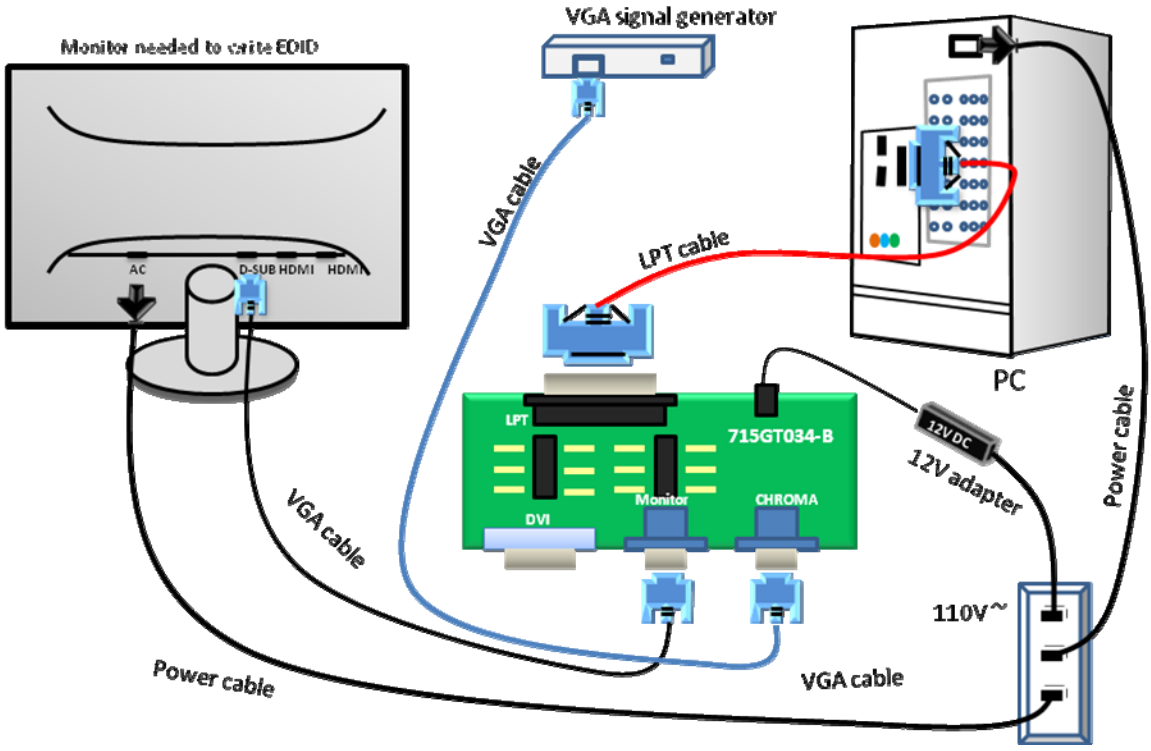
LPT port driver

ISP tool



EDID

13.1 Connection (DC on the monitor):



13.2 Install LPT drive

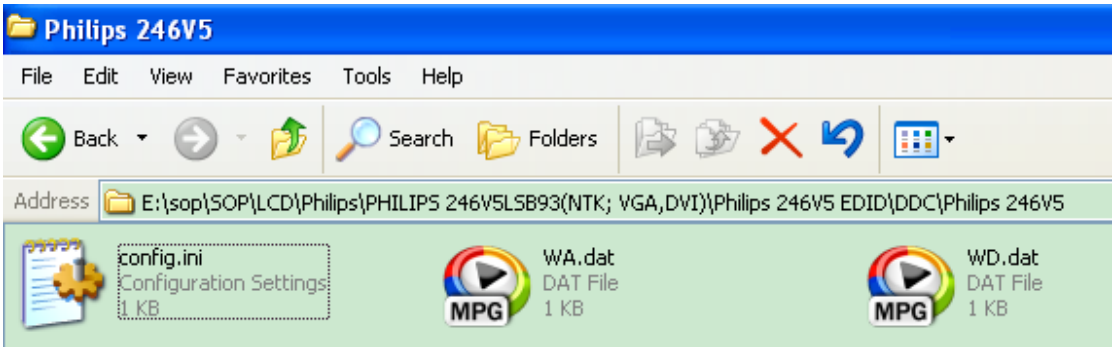
1. Double click the icon  PORT95NT.EXE PackageForTheWeb Stub InstallShield Software Corpora... to install the driver. Restart PC after installation.

13.3 Prepare the EDID written

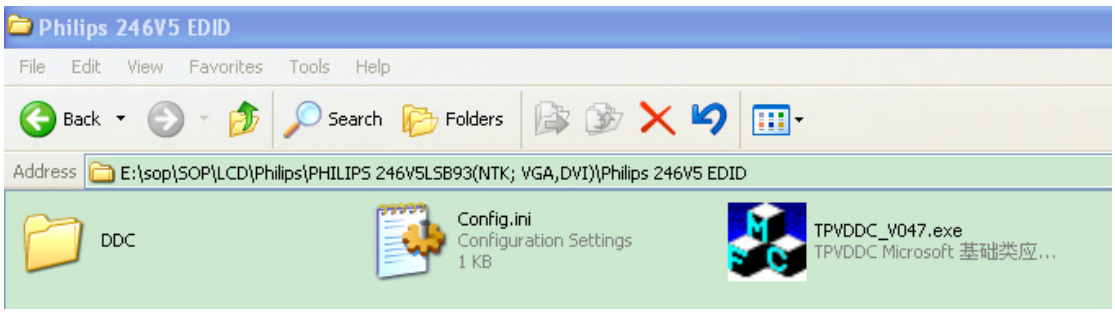
1. Change the EDID files name as below rule.

Analog EDID ⟶ WA.dat Digital EDID ⟶ WD.dat

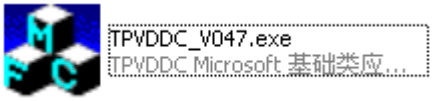
2. Copy these three files to one folder named as Philips 246V5 which must contains “config.ini” file.



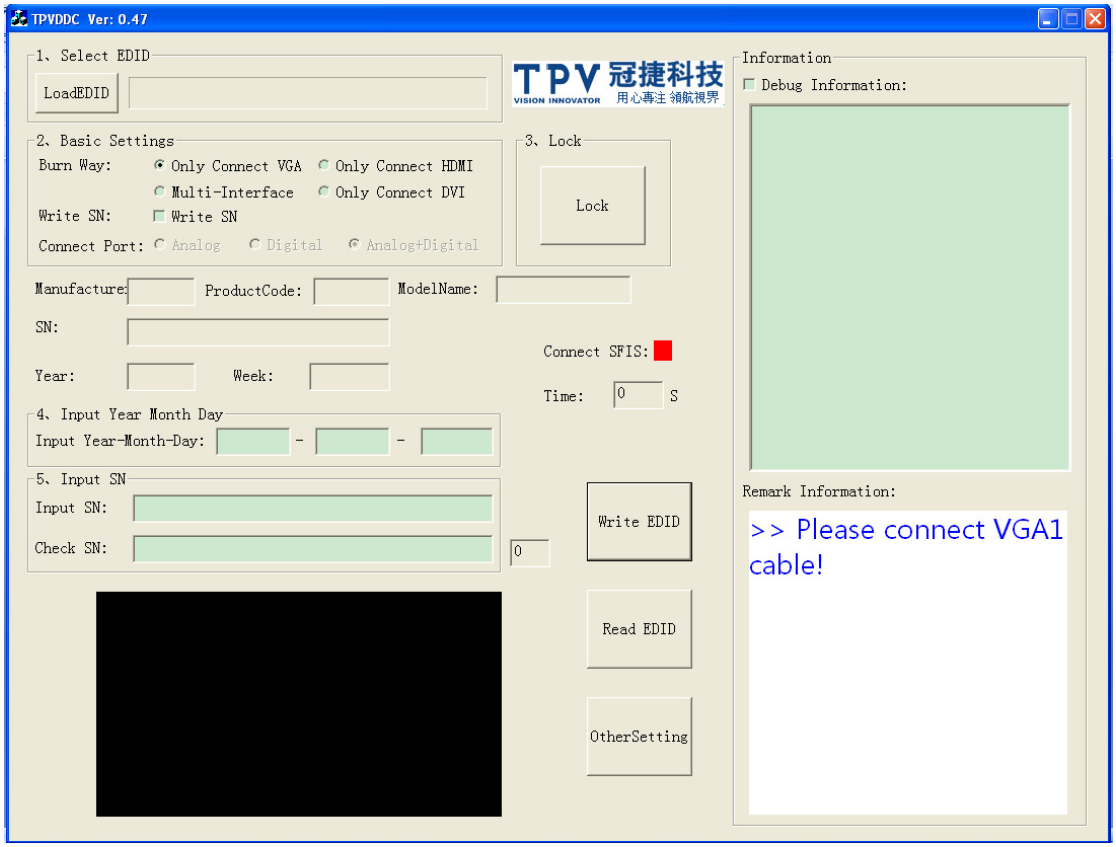
3. Copy Philips 246V5 to DDC folder and put DDC and ISP tool together.



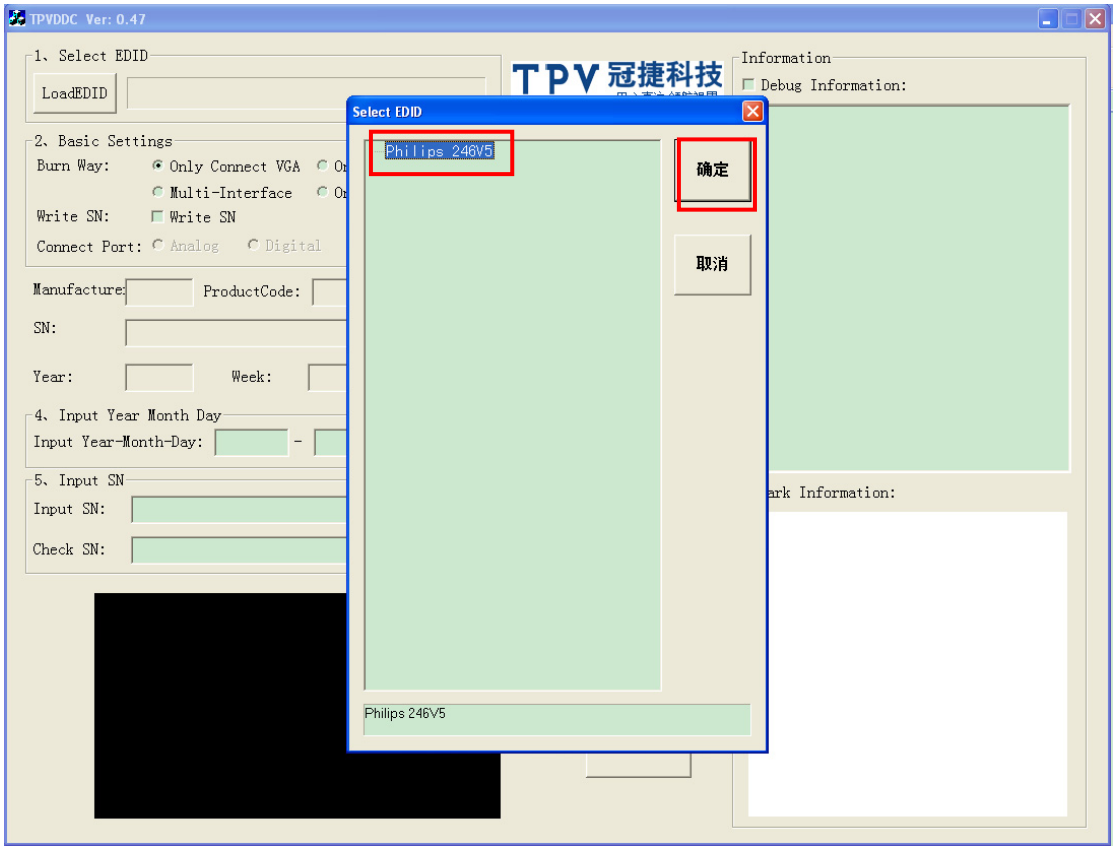
13.4. Run the ISP tool.

1. Double-click the icon 

to open the tool.

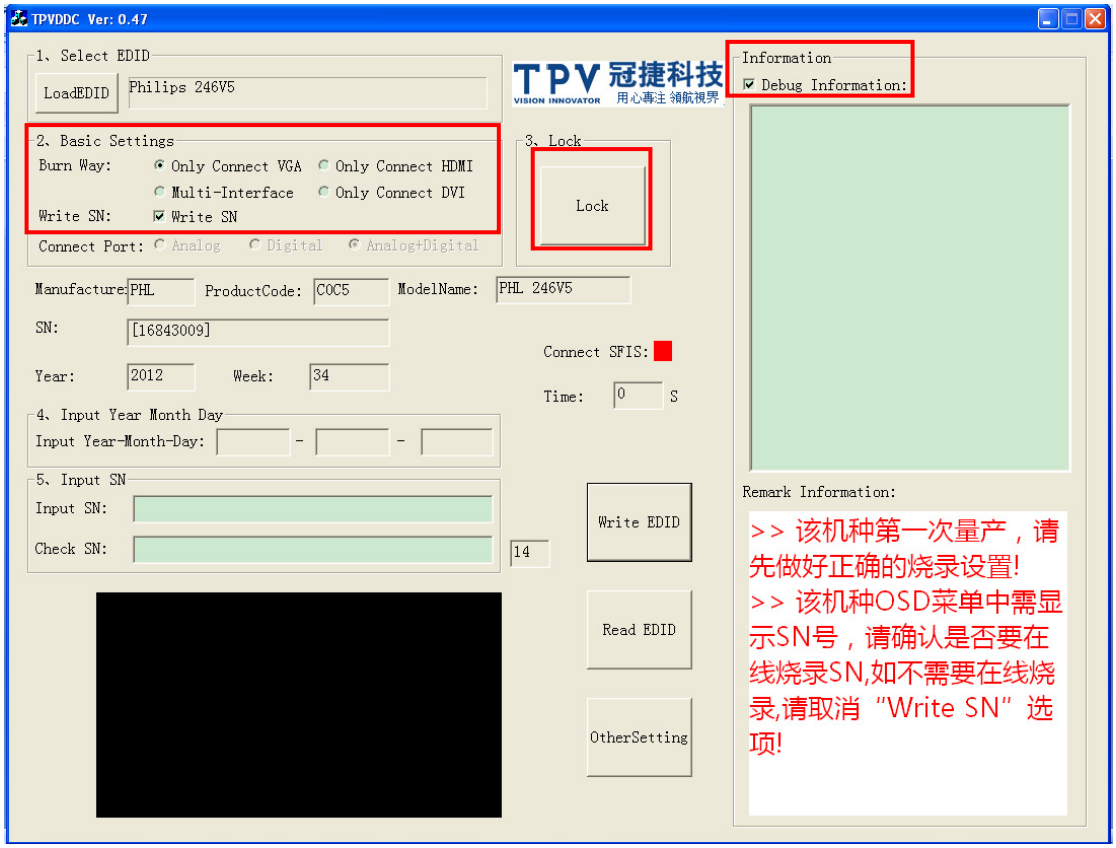


2. Select the EDID folder.



3. Load EDID successful.

4. Tick the “Only connect DVI”and “write SN”, then click “Lock” and “Debug Imformayion”.

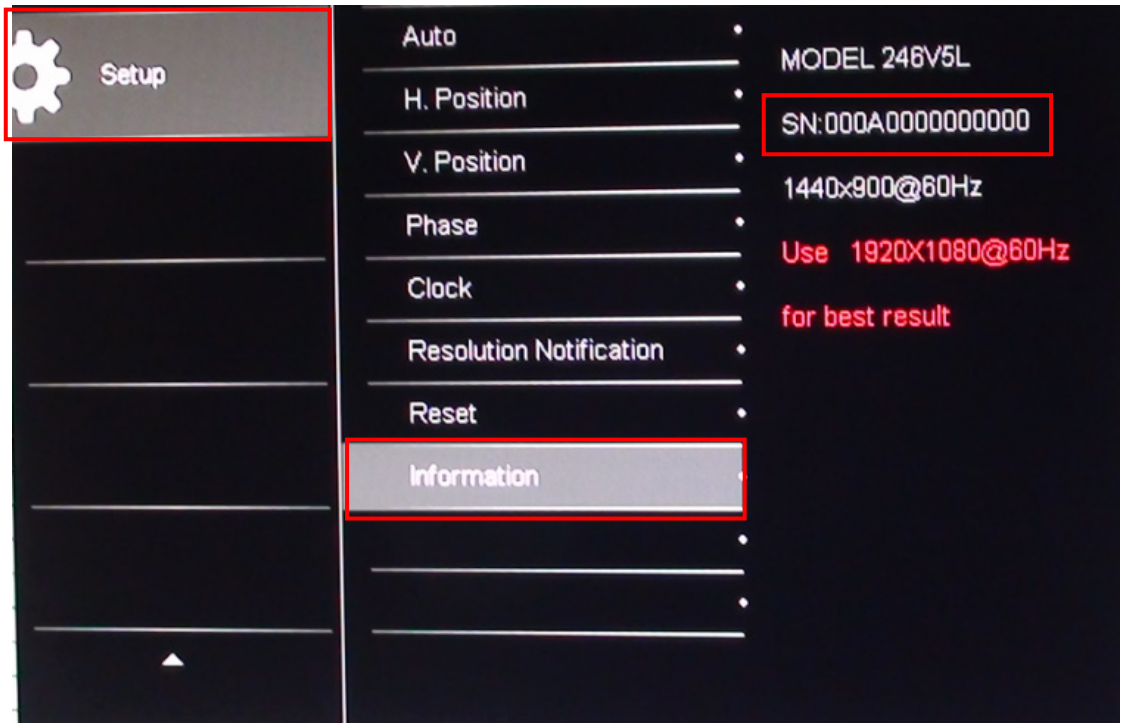


5. Type in the 14 digit S/N.Notes:the SN fourth digit must is A.

6. Start to writing. Click “write EDID” to start writing. When The green “PASS” appear, the process is finished.

7. Check the S/N in monitor user menu.

Press “MENU” and select “Information”—“SN”, you can check the SN.



13.5. Troubleshooting.

1. Can’t write!

(1) AC on the monitor and turn on it.(Restart the monitor)

(2) Take apart the monitor and connect the 7pin of EEPROM to GND to disable write protection then write EDID one by one.

(3) Set the Burn in on last to try again.

246V5LSB/93 EDID

Analog

```
     00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F
       -----------------------------------------------
  00| 00 FF FF FF FF FF FF 00 41 0C C5 C0 01 01 01 01
  10| 22 16 01 03 6E 35 1E 78 2A 92 65 A6 55 55 9F 28
  20| 0D 50 54 BD 4B 00 D1 C0 81 80 95 0F 95 00 B3 00
  30| 81 C0 01 01 01 01 02 3A 80 18 71 38 2D 40 58 2C
  40| 45 00 13 2B 21 00 00 1E 00 00 00 FF 00 0A 20 20
  50| 20 20 20 20 20 20 20 20 20 20 00 00 00 FC 00 50
  60| 48 4C 20 32 34 36 56 35 0A 20 20 20 00 00 00 FD
  70| 00 38 4C 1E 53 11 00 0A 20 20 20 20 20 20 00 F0
```

EDID Structure Version/Revision: 01 03

<-Vendor/Product Identification:->

ID Manufacturer Name: PHL
ID Product Code: C0C5
ID Serial Number: No Use
Week of Manufacture: 34
Year of Manufacture: 2012

<-Basic Display Parameters/Features:->

Video i/p definition: Analog
Max. H. Image Size : 53cm
Max. V. Image Size : 30cm
Display Gamma : 2.2

<-Color Characteristics:->

Rx: 0.650 Gx: 0.332 Bx: 0.157 Wx: 0.313
Ry: 0.333 Gy: 0.623 By: 0.053 Wy: 0.329

<-Established Timings:->

Established Timings 1:BD
720 x 400 @ 70Hz VGA,IBM
640 x 480 @ 60Hz VGA,IBM
640 x 480 @ 67Hz Apple,Mac II
640 x 480 @ 72Hz VESA

640 x 480 @ 75Hz VESA

800 x 600 @ 60Hz VESA

Established Timings 2:4B

800 x 600 @ 75Hz VESA

1024 x 768 @ 60Hz VESA

1024 x 768 @ 75Hz VESA

1280 x1024 @ 75Hz VESA

Established Timings 3:00

<-Standard Timing Identification:->

1920 x 1080 @ 60Hz

1280 x 1024 @ 60Hz

1440 x 900 @ 75Hz

1440 x 900 @ 60Hz

1680 x 1050 @ 60Hz

1280 x 720 @ 60Hz

<-Detailed Timing Descriptions:->

FC (Monitor Name) : PHL 246V5

FD (Monitor Limits):

Min. V. rate: 56 Hz

Max. V. rate: 76 Hz

Min. H. rate: 30 KHz

Max. H. rate: 83 KHz

Max. P Clock: 170 MHz

FF (Monitor SN) :

Detailed Timing : 1920x1080 @ 60Hz

Extension Flag : 00

Block0 Checksum : F0

Digital

```
      00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F
      -----------------------------------------------
00| 00 FF FF FF FF FF FF 00 41 0C C5 C0 01 01 01 01
10| 22 16 01 03 80 35 1E 78 2A 92 65 A6 55 55 9F 28
20| 0D 50 54 BD 4B 00 D1 C0 81 80 95 0F 95 00 B3 00
30| 81 C0 01 01 01 01 02 3A 80 18 71 38 2D 40 58 2C
40| 45 00 13 2B 21 00 00 1E 00 00 00 FF 00 0A 20 20
50| 20 20 20 20 20 20 20 20 20 20 00 00 00 FC 00 50
60| 48 4C 20 32 34 36 56 35 0A 20 20 20 00 00 00 FD
70| 00 38 4C 1E 53 11 00 0A 20 20 20 20 20 20 00 DE
```

EDID Structure Version/Revision: 01 03

<-Vendor/Product Identification:->

ID Manufacturer Name: PHL
ID Product Code: C0C5
ID Serial Number: No Use
Week of Manufacture: 34
Year of Manufacture: 2012

<-Basic Display Parameters/Features:->

Video i/p definition: Digital
Max. H. Image Size : 53cm
Max. V. Image Size : 30cm
Display Gamma : 2.2

<-Color Characteristics:->

Rx: 0.650 Gx: 0.332 Bx: 0.157 Wx: 0.313
Ry: 0.333 Gy: 0.623 By: 0.053 Wy: 0.329

<-Established Timings:->

Established Timings 1:BD
720 x 400 @ 70Hz VGA,IBM
640 x 480 @ 60Hz VGA,IBM
640 x 480 @ 67Hz Apple,Mac II
640 x 480 @ 72Hz VESA
640 x 480 @ 75Hz VESA

800 x 600 @ 60Hz VESA

Established Timings 2:4B

800 x 600 @ 75Hz VESA

1024 x 768 @ 60Hz VESA

1024 x 768 @ 75Hz VESA

1280 x1024 @ 75Hz VESA

Established Timings 3:00

<-Standard Timing Identification:->

1920 x 1080 @ 60Hz

1280 x 1024 @ 60Hz

1440 x 900 @ 75Hz

1440 x 900 @ 60Hz

1680 x 1050 @ 60Hz

1280 x 720 @ 60Hz

<-Detailed Timing Descriptions:->

FC (Monitor Name) : PHL 246V5

FD (Monitor Limits):

Min. V. rate: 56 Hz

Max. V. rate: 76 Hz

Min. H. rate: 30 KHz

Max. H. rate: 83 KHz

Max. P Clock: 170 MHz

FF (Monitor SN) :

Detailed Timing : 1920x1080 @ 60Hz

Extension Flag : 00

Block0 Checksum : DE

HDMI

```
      00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F
       --------------------Block 0--------------------
 00| 00 FF FF FF FF FF FF 00 41 0C C5 C0 01 01 01 01
 10| 22 16 01 03 80 35 1E 78 2A 92 65 A6 55 55 9F 28
 20| 0D 50 54 BD 4B 00 D1 C0 81 80 95 0F 95 00 B3 00
 30| 81 C0 01 01 01 01 02 3A 80 18 71 38 2D 40 58 2C
 40| 45 00 13 2B 21 00 00 1E 00 00 00 FF 00 0A 20 20
 50| 20 20 20 20 20 20 20 20 20 20 00 00 00 FC 00 50
 60| 48 4C 20 32 34 36 56 35 0A 20 20 20 00 00 00 FD
 70| 00 38 4C 1E 53 11 00 0A 20 20 20 20 20 20 01 DD
       --------------------Block 1--------------------
 00| 02 03 22 F1 4F 01 02 03 05 06 07 10 11 12 13 14
 10| 15 16 1F 04 23 09 17 07 83 01 00 00 65 03 0C 00
 20| 10 00 02 3A 80 18 71 38 2D 40 58 2C 45 00 13 2B
 30| 21 00 00 1E 8C 0A D0 8A 20 E0 2D 10 10 3E 96 00
 40| 13 2B 21 00 00 18 01 1D 00 72 51 D0 1E 20 6E 28
 50| 55 00 13 2B 21 00 00 1E 8C 0A D0 90 20 40 31 20
 60| 0C 40 55 00 13 2B 21 00 00 18 00 00 00 00 00 00
 70| 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 B9

----------------------------------------------------------
Block 0:

EDID Structure Version/Revision: 01 03
<-Vendor/Product Identification:->
        ID Manufacturer Name:    PHL
        ID Product Code:            C0C5
        ID Serial Number:          No Use
        Week of Manufacture:     34
        Year of Manufacture:     2012


<-Basic Display Parameters/Features:->
        Video i/p definition:    Digital
        Max. H. Image Size :     53cm
        Max. V. Image Size :     30cm
        Display Gamma :             2.2


<-Color Characteristics:->
        Rx: 0.650     Gx: 0.332     Bx: 0.157     Wx: 0.313
```

Ry: 0.333 Gy: 0.623 By: 0.053 Wy: 0.329

<-Established Timings:->

Established Timings 1:BD

720 x 400 @ 70Hz VGA,IBM

640 x 480 @ 60Hz VGA,IBM

640 x 480 @ 67Hz Apple,Mac II

640 x 480 @ 72Hz VESA

640 x 480 @ 75Hz VESA

800 x 600 @ 60Hz VESA

Established Timings 2:4B

800 x 600 @ 75Hz VESA

1024 x 768 @ 60Hz VESA

1024 x 768 @ 75Hz VESA

1280 x1024 @ 75Hz VESA

Established Timings 3:00

<-Standard Timing Identification:->

1920 x 1080 @ 60Hz

1280 x 1024 @ 60Hz

1440 x 900 @ 75Hz

1440 x 900 @ 60Hz

1680 x 1050 @ 60Hz

1280 x 720 @ 60Hz

<-Detailed Timing Descriptions:->

Detailed Timing : 1920x1080 @ 60Hz

FF (Monitor SN) :

FC (Monitor Name) : PHL 246V5

FD (Monitor Limits):

Min. V. rate: 56 Hz

Max. V. rate: 76 Hz

Min. H. rate: 30 KHz

Max. H. rate: 83 KHz

Max. P Clock: 170 MHz

Extension Flag : 01

Block0 Checksum : DD

Block 1:

Extended Block Type: CEA 861B
Detailed Timing Blocks start at Byte: 22
DTV Underscan YES
DTV Basic Audio YES
YCbCr (4:4:4) YES
YCbCr (4:2:2) YES

<-Video Short Block Description:->
640 x 480 P 59.94/60Hz 4:3
720 x 480 P 59.94/60Hz 4:3
720 x 480 P 59.94/60Hz 16:9
1920 x 1080 I 59.94/60Hz 16:9
720(1440) x 480 I 59.94/60Hz 4:3
720(1440) x 480 I 59.94/60Hz 16:9
1920 x 1080 P 59.94/60Hz 16:9
720 x 576 P 50Hz 4:3
720 x 576 P 50Hz 16:9
1280 x 720 P 50Hz 16:9
1920 x 1080 I 50Hz 16:9
720(1440) x 576 I 50Hz 4:3
720(1440) x 576 I 50Hz 16:9
1920 x 1080 P 50Hz 16:9
1280 x 720 P 59.94/60Hz 16:9

<-Audio Short Block Description:->
Numbers of Audio Channels: 2
Audio Format Description: Linear PCM
Audio Supported: 96KHz 48KHz 44KHz 32KHz
Audio Bit Rate: 24bit 20bit 16bit

<-Speaker Allocation:->
Speaker Allocation: FL/FR

<-Detailed Timing Descriptions: ->

Detailed Timing Descriptions: 1920x1080 @ 60Hz

H Image Size: 531 mm V Image Size: 299 mm

Pixel Clock: 148 Hz Refreshed Mode: Non-Interlaced

Detailed Timing Descriptions: 720x480 @ 60Hz

H Image Size: 531 mm V Image Size: 299 mm

Pixel Clock: 27 Hz Refreshed Mode: Non-Interlaced

Detailed Timing Descriptions: 1280x720 @ 60Hz

H Image Size: 531 mm V Image Size: 299 mm

Pixel Clock: 74 Hz Refreshed Mode: Non-Interlaced

Detailed Timing Descriptions: 720x576 @ 50Hz

H Image Size: 531 mm V Image Size: 299 mm

Pixel Clock: 27 Hz Refreshed Mode: Non-Interlaced

Block1 Checksum : B9

14. White Balance, Luminance Adjustment

1. Apparatuses and program: analyzer CA-210, PC, tool, FGA adjustment program (Philips LEDFGA.DDCI), Pattern generator.

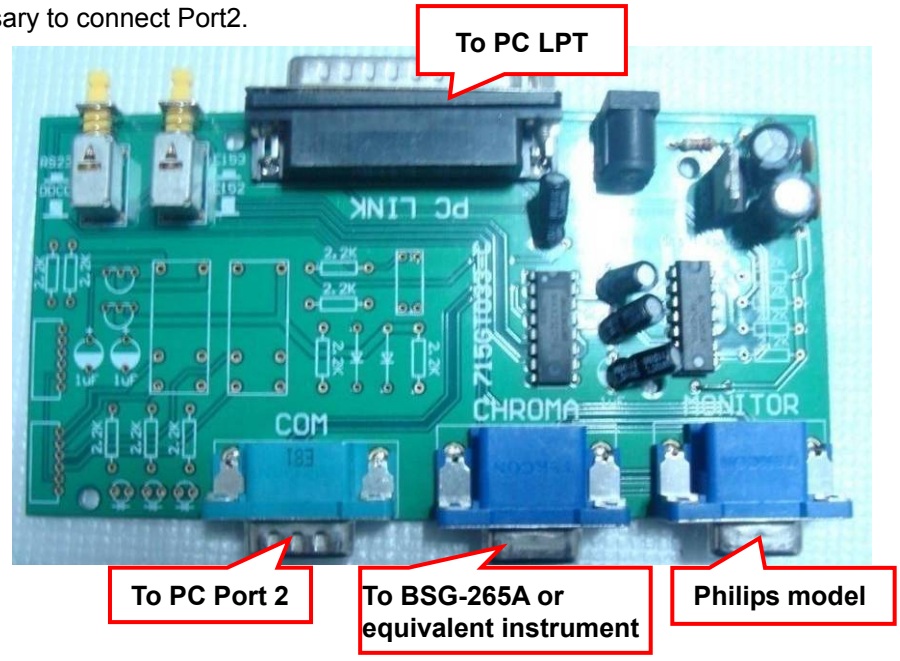
2. Equipment installation:

a. Connect analyzer CA-210 to PC by USB connector, install drive program CA-SDK Ver4.00 for CA-210 and restart PC after finish installing

b. Install Port95NT drive program, set PC printer connector mode as ECP mode and reset PC after finish installing.

c. Connect tool as follow:

Note: It's not necessary to connect Port2.



3. Adjustment

Preparation before adjustment:

a. Monitor should be warmed up for more than half an hour.

b. Make sure that the tools are connected right and drive programs have been installed OK.

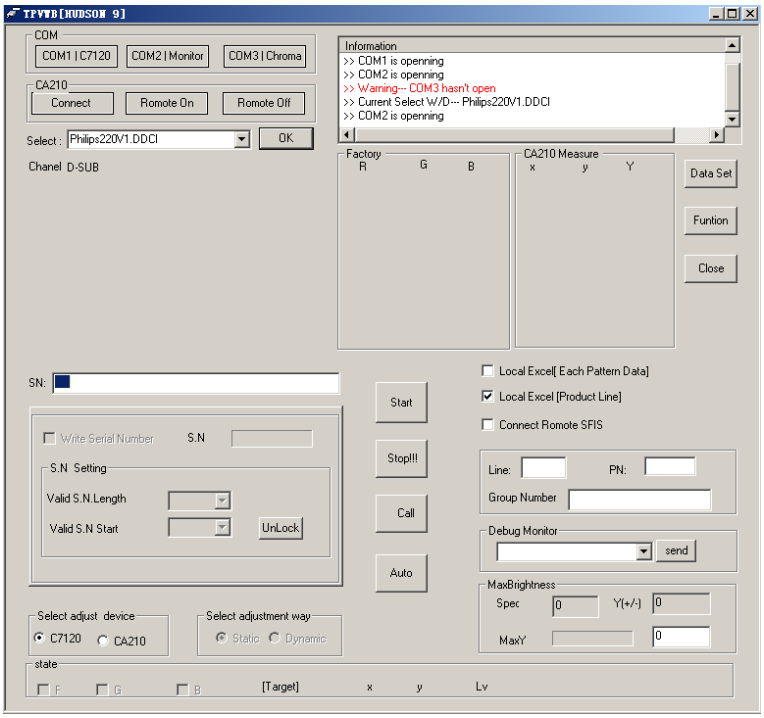
4. Adjustment process:

a. Press the power of CA-210, shut off the lens, press 0-Cal and open the lens after analyzer reset.

b. Open white balance adjustment program, select the right parameter according with the program and click OK.

c. Make sure that the lens of CA-210 aims at the center of the screen, then click START to adjust.

d. After finish adjusting, the adjustment program displays pass, and the START button changes for NEXT, which means that you can adjust another monitor.



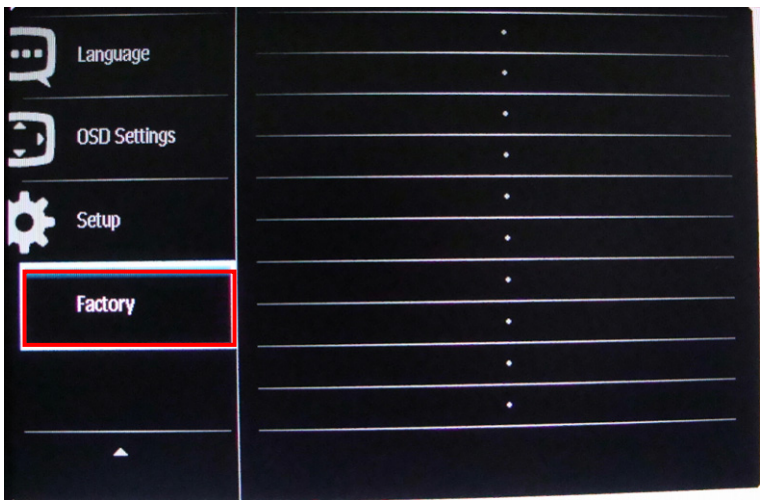
5. Color Temp confirmation

Connect the signal to the monitor, the monitor displays white-picture, use CA-210 to measure the Color Temp of the screen center and select the OSD to make sure whether the Color Temps accord with the SPEC.

CIE coordinates	9300K	6500K/sRGB	sRGB
x	0.283±0.02	0.313±0.02	0.313±0.02
y	0.297±0.02	0.329±0.02	0.329±0.02

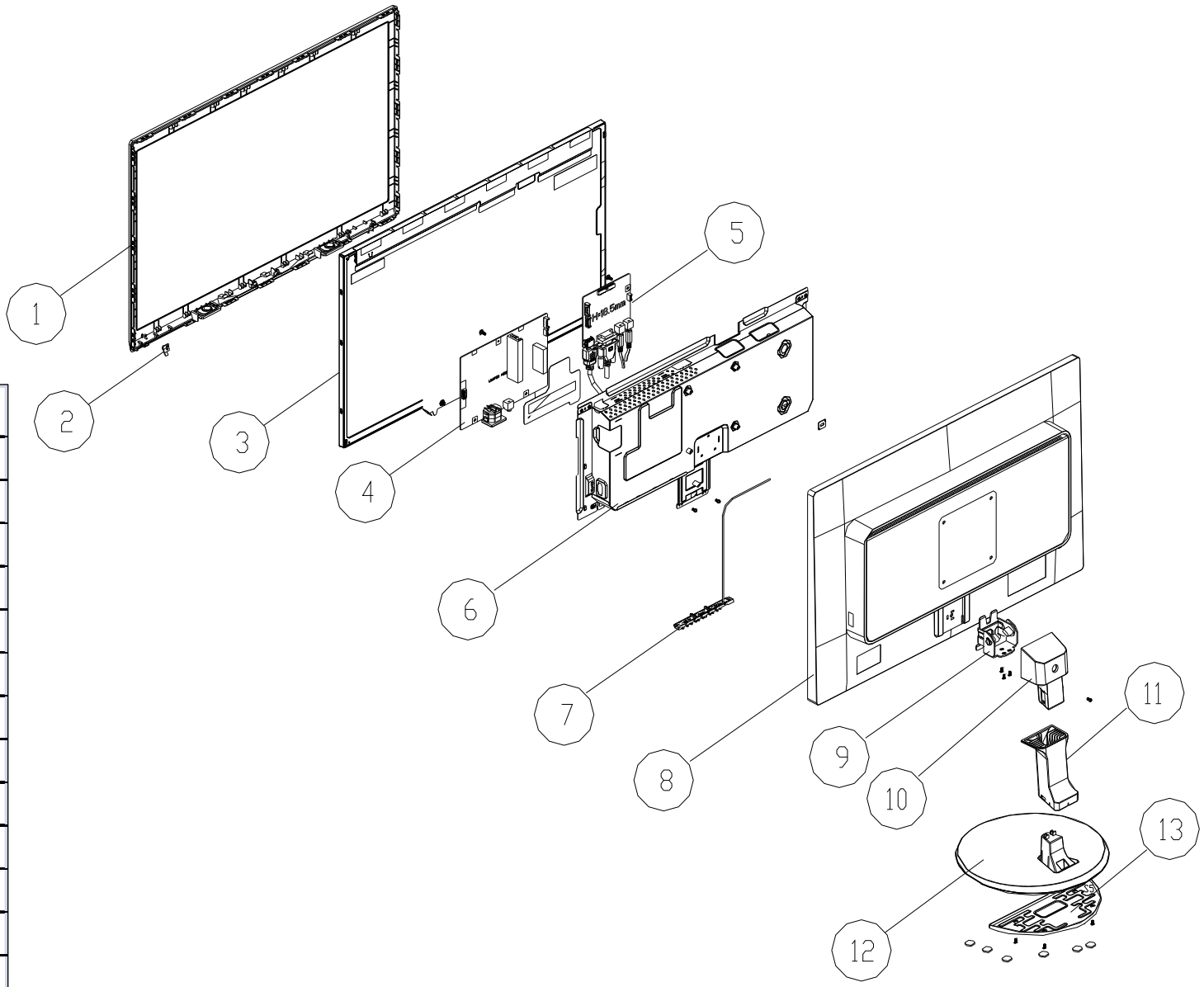
6. How to enter into the factory mode:

1. Connect the video source and power off the monitor.
2. Press ▼ and OK buttons at the same time, power on the monitor, and then press the menu again; the picture will appear on the top left corner.
3. Select the “Factory” and press the “MENU” button to enter the factory mode.



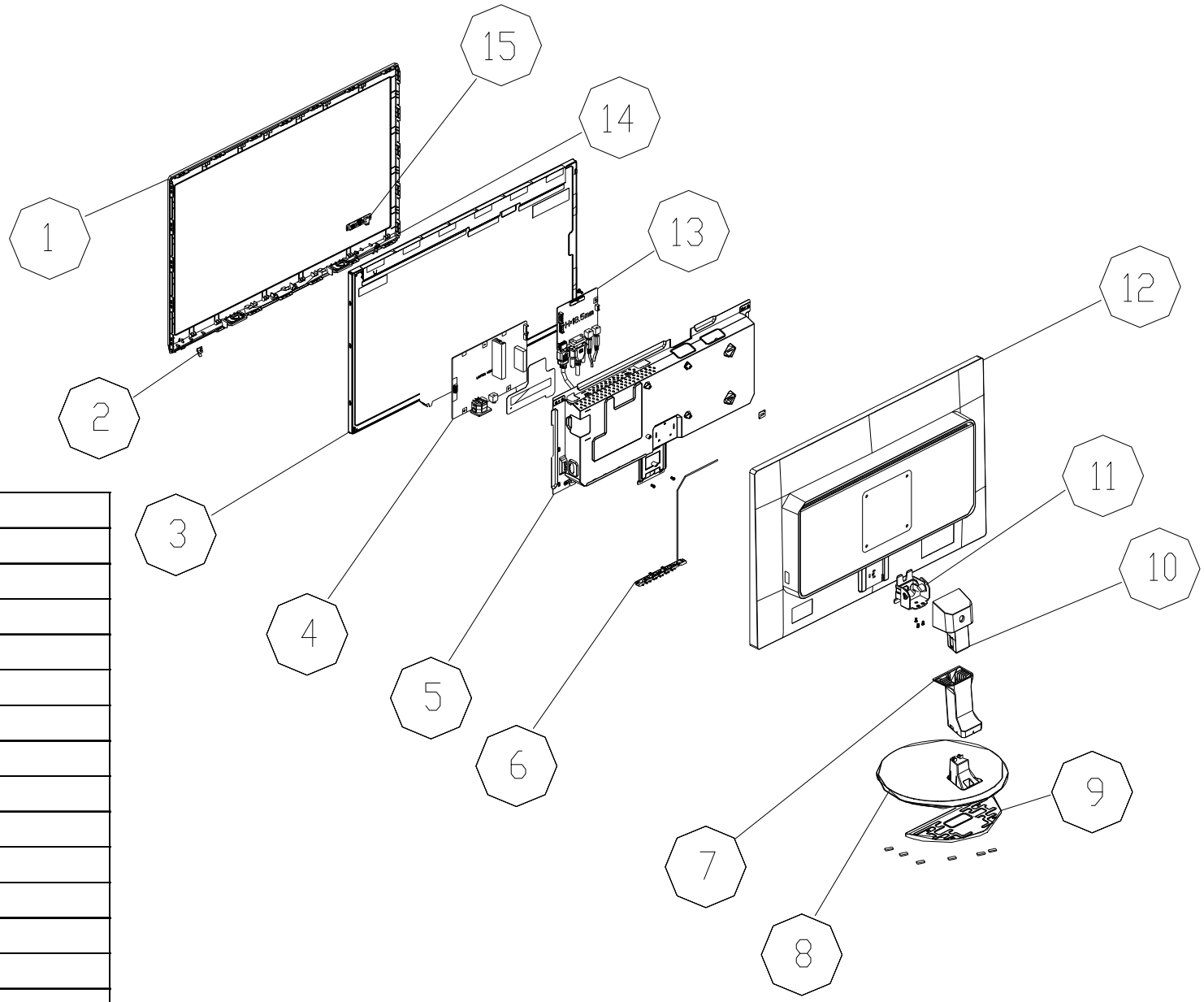
15. Monitor Exploded View

246V5LSB



Item	Description
1	BEZEL
2	LENS
3	PANEL
4	POWER BOARD ASSY
5	SCALER BOARD ASSY
6	MAINFRAME
7	KEY BOARD ASSY
8	REAR_COVER
9	HINGE ASSY
10	STAND_TOP
11	STAND_BUTTON
12	BASE
13	BKT_BASE

246V5LAB



Item	Description
1	BEZEL
2	LENS
3	PANEL
4	POWER BOARD ASSY
5	MAINFRAME
6	KEY BOARD ASSY
7	STAND_BUTTON
8	BASE
9	BKT_BASE
10	STAND_TOP
11	HINGE ASSY
12	REAR_COVER
13	SCALER BOARD ASSY
14	SPEAKER
15	HEAD PHONE JACK BOARD ASSY

16. Recommended & Spare Parts List

Note: Take the 246V5LSB/93 BOM for example. The following information of initial version BOM are only for reference of repair, not place the order as the basis and are subject to change without notice. Please base on RSPL or Service BOM (http://cs.tpv.com.cn) , thank you!

Item	Location	PCM Codes	Description	Remark
1	FQ105	A34G3175AFLC1B0100	BEZEL	
2	FQ411	A33G144400201C0100	LENS	
3	E750	750GBU240H1D23N000	LCD M240HW01 VD0A XM AUO	
4	FQ003	PLPCCE514UQH1	POWER BOARD ASSY	
5	FQ002	CBPCBN2PHQM	SCALER BOARD ASSY	
6	FQ124	Q15G13954010FJ	MAINFRAME	
7	FQ004	KEPCCPHQ1	KEY BOARD ASSY	
8	FQ106	A34G3176ADT04B0100	REAR_COVER	
9	FQ104	Q37G0318101FHQ	HINGE ASSY	
10	FQ107	A34G3177AFL01B0100	STAND_TOP	
11	FQ108	A34G3178AFL01B0100	STAND_BUTTON	
12	FQ109	A34G3179AFL01B0100	BASE	
13	FQ143	Q15G14781010AJ	BKT_BASE	
	FQ144	A33G1366ANG 1L0100	KEY	
	E08902	089G 725CAA 2G	D-SUB CABLE 1500MM	
	E08901	089G414A15N HL	AC POWER CORD 1500 FOR CHINA	
	ECN804	095G8014 6DJ15	HARNESS 6P(A2008)-6P(CI1406S) 160MM	
	ECN408	395G179H30NF65	FFC CABLE 30PIN 212MM 1.0MM	
	ECN408	395G179X30NF65	FFC CABLE 30PIN 212MM 1.0MM	
	ECN404	395G801407M648	HARNESS 7P(2008)-6P(1253) 360MM	
	FQ201	Q40G024N81321A	RATING LABEL 246V5L CHINA	
	FQ208	Q41G780081378G	WARRANTY CARD WARRANTY CARD FOR CHINA	
	FQ206	Q41G78S181386A	QSG 246V5(M5246VQ1T)	
	FQ205	705GQDCS044231	EPS ASSY	
	FQ202	Q44GK09181301A0PHX	ARTWORK CARTON	
	FQ218	Q45G990160940900X1	PROTECT BAG	
	FQ204	Q70G24C181312A	CD MANUAL 246V5(M5246V1T) TCO6.0	
	FQ002	756GQCCB0PH1300000	SCALER BOARD ASSY(CBPC*)	
	U402	100GPNAE002NT1	MCU ASSY(056G2233 37)	
	CN404	033G3802 7B Y	WAFER	
	CN404	033G3802 7B Y L	CONNECTOR 7P 2.0	
	CN701	033G3802 9B Y	CONNECTOR 9P 2.0	
	CN701	033G3802 9B Y L	CONN 2.0 9P	
	CN408	033G801930F CH L	FFC CONN 1.0MM 30P R/A 34MM 6MM	
	CN408	033G801930F CH JS	FFC CONN 1.0MM 30P R/A 34MM 6.3MM	
	R707	061G152M479 64 SY	RST MOFR 4.7 OHM +-5% 2WS FUTABA	
	CN101	088G 35315F HD HF	D-SUB CONN WITH SCREW 15P BLUE	
	CN102	088G 35424FXNH HF	DVI CONN WITH SCREW 24P WHITE - R/A 37.7	
	X401	093G 22 51 YC	YC-49S-12M30PF30PPM25OHM 12M 30PPM 30PF	
	X401	093G 2251B J	CRYSTAL 12MHZ NXS12.000AC30F-KAB10	
	C433	067G 3051013PB	EC 105C 100UF M 16V 5*11MM JH CD263	
	U702	056G 563204 C	HF LDO G960PT43U 1A 3.3V TO-252	
	U703	056G 563206	LDO AP2114H-1.8TRG1 1A 1.8V SOT-223	
	U702	056G 563250	LDO LSP2159BD33AD TO-252 B-TY 1.5A/3.3V	
	U104	056G 662 48	ESD PROTECT AZC399-04S.R7G SOT23-6L	
	U101	056G1133 34 1	EEPROM M24C02-RMN6TP 2KB SO-8	

	U403	056G1133 56	M24C16-WMN6TP	
	U403	056G1133139	EEPROM CAT24C16WI-GT3 16K 8PIN	
	Q701	057G 417511	MMBT3904	
	Q401	057G 417517	TRA LMBT3906LT1G -200MA/-40V SOT-23 LRC	
	Q701	057G 417525	SMALLTRAN MMBT3904 200MA 40V SOT-23	
	Q401	057G 417526	SMALLTRAN MMBT3906 -0.2A -40V SOT-23	
	Q705	057G 763513	P6403FMG BY NIKO-SEM	
	Q705	057G 763940	MOSFET AO3401A SOT-23	
	R711	061G0402000 JT	RST CHIPR MAX0R05 1/16W TZAI YUAN	
	R117	061G0402000 JY	RST CHIPR MAX 0R05 OHM 1/16W YAGEO	
	R135	061G0402100 JT	RST CHIP 10R 1/16W 5% TZAI YUAN	
	R135	061G0402100 JY	RST CHIPR 10 OHM +-5% 1/16W YAGEO	
	R439	061G0402101 JT	RST CHIP 100R 1/16W 5% TZAI YUAN	
	R111	061G0402101 JY	RST CHIPR 100 OHM +-5% 1/16W YAGEO	
	R149	061G0402102 JT	RST CHIP 1K 1/16W 5% TZAI YUAN	
	R150	061G0402102 JY	RST CHIPR 1KOHM +-5% 1/16W YAGEO	
	R419	061G0402103 JF	RST CHIPR 10KOHM +-5% 1/16W FENGHUA	
	R725	061G0402103 JT	RST CHIP 10K 1/16W 5% TZAI YUAN	
	R714	061G0402103 JY	RST CHIPR 10KOHM +-5% 1/16W YAGEO	
	R453	061G0402104 JT	RST CHIP 100K 1/16W 5% TZAI YUAN	
	R453	061G0402104 JY	RST CHIPR 100KOHM +-5% 1/16W YAGEO	
	R432	061G0402105 JT	RST CHIP R 1MOHM 1/16W +/-5% TZAI YUAN	
	R432	061G0402105 JY	RST 0402 1M 5% 1/16W RC0402JR-071ML	
	R411	061G0402222 JT	RST CHIP 2K2 1/16W 5% TZAI YUAN	
	R126	061G0402222 JY	RST CHIPR 2.2KOHM +-5% 1/16W YAGEO	
	R702	061G0402223 JT	RST CHIP 22K 1/16W 5% TZAI YUAN	
	R133	061G0402223 JY	RST CHIPR 22KOHM +-5% 1/16W YAGEO	
	R454	061G0402224 JT	RST CHIP 220K 1/16W 5% TZAI YUAN	
	R454	061G0402224 JY	RST CHIPR 220KOHM +-5% 1/16W YAGEO	
	R401	061G04023901FF	RST CHIPR 3.9KOHM +-1% 1/16W FENGHUA	
	R404	061G04023901FT	RST 0402 3.9K 1% 1/16W TZAI YUAN	
	R408	061G04024700FT	RST CHIP 470R 1/16W 1%	
	R408	061G04024700FY	RST CHIP 470R 1/16W 1%	
	R142	061G0402471 JT	RST CHIP 470R 1/16W 5% TZAI YUAN	
	R142	061G0402471 JY	RST CHIPR 470OHM +-5% 1/16W YAGEO	
	R422	061G0402472 JF	RST CHIPR 4.7KOHM +-5% 1/16W FENGHUA	
	R132	061G0402472 JT	RST CHIP 4K7 1/16W 5% TZAI YUAN	
	R132	061G0402472 JY	RST CHIPR 4.7KOHM +-5% 1/16W YAGEO	
	R107	061G04027509FT	RST CHIP 75R 1/16W 1%	
	R112	061G04027509FY	RST CHIP 75R 1/16W 1%	
	R423	061G0402752 JF	RST CHIP 7K5 1/16W 5% FENGHUA	
	R423	061G0402752 JT	RST CHIP 7K5 1/16W 5% TZAI YUAN	
	R122	061G0603000 JT	RST CHIP MAX 0R05 1/10W TZAI YUAN	
	R122	061G0603000 JY	RST CHIPR MAX0R05 1/10W YAGEO	
	R417	061G0603561 JT	RST CHIPR 560OHM +-5% 1/10W TZAI YUAN	
	R417	061G0603561 JY	RST CHIP 560R 1/10W 5% YAGEO	
	FB701	061G0805000 JT	RST 0805 0.05R MAX 1/8W	
	FB701	061G0805000 JY	RST CHIPR MAX 0R05 OHM 1/8W YAGEO	
	R448	061G1206221 JT	RST CHIPR 220 OHM +-5% 1/4W TZAI YUAN	
	R448	061G1206221 JY	RST CHIPR 220R +-5% 1/4W YAGEO	
	C120	065G040210232K T	CAP CHIP 0402 1000PF 50V X7R	

	C412	065G040210332K F	CAP 0402 10NF 10% 50V X7R	
	C119	065G040210332K Y	CAP CHIP 0402 10N 50V X7R +/-10%	
	C408	065G040210412K 3	CAP CHIP 0402 100N 16V X7R +/-10%	
	C401	065G040210412K F	CAP 0402 100NF 10% 16V X7R	
	C427	065G040210425K F	CHIP 0402 0.1UF 25V X5R	
	C414	065G0402105A5K T	CAP 0402 1UF 10% 10V X5R	
	C182	065G040222031J T	CAP CHIP 0402 22PF J 50V NPO	
	C428	065G040222031J Y	CAP CHIP 0402 22P 50V NP0 +/-5%	
	C429	065G040222415K F	CAP 0402 220NF 10% 16V X5R	
	C116	065G040222415K T	CAP CHIP 0402 220NF K 16V X5R	
	C430	065G0402224A5K F	CAP 0402 220NF 10% 10V X5R	
	C108	065G040247312K T	CAP 0402 47NF 10% 16V X7R	
	C103	065G040250931C A	CAP 0402 5PF 0.25PF 50V NP0	
	C403	065G0603225A5K T	CAP 0603 2.2UF 10% 10V X5R	
	C416	065G0805475A2K A	MLCC 0805 4U7 10V X7R +-10%	
	C413	065G0805475A2K T	CAP CHIP 0805 4.7UF K 10V X7R	
	FB409	071G 56K121 M	CHIP BEAD 120OHM 6A MGLB2012-120T-LF	
	FB405	071G 56V301 M	CHIP BEAD 0805 300R 25% 700MA	
	FB402	071G 56V301 TA	CHIP BD 0805 300R/700MA FCM2012VF-301T07	
	D101	093G 64 42 P	BAV70 SOT23 BY PAN JIT	
	D101	093G 64 42SEM	SWITCHING BAV70 215MA 75V SOT-23	
	D402	093G 39S 24 T	RLZ 5.6B LLDS	
	D403	093G 39S940 T	ZENER GLZ5.6B 5.6 0.5 MINI-MELF LL-34	
	U401	356G0562100B14	SCALER NT68660BUFG/B TQFP100	
	SW001	377G05005B60XL	DOME SW 5PCS 278G4	
	CN001	033G8032 6F J	CONN 1.25MM 6P R/A 1.25T-11-6PWB	
	CN001	033G8032 6F L	CONN 1.25MM 6P R/A B1254W06HUM2	
	CN001	033G8032 6F HR	CONNECTOR 6P 1.25	
	R005	061G06031501FT	RST CHIP 1K5 1/10W 1%	
	R002	061G06032201FT	RST CHIP 2K2 1/10W 1%	
	LED001	081G 15W 1 EL	CHIP LED WHITE 99-113UNC/2223010/TR8	
	ZD004	093G 64 59 SU	ESD MLVS0603M04 0603	
	U902	056G 139 9	IC EL817M(X) PHOTOCOUPLER DIP-4	
	U902	056G 139 3A	PC123Y22FZOF SHARP	
	NR901	061G 58100 WD	RST NTCR 10 OHM +-20% 5A THINKING	
	NR901	061G 58100 X1	NTCR 10 20% 3.6W	
	C908	063G107K334 6S	CAP X2 330NF 10% 275V BULK (B)	
	C908	063G107K334 UM	CAP X2 330NF 10% 275V BULK (B)	
	C902	065G306M1022BP	CAP Y1 1NF 20% 250V Y5U	
	C903	065G306M1023BW	CAP Y1 1NF 20% 250V Y5U	
	C900	065G306M2223BD	CAP Y1 2.2NF 20% 250V Y5U	
	C900	065G306M2223BW	CAP Y1 2.2NF 20% 250V Y5U	
	C907	067G 40Z10115H	EC 100UF 20% 450V 18*35	
	C907	067G 40Z10115K	EC 100UF 20% 450V 18*35	
	C918	067G215D4714KV	EC 470UF 20% 25V ED1E471MCM1016F4P	
	C918	067G215D4714LV	LOW ESR EC 470UF 25V M 10*16MM	
	L901	073G 174 65 H2	LINE FILTER 30MH MIN	
	L901	073G 174 65 X2	LINE FILTER 30MH MIN	
	L906	073G 253 91 V1	CHOKE COIL 1.1UH 30% 3LFDR0810-1R0K, HF	
	L906	073G 253191 H	IND CHOKE 1.1UH DADON	
	L906	073G 253191 L	CHOKE COIL 1.1UH CC-007802	

	L801	073G 253214 X	CHOKE COIL 47UH 10% ,HF	
	L801	073G 253214 DN	CHOKE COIL 47UH 10% LZ.CC013.G01 2.5A	
	T901	080GL22T 3 H6	X'FMR 490UH 7% 4UH ER28 BCK-12866-HA	
	CN901	087G 501 32 S HF	HF AC SOCKET DIP 3PIN+2PIN GROUND	
	CN901	087G 501 32 HC HF	HF AC SOCKET R/A 3PIN+2PIN GROUND	
	BD901	093G 50460 28	BRIDGE DIODE KBP208G LITEON	
	BD901	093G 50460517	BRIDGE 2KBP08M-70 2A 800V KBP 80A	
	D901	093G 60325	SCHOTTKY SB5150 5A 150V DO-201AD	
	D902	093G 60335	DIODE SR515 5A/150V DO-201AD	
	CN804	311GW200A06ABF	CONN 2.0MM 6P R/A A020004106RD0A 16MM	
	CN804	311GW200A06ABX	WAFER 2.0MM 6P	
	CN902	395G082009FM06	HARNESS 9P-10P 160MM	
	CN902	395G082009XM06	HARNESS 9P-9P 160MM	
	U901	056G 379529	AC/DC CONVERTER IC LD7576AGR SOP-7	
	U801	056G 700 11	LED DRIVER OZ9998BGN-A1-0-TR SOP-16	
	Q801	057G 763127	MOSFET AO4886 3.3A 100V SO-8	
	Q801	057G 763538	MOSFET SM1A12DSKC 3.5 100 SOP-8	
	R828	061G0805000 JF	RST CHIPR 0 OHM +-5% 1/8W FENGHUA	
	R828	061G0805000 JI	RST 0805 MAX0.05R 5% 1/8W TA-I	
	R804	061G0805100 JF	RST CHIPR 10 OHM +-5% 1/8W FENGHUA	
	R804	061G0805100 JT	RST CHIP 10R 1/8W 5% TZAI YUAN	
	R928	061G08051001FF	RST CHIPR 1KOHM +-1% 1/8W FENGHUA	
	R928	061G08051001FT	RST CHIP 1K 1/8W 1%	
	R916	061G08051002FF	RST CHIPR 10KOHM +-1% 1/8W FENGHUA	
	R916	061G08051002FT	RST CHIP 10K 1/8W 1%	
	R815	061G08051004FF	RST CHIPR 1 MOHM +-1% 1/8W FENGHUA	
	R815	061G08051004FT	RST CHIP R 1 MOHM +-1% 1/8W	
	R907	061G0805102 JF	RST CHIPR 1K OHM +-5% 1/8W FENGHUA	
	R806	061G0805102 JT	RST CHIPR 1K OHM +- 5% 1/8W TZAI YUAN	
	R818	061G0805103 JF	RST CHIPR 10K OHM +-5% 1/8W FENGHUA	
	R801	061G0805103 JT	RST 0805 10K 5% 1/8W	
	R805	061G0805104 JF	RST CHIPR 100KOHM +-5% 1/8W FENGHUA	
	R805	061G0805104 JT	RST CHIPR 100KOHM +- 5% 1/8W TZAI YUAN	
	R805	061G0805104 JY	RST CHIPR 100KOHM 1/8W YAGEO	
	R826	061G0805109 JF	RST CHIPR 1 OHM +- 5% 1/8W FENGHUA	
	R808	061G0805109 JT	RST CHIP 1R 1/8W 5% TZAI YUAN	
	R919	061G08051500FF	RST CHIPR 150OHM +-1% 1/8W FENGHUA	
	R919	061G08051500FT	RST CHIPR 150OHM +-1% 1/8W TZAIYUAN	
	R810	061G08052002FF	RST CHIPR 20KOHM +-1% 1/8W FENGHUA	
	R810	061G08052002FT	RST CHIP 20K 1/8W 1%	
	R816	061G08052402FF	RST CHIPR 24KOHM +-1% 1/8W FENGHUA	
	R816	061G08052402FI	RST CHIPR 24 KOHM +-1% 1/8W	
	R802	061G0805304 JF	RST CHIPR 300KOHM +-5% 1/8W FENGHUA	
	R803	061G0805304 JT	RST CHIP 300K 1/8W 5% TZAI YUAN	
	R809	061G08053303FT	RST CHIP 330K 1% 1/8W	
	R809	061G08053303FY	RST CHIP 330K 1/8W 1%	
	R920	061G08054701FF	RST CHIPR 4.7KOHM +-1% 1/8W FENGHUA	
	R920	061G08054701FT	RST CHIP 4K7 1/8W 1%	
	R905	061G0805471 JF	RST CHIPR 470 OHM +-5% 1/8W FENGHUA	
	R905	061G0805471 JT	RST CHIPR 470OHM +-5% 1/8W TZAI YUAN	
	R925	061G08059311FF	RST CHIPR 9.31KOHM +-1% 1/8W FENGHUA	

	R925	061G08059311FT	RST CHIPR 9.31KOHM +-1% 1/8W TZAI YUAN	
	F801	061G12060004JF	RST CHIPR MAX0R05 4A 1/4W FENGHUA	
	F801	061G12060004JT	RST CHIPR 1206 MAX0R05 4A 1/4W TZAI YUAN	
	R917	061G1206100 JF	RST CHIPR 10 OHM +-5% 1/4W FENGHUA	
	R917	061G1206100 JT	RST CHIPR 10 OHM +-5% 1/4W TZAI YUAN	
	R817	061G12061001FF	RST CHIPR 1KOHM +-1% 1/4W FENGHUA	
	R817	061G12061001FT	RST CHIP R 1KOHM +-1% 1/4W	
	R903	061G1206101 JF	RST CHIPR 100 OHM +-5% 1/4W FENGHUA	
	R903	061G1206101 JT	RST CHIPR 100 OHM +-5% 1/4W TZAI YUAN	
	R908	061G1206103 JF	RST CHIPR 10KOHM +-5% 1/4W FENGHUA	
	R911	061G1206103 JT	RST CHIPR 10KOHM +-5% 1/4W TZAI YUAN	
	R913	061G1206109 JF	RST CHIPR 1 OHM +-5% 1/4W FENGHUA	
	R913	061G1206109 JT	RST CHIPR 1 OHM +-5% 1/4W TZAI YUAN	
	R923	061G1206221 JF	RST CHIPR 220 OHM +-5% 1/4W FENGHUA	
	R812	061G1206308 JF	RST CHIPR 0.3 OHM +-5% 1/4W FENGHUA	
	R813	061G1206308 JT	RST 1206 0.3R 5% 1/4W	
	R902	061G1206914 JT	RST CHIPR 910 KOHM 1/4W TZAI YUAN	
	R901	061G1206914 JY	RST CHIPR 910 KOHM +-5% 1/4W YAGEO	
	C812	065G080510131J A	CAP CHIP 0805 100PF J 50V NPO	
	C812	065G080510131J F	CAP CHIP 0805 100PF J 50V NPO	
	C812	065G080510131J Y	CAP CHIP 0805 100P 50V NP0 +/-5%	
	C803	065G080510232K A	MLCC 0805 1NF 50V X7R +/-10% SAMSUNG	
	C906	065G080510232K F	CAP 0805 1000PF 10% 50V X7R	
	C914	065G080510232K Y	CAP CHIP 0805 1N 50V X7R +/-10%	
	C915	065G080510332K A	CAP CHIP 0805 10NF K 50V X7R	
	C802	065G080510332K F	CAP 0805 10NF K 50V X7R	
	C915	065G080510332K Y	CAP CHIP 0805 10N 50V X7R +/-10%	
	C814	065G080510432K 3	CAP CHIP 0805 100N 50V X7R +/-10%	
	C924	065G080510432K A	CAP CHIP 0805 0.1UF K 50V X7R	
	C814	065G080510432K F	CAP CHIP 0805 0.1UF K 50V X7R	
	C912	065G080510432K Y	CAP CHIP 0805 100N 50V X7R +/-10%	
	C806	065G080522432K 3	CAP CHIP 0805 220N 50V X7R +/-10%	
	C807	065G080522432K A	CAP 0805 220NF 10% 50V X7R	
	C807	065G080522432K Y	CAP CHIP 0805 220N 50V X7R +/-10%	
	C805	065G080522512K M	CAP 0805 2.2UF 10% 16V X7R	
	C927	065G080547332K F	CAP CHIP 0805 47NF K 50V X7R	
	C927	065G080547332K Y	CAP CHIP 0805 47N 50V X7R +/-10%	
	C811	065G080547432K A	CAP CHIP 0805 0.47UF K 50V X7R	
	C810	065G080547432K M	CAP 0805 470NF 10% 50V X7R	
	C810	065G080547432K T	CAP CHIP 0805 0.47UF K 50V X7R	
	C916	065G120622272K F	CAP 1206 2.2NF 10% 500V X7R	
	C929	065G120622272K Y	CER 1206 2N2 500V X7R 10%	
	D801	093G 60S509 T	SCHOTTKY BR310 T/R 3A 100V SMB	
	D801	093G 60S907 T	SCHOTTKY B3100B 3A 100V SMB	
	T901	S80GL22T3V6	XFMR 490UH 7% 4UH EER28 --	
	E055	055G 23524	WELDING FLUX WITHOUT PB	
	Q901	057G 667923	MOSFET SMK0765F 7A 650V TO-220FP	
	Q901	057G 667941	MOSFET P0765ATF 7 650 TO-220F	
	HS1	090G6064 1	HEAT SINK	
	D906	093G 60526	SCHOTTKY MBRF1060CT ITO-220AB	
	D906	093G1506 2	SCHOTTKY FMW-2156 15A 60V TO-220	

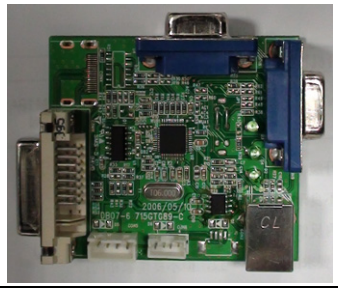
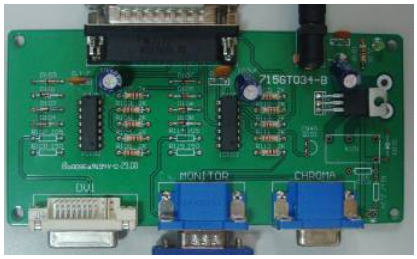
	HS3	Q90G6084 3	HEAT SINK	
	U903	056G 158 10 T	DC/DC AS431AZTR-E1 150MA 40V TO-92	
	U903	056G 158504AME	IC AME431BAJATB25Z AME	
	Q904	057G 530503 T	2SD1207T	
	Q904	057G 761 16	TRA KTD1028 KEC	
	R915	061G 17222052T TZ	RST CFR 22R 5% 1/4W	
	R915	061G 17222052T XZ	RST CFR 22 OHM +-5% 1/4W XIANZHENG	
	R906	061G152M10452T HX	RST MOF 100K 5% 2WS	
	R906	061G152M10452T SY	RST MOFR 100KOHM +-5% 2WS FUTABA	
	R904	061G152M25152T HX	RST MOF 250R 5% 2W	
	R904	061G152M25152T SY	RST MOF 250R 5% 2W	
	R924	061G152M47852T SY	RST MOFR 0.47 OHM +-5% 2WS FUTABA	
	C911	065G 2K152 2T6213	CAP CER 1.5NF 10% 2KV Y5P	
	C911	065G 2K152 2T6921	CAP CER 1500PF K 2KV Y5P	
	C816	065G517K102 2T6921	CAP CER 1000PF K 500V Y5P	
	C920	067G 2046812KT	CAP CS 680UF 20% 10V 8*11 3900MA GP1A6	
	C920	067G 2046812LT	CAP CS 680UF 20% 10V 8*11.5 2000 HR 3900	
	C809	067G 4153309KT	EC 33UF 20% 100V 8*12 ED	
	C801	067G215D3314KT	EC 330UF 20% 25V 10*12 ED	
	C922	067G215S4713KT	EC 470UF 20% 16V 10*13 ED 4000 HR 1030MA	
	C922	067G215S4713LT	EC 470UF 20% 16V 10*12.5 4000 HR	
	C913	067G215Y4707KT	EC 47UF 20% 50V 6.3*11MM EG	
	C913	067G215Y4707LT	LOW ESR EC 47UF 50V M 6.3*11MM	
	FB902	071G 55 29	FERRITE BEAD	
	F901	084G 56 4 B	FUSE 4A 250V	
	F901	084G 56 4W	FUSE 4A 250V	
	ZD901	093G 3916352T	ZD TZX22B	
	ZD901	093G 3916826T	ZENER MTZJ T-77 22B 22V 0.5W DO-34	
	D903	093G 6026T52T	CTIFIER DIODE FR107	
	D907	093G 6451652T	1N4148	
	D907	093G 6452452T	SWITCHING 1N4148-B4006 0.2A 100V DO-35	
	D904	093G110050152T	DIODE PR1007 1A/1000V 500NS DO-41	
	C801	367G215X3314LT	EC 330UF 20% 25V 10*12.5	

Note: Take the 246V5LAB/00 BOM for example, the parts information listed below are for reference only, and are subject to change without notice. Please go to http://cs.tpv.com.cn/hello1.asp for the latest information

Item	location	PCM Codes	Description	Remark
1	FQ105	A34G3175AFLB2B0100	BEZEL	
2	FQ411	A33G144400201C0100	LENS	
3	E750	750GBU240H1D23N000	LCD M240HW01 VD0A XM AUO	
4	FQ003	PLPCCE514UQGZ	POWER BOARD ASSY	
5	FQ124	Q15G13953010FJ	MAINFRAME	
6	FQ004	KEPCCPHQ1	KEY BOARD ASSY	
7	FQ144	A33G1366ANG 1L0100	KEY	
8	FQ108	A34G3178AFL01B0100	STAND_BUTTON	
9	FQ109	A34G3179AFL01B0100	BASE	

10	FQ143	Q15G14781010AJ	BKT_BASE	
11	FQ107	A34G3177AFL01B0100	STAND_TOP	
12	FQ104	Q37G0318101FHQ	HINGE ASSY	
13	FQ106	A34G3176ADT03B0100	REAR_COVER	
14	FQ002	CBPCBN2PHQM	SCALER BOARD ASSY	
15	SP01	378G0025500YAB	SPEAKER 4 OHM 2.5W 40X20 50mm NO	
16	FQ016	HJPFVQA1	HEAD PHONE JACK BOARD ASSY	
	E08904	089G 17356G553	AUDIO CABLE 1800MM	
	E08902	089G 725CAA 2G	D-SUB CABLE 1500MM	
	E08901	089G404A15N CX	AC POWER CORD 1500MM	
	ECN804	095G8014 6D946	HARNESS 6P-6P(CI1406S) 220mm	
	ECN408	395G179X30NF65	FFC CABLE 30PIN 212MM 1.0MM	
	ECN404	395G801407M648	HARNESS 7P(2008)-6P(1253) 360mm	
	ECN683	395G802204XF04	HARNESS 4P-2P+2P 320/20	
	FQ205	705GQDCS044252	EPS ASSY	
		Q44GK0921010YD	CUSHION-T	
		Q44GK0922010YD	CUSHION-B	
	FQ202	Q44GK09281302A0PHX	ARTWORK CARTON	
	FQ218	Q45G990160940900X1	PROTECT BAG	
	FQ002	756GQCCB0PH1310000	SCALER BOARD ASSY(CBPC*)	
	U402	100GPNAE003NT1	MCU ASSY(056G2233 37)	
	X401	093G 22 51 YC	YC-49S-12M30PF30PPM25ohm 12M 30ppm 30PF	
	U702	056G 563204 C	HF LDO G960PT43U 1A 3.3V TO-252	
	U703	056G 563206	LDO AP2114H-1.8TRG1 1A 1.8V SOT-223	
	U102	056G 662 48	ESD PROTECT AZC399-04S.R7G SOT23-6L	
	U105	056G1133 34 1	EEPROM M24C02-RMN6TP 2Kb SO-8	
	U403	056G1133 56	M24C16-WMN6TP	
	U401	356G0562100B14	SCALER NT68660BUFG/B TQFP100	
	U682	056G 662 15	ESD PROTECT AZ2025-04S SOT23-5L	
	U902	056G 139 8	Photo-Coupler PS2561DL1-1 CTR Q100~200%	
	T901	380GL32P108N00	X'FMR 430uH 10% 12uH Max ERL28 YUVA-204	
	U901	056G 379190	AC/DC CONVERTER LD7750RGR SOP-7	
	U801	056G 700 11	LED DRIVER OZ9998BGN-A1-0-TR SOP-16	
	U601	356G0616024153	AUDIO APA2603AKI-TRG 2.8W SOP-24 --	
	U903	056G 563355	Shunt Regu TL431G-A-TA TO-92 42V 150mA	
	F902	084G 56 4 C	FUSE 4A 250V MST 4A 250V	

Service Kit

Description	Part No.	Picture
ISP TOOL	715GT089-B/C	
EDID TOOL	715GT034-B	

17. General Product Specification

FOREWORD

This specification describes a multi-scan color TFT LCD monitor.
All optical characteristics are determined according to panel specification after warming up longer than 30 minutes.

PRODUCT PROFILE

EDID header

Data for EDID & .inf file

Philips 246V5

1	User visible strings on .inf file	Philips 246V (24inch Wide LCD MONITOR 246V5)
2	Manufacturer ID (EDID data)	PHL
3	Product ID, "xxxx" 4 codes	MSB(byte 12): C0
		LSB (byte 11): B3
4	maximum resolution	1920x1080
5	Horizontal Frequency Range	30~83 KHz
6	Vertical Frequency Range	56~76Hz
7	Monitor Name (13 characters max.)	Philips 236V5

236V5 :

AUO

Type NR. : M240HW01 VD
Resolution : 1920 x 1080 (WSXGA+)
Outside dimensions : 556.0(H)x323.2(V)x11.5(D).
Pitch (mm) : 276.75 (per one triad) ×276.75
Color pixel arrangement : RGB vertical stripe
Display surface : Anti-Glare, 3H
Color depth : 16.7M (6 bit Hi-FRC)
Backlight : LED
Active area (W x H) : 509.184(H) x 286.416(V) mm
View angle (CR=10) : =170 for Right/Left (Typ)
: =160 for Up/Down (Typ)
Contrast ratio : 1000:1 (Typ)
White luminance : 250(Typ.)
Color gamut : >=72%
Gate IC : N/A
Source IC : N/A
Response time : Tr + Tf <=5 ms (Typ)
Vertical frequency range : 50~75Hz

Scanning frequencies

Hor. : 30 – 83 K Hz
Ver. : 56 - 76 Hz
Video dot rate: < 210 MHz for VGA and < 170 MHz for DVI, warning message must be displayed while over 165 MHz (supplier to provide accurate scaler bandwidth number)
Power input: 90-264 V AC, 50/60 ± 2 Hz
Functions:
(1) D-SUB analog R/G/B separate inputs, H/V sync separated, Composite (H+V) TTL level,
(2) SOG sync: a. Sync select: H + V
b. Sync select: SERR
(3) DVI digital Panel Link TMDS inputs, HDCP supported.

Ambient temperature:

0 °C - 40 °C

Power Range

FULL RANGE POWER SUPPLY 90 – 264 VAC

ELECTRICAL CHARACTERISTICS

Scaler should be capable of below items.
1) Scaler must support color engine for Image enhancement feature (SmartImage)
2) Scaler must have enough memory to support PerfecTune feature and Philips OSD
3) Scaler must support SmartContras,500K:1 DCR preferred
4) VGA signal Auto adjustment:

Monitor automatically adjusts and optimizes resolution and frequency based on input signal defined by “Source” function. “NO VIDEO INPUT” message to be displayed on screen while no signal is detected. Monitor will automatically optimize resolution and frequency whenever connected to different signal source. When press the “Auto”, the screen also show a status bar. During adjustment period, a status bar will show on screen from 0% to 100% to indicate the progress of adjustment.

Auto auto adjustment : new timing & preset modes (non- factory preset mode) should do auto adjustment at first time detection and save the related date into memory.

Resolution ≦ 800x600 , do not do auto auto adjustment.

Interface signals

1). D-Sub Analog

Input signal : Video, Hsync., Vsync

Video : 0.7 Vp-p, input impedance, 75 ohm @DC

Sync. : Separate sync TTL level , input impedance 2.2k ohm terminate

Hsync Positive/Negative

Vsync Positive/Negative

Composite sync TTL level, input impedance 2.2k ohm terminate (Positive/Negative)

Sync on green video 0.3 Vp-p Negative (Video 0.7 Vp-p Positive)

2). DVI-D Digital

Input signal: Single TMDS link (Three channels: RX0-/+, RX1-/+, RX2-/+)

TMDS channel:

- Carries audio, video and auxiliary data.
- Signaling method: According to DVI 1.0 specification. Single-link (Type A HDMI).
- Video pixel rate: 25 MHz to 165 MHz (Type A)
- Pixel encodings: RGB 4:4:4, YCbCr 4:2:2, YCbCr 4:4:4.
- Audio sample rates: 32 kHz, 44.1 kHz, 48 kHz
- Audio channels: **2.**

DDC channel:

- Allows source to interrogate capabilities of sink.
- I²C signaling with 100 kHz clock.
- E-EDID data structure according to EIA/CEA-861D and VESA Enhanced EDID.

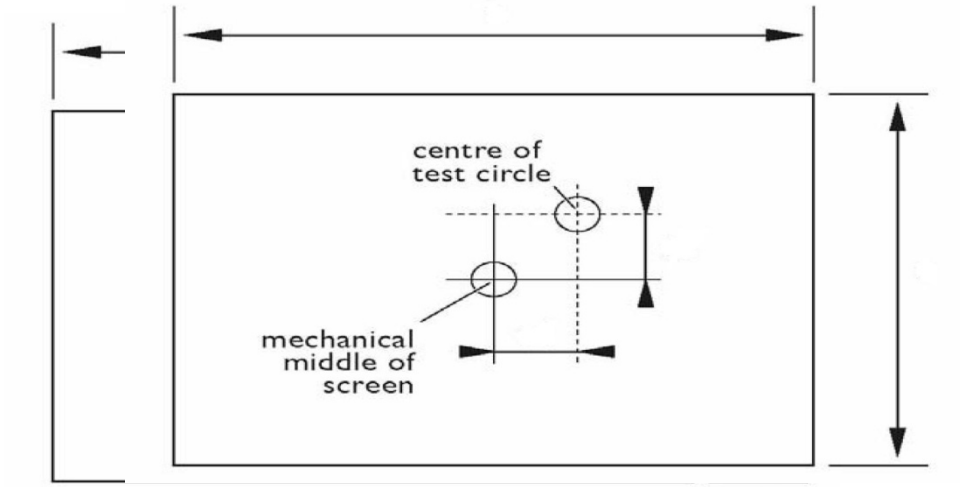
Content protection:

According to High-Definition Content Protection (HDCP) Specification 1.10.

HDMI video input should support timing defined in **CEA 861-D** specification with extended EDID blocks

Video Timing Support :

Format	Resolution	Type	Vertical frequency
480i	720 x 480	SD	60Hz
480p	720 x 480	SD	60Hz
576i	720 x 576	SD	50Hz
576p	720 x 576	SD	50Hz
720p	1280 x 720	HD	50Hz , 60Hz
1080i	1920 x 1080	HD	50Hz , 60Hz
1080p	1920 x 1080	HD	24Hz, 25Hz, 30Hz, 50Hz, 60Hz



- Picture centering - H & V ≤ 0.5 %. (for TV, 480i/p, 576i/p, 720p, 1080i/p)

Over Scan -

1. RGB signal : OFF (no this function)
2. YUV signal : (Video timming) ON (Be use and set ON/OFF)
   (But only 1080p define is OFF)

PC timing: to follow PC timing table

TMDS/+5V/DDC/HPD/CEC Signals

(TMDS Signal)

Termination Supply Voltage AV_{CC} : 3.3V±5%

Differential Voltage Level : 150mV – 1200mV

Common Mode Voltage : (AV_{CC} – 300mV) – (AV_{CC} – 37.5mV)

Differential Sensitivity : 150mVp-p

Maximum differential Voltage : 1560mVp-p

(+5V Power)

Power Supply Voltage : 4.7V – 5.3V

Maximum Current Consumption : 50mA

(DDC Signal)

Maximum Capacitance : 50pF

(HPD Signal)

High Voltage Level : 2.4V – 5.0V

Low Voltage Level : 0 – 0.4V

Output Resistance : 1KΩ±20%

(CEC Signal, not supported by this model)

Input Low Voltage : < 0.8V

Input High Voltage : > 2.0V

Output Low Voltage: 0 – 0.4V

Output High Voltage: 2.5V – 3.6V

Pull-up Resistor: 2.7KΩ±10%

Leakage Current in standby/off : < 1.8uA

Maximum Capacitance: 100pF

3). Audio in (option , refer to Quick specification table)
Input signal: 1Vrms
Loudspeaker: stereo of RMS Power
Frequency range: (WAIT FOR SUPPLIER INPUT)
Headphone connection will mute speaker

7). HDMI audio out (headphone): (option, refer to Quick specification table)
Stereo, > 50mVrms for headphone of 32Ω

Interface

D-Sub Cable

Length : Please refer to M3 cable bundle summary file
Fix with monitor when packing, with transplant pin protective cover.

Connector type : D-Sub male with DDC2B pin assignments.
Blue connector thumb-operated jack screws

Pin assignments:

PIN No.	SIGNAL
1	Red
2	Green/ SOG
3	Blue
4	Sense (GND)
5	Cable Detect (GND)
6	Red GND
7	Green GND
8	Blue GND
9	DDC +3.3V or +5V
10	Logic GND
11	Sense (GND)
12	Bi-directional data
13	H/H+V sync
14	V-sync
15	Data clock

DVI Cable

The input signals are applied to the display through DVI-D cable.
Length : Please refer to cable bundle summary file
Connector type : DVI-D male with DDC-2B pin assignments
White connector thumb-operated jackscrews
With transplant pin protective cover.

Pin Assignment:

Pin No.	Description
1	T.M.D.S. data2-
2	T.M.D.S. data2+
3	T.M.D.S. data2 shield
4	No Connect
5	No Connect
6	DDC clock
7	DDC data
8	No Connect
9	T.M.D.S. data1-
10	T.M.D.S. data1+
11	T.M.D.S. data1 shield
12	No Connect
13	No Connect
14	+5V Power
15	Ground (for +5V)
16	Hot plug detect
17	T.M.D.S. data0-
18	T.M.D.S. data0+
19	T.M.D.S. data0 shield
20	No Connect
21	No Connect
22	T.M.D.S clock shield
23	T.M.D.S. clock+
24	T.M.D.S. clock-

HDMI cable

Length : Please refer to cable bundle summary file
Connector type : DisplayPort 1.1 External cable-connector

Pin Assignment:

Pin No.	Description
1	Lane 0 (positive)
2	Ground
3	Lane 0 (negative)
4	Lane 1 (positive)
5	Ground
6	Lane 1 (negative)
7	Lane 2 (positive)
8	Ground
9	Lane 2 (negative)
10	Lane 3 (positive)
11	Ground
12	Lane 3 (negative)
13	connected to Ground
14	connected to Ground
15	Auxiliary Channel (positive)
16	Ground
17	Auxiliary Channel (negative)
18	Hot Plug Detect
19	Return for Power
20	Power for connector

3.2.4 3.5mm Audio Jack cable

Length : Please refer to cable bundle summary file
Connector type : 3.5mm stereo audio jack (TRS) connector

Timing requirement

Factory Preset mode definition:

1. Perfect FOS while presenting those timings.
2. Will specify those timing in User's Manual

Preset mode definition:

1. Need to support those timings.
2. Perfect FOS after auto adjustment.

User mode

1. Can save those timing that not in Preset mode and can be showed (not over scaler or Panel spec.)
2. It needs to reserve the 10 timings space in memory size.

Mode storing capacity

Factory preset modes : Refer to Timing table_
preset modes : Refer to Timing table
User modes : Refer to Timing table
Timing pixel clock over H/W limitation do not support.

1. Factory preset modes and preset modes are defined in the enclosed timing table file


246V5_LCD MTR Product Identification

OSD/Keypad functions

ITEM			
1	OSD/keypad definition	 MMD_OSD_Function definition _FW SP  246V5_LCD MTR Product Identification	Reset - No: Exit Yes: Auto adjustment for displaying timing mode and recall factory preset
2	OSD Translation	 246V5 OSD Translation V01_2012	English, Spanish, French, German, Italian, Portuguese, Russian, S. Chinese, Turkish, Dutch, Swedish, Finnish, Polish, Czech, Korean, T. Chinese, Japanese, Hungarian, Greek, Ukrainian, Brazil Portuguese(21)
3	Power On logo	 Philips_Logo_1920x1080.bmp	Power On Logo: Power On → Show up Philips logo 3 seconds → Change to input signal. This picture is reference only. The official drawing will send out by PM.

Horizontal scanning

Sync polarity	: Positive or Negative
Scanning frequency	: 30 – 83 K Hz

PS : Item 3.4 and 3.5 , as far as possible to be display (another Horizontal and Vertical)

Vertical scanning

Sync polarity	: Positive or Negative
Scanning frequency	: 56 - 76 Hz

Power input connection

Power cord length	:please refer to M3 cable bundle summary file
Power cord type	: 3 leads power cord with protective earth plug.

Power management

The monitor must comply with the Microsoft On Now specification, and meet EPA requirements.

Mode	HSYNC	VSYNC	Video	Pwr-cons.	Indication	Rec. time
Power-On	On	On	Active	19" <25W (typ.),<30W(max.) 23" <37W (typ) 58W(Max)	White LED	--
Standby (Sleep mode)	Off	Off	Blanked	< 0.5W	Blinking white LED Period 3ec on, 3sec off	Note 1 Note 2
DC Power Off			N/A	< 0.5W	LED Off	

PS: SmartImage Economy mode: < EPA5.0 spec. (Brightness=20%)
EPA 5.0 spec. as below

Panel size	Native resolution	Max. Power (W)
16"(16:9)	1366x768	14.5
17"(4:3)	1280x1024	21.9
17"(16:10)	1440x900	21.2
18.5"(16:9)	1366x768	16.6
19"(16:10)	1440x900	22.7
19"(4:3)	1280x1024	23.6
20"(16:10)	1680x1050	28
20"(16:9)	1600x900	24.5
22"(16:10)	1680x1050	30
22"(16:9)	1920x1080	31.6
23"(16:9)	1920x1080	32.9
24"(16:10)	1920x1200	36.8
24"(16:9)	1920x1080	34

Note 1 :

a. D-SUB mode,
Normal node to Power saving mode: 15/s (typ.), Max 18s
Power saving mode to Normal: 4/s(typ.)

b. DVI mode,
Normal node to Power saving mode: 15/s(typ.), Max 18s
Power saving mode to Normal: 3.8s(typ.)

Note 2 :

Measurement power Saving.


measurement of power saving.pdf


Power consumption measure the way -090

VGA Display identification

In accordance with VESA Display Channel Standard Ver.1.0 and DDC 2B capability

DVI Display identification

In accordance with DVI requirement (DDWG digital Visual Interface revision 1.0)

use DDC-2B, DDC/CI, and EDID V1.3

DDC /CI Support and Smart Manage/Control

In accordance with VESA DDC/CI and MCCS ver.2.0, the monitor should be workable with , Philps SmartManage, SmartControl V6.1, and Protrait Display Tune at least.

Hot-key definition

PerfectTune II **(formerly FGA, FACTORY GAMMA Alignment)**

A. PerfectTune must be done after warming 30 minutes at least.
B. PerfectTune must be performed after Auto Color.
C. PerfectTune must be conducted through DVI or scaler embedded patterns.
D. Delta E < 2.5

audio

3.17.1 Frequency Response

The amplifier and speaker combination shall provide a frequency response of 300 Hz to 20 kHz, with +/- 3 dB variation over the entire response range.

3.17.2 Total Harmonic Distortion

Total harmonic distortion shall be limited to 5% THD at the maximum wattage speaker rating specified in section 1.3, at 1 kHz, when the input is 1.0Vrms.

3.17.3 Power Handling

Each speaker transducer shall accept up to the specified Wattage of audio power without damage or exceeding the frequency response and total harmonic distortion specifications.

3.17.4 Audio Amplifier

The amplifier shall provide two channels of audio up to 1.5 Watts per channel from 100 Hz
to 20 kHz, based upon an audio signal input of 1.0V RMS per channel.

3.17.5 Volume Control

For monitors with a manual volume control, the direction (at the bottom) of the bezel volume control is “-“ key for Minimum volume and “+” key for Maximum volume. The default shipping position of the Volume Control shall be approximately 90%.

3.17.6 Speaker Sensitivity

The speakers shall support a minimum sensitivity of 75 dB +/- 3 dB at 2W/1m at 1 kHz.

3.17.7 Maximum Audio Card Output

The monitor audio amplifier shall accept a maximum input voltage of 1.5 Vrms and meet the following requirements at the maximum monitor volume setting:

1. The ratings of the audio amplifier may not be exceeded.
2. The ratings of the speakers may not be exceeded.
3. There must not be any clipping of the audio amplifier output signal.

Voltage dividers may be used to reduce the input signal level.

3.17.8 Monitor Audio Amplifier Input Impedance

The monitor audio amplifier shall have minimum 10K Ohm AC input impedance

VISUAL CHARACTERISTICS

Test conditions

Unless otherwise specified, this specification is defined under the following conditions.

(1) Input signal : As defined in 3.3, follow panel resolution, signal sources must have 75 ohm output impedance.

(2) Luminance setting : controls to be set to 250 nits(except 166V3 220 nits) with full screen 100 % duty cycle white signal

(3) Warm up: more than 30 minutes after power on with signal supplied.

(4) Ambient light: 400 -- 600 lux.

(5) Ambient temperature: 20 ± 5 °C

Brightness

Follow Panel specification.

Color temperature adjustment

There are three factory preset white color 9300K, 6500K, sRGB.

Apply full white pattern, with brightness in 100 % position and the contrast control at 50 % position.

The 1931 CIE Chromaticity (color triangle) diagram (x ,y) coordinate for the screen center should be:

Product specification

CIE coordinates	(x,y)	
9300K	x = 0.283 ± 0.02 y = 0.297 ± 0.02	PerfecTune II
6500K/sRGB	x = 0.313 ± 0.02 y = 0.329 ± 0.02	PerfecTune II
sRGB	x = 0.313 ± 0.02 y = 0.329 ± 0.02	PerfecTune II

Production alignment spec.

CIE coordinates	(x,y)	
9300K	x = 0.283 ± 0.006	PerfecTune II

	y = 0.297 ± 0.006	
6500K/sRGB	x = 0.313 ± 0.006 y = 0.329 ± 0.006	PerfecTune II
sRGB	x = 0.313 ± 0.006 y = 0.329 ± 0.006	PerfecTune II

Quality Inspection specification:

CIE coordinates	(x,y)	
9300K	x = 0.283 ± 0.030 y = 0.297 ± 0. 030	Note 1
6500K/sRGB	x = 0.313 ± 0. 030 y = 0.329 ± 0. 030	
sRGB	x = 0.313 ± 0. 030 y = 0.329 ± 0. 030	

Note 1：Test in 9 points pattern，9300K color temperature x-shift or y—shift must be less than 15 at center，the x-shift or y—shift in 9 points should be judged by panel Spec.

MECHANICAL CHARACTERISTICS

Cosmetic -

Philips ID

Mechanical data files -

ProE files required

Location of Philips logo -

Per Philips make-up sheet

Gap between panel and front bezel

15"~19": <0.8mm, 19"W:<1.0mm, 20W~23"W: <1.2mm, 24"W: <1.4mm

Location of Control icons -

Location of Control icons -

Per Philips Graphic sheet

Color for resin/paint -

Per Philips make-up sheet

Fire enclosure request

Shielding Cover should fulfill international standard

Resins

- RoHS required
- WEEE required.
- Resin type/selection refer to Project Book Section 7.2 Plastic material.

If paint is used

- RoHS required
- WEEE require
- If new painting type need to implement, refer to UN-D 1235.

Plastic mold tooling

- Tooling to be designed to minimize cosmetic defects induced by molding process (sink, blush, weld lines, gate marks, ejector marks, etc.). Refer to “TYV61-90007”.
- Painting to cover up cosmetic defects due to molding is strongly discouraged.
- China RoHS mark requested.

Plastics flammability

- All Plastics to be Flame Retardant UL 94-HB or Better.
- Base / Pedestal to be Flame Retardant UL 94-HB.
- All major plastic parts (bezel, back cover) need to be molded from same resin.
- Plastic resin type selection should be referred to “plastic-Philips Pool monitor”.

Texture/Glossing of housing

- The texture area and texture no should follow Philips make-up sheet.
- The exterior surfaces shall have a uniform texture.
- Philips must approve the mold texturing.
- Detail document for texture refer to “UN-D249”, “UN-D 600”.
- < = 20 gloss units

Tilt and swivel base

- Tilt angle : -5 ° +2/- 0 ° (forward)
  +20 °+ 0/- 3 ° (backward)
- Swivel angle : nil
- High Adjustment : nil
- Portrait Display : nil

Kensington Lock

- Must meet Kensington_slot.spec “TYE-M0004”.
- MMD request metal plate in Kensington hole.

Product dimension / Weight (Refer to Philips approved SHT 191/SHT560)

Transportation

Transportation standards refer to UAN-D1534/00/01/02.

Transportation packages

- Net weight Packaging and wrapping shall be sufficient to protect the product against damage or loss during shipment from the supplier to the destination specified in the purchase order. All packaging materials are subject to test and evaluation per UAN-D1534/00/01/02.
- The cushion material shall be constructed using EPS material.
- The doggy hole is requested.

Transportation Test_

Overall tests refer to UAN-D1534/00/01/02.
Vibration, drop test should be performed at ambient temperature (20°C to 23°C) and relative humidity (40% to 65%).

A. Transportation test specification for all regions

- Package test
  1. Random Vibration test
  2. Drop test
  3. Cold Drop test (for design reference)
- Un-package test
  1. Half sine shock test (non operation)

B. Transportation test specification for China/India

- Package test
  1. Random Vibration test
  2. Drop test
  3. Cold Drop test (for design reference)
- Un-package test
  1. Sine vibration (operating)
  2. Half sine shock test (non operation)

Pallet / Container loading (Refer to Philips approved SHT 560)

Transportation standards refer to TYE-M0002 ,UAN-D1534 and UAW-0309.

- Air shipment -
- Sea container 20'(pallet/slip sheet)
- Sea container 40'(pallet/slip sheet)
- Sea container 40' High Cube (pallet/slip sheet)
- Land 45‘ Truck and Trailer (800X1200mm pallet)
- Land 45‘ Truck and Trailer (1000X1200mm pallet) for UK
- Truck shipment-

Transportation request for all regions except China/India

A. Air shipment

B. 20’/40’/40’HQ Container loading for WW

Transportation request for China and India

A. Container loading for China and India

B. Truck loading

Transportation request for EU

A. Land 45‘ Truck and Trailer (800X1200mm pallet)

B. Land 45‘ Truck and Trailer (1000X1200mm pallet) for UK

ENVIRONMENTAL CHARACTERISTICS

The following sections define the interference and susceptibility condition limits that might occur between external environment and the display device.

Susceptibility of display to external environment

Operating

- Temperature : 0 to 40 degree C
- Humidity : 80% max
- Altitude : 0-3658m
- Air pressure : 600-1100 mBAR

Storage

- Temperature : -20 to 60 degree C
- Humidity : 95% max
- Altitude : 0-12192m
- Air pressure : 300-1100 mBAR

Note: recommend at 5 to 35°C, Humidity less than 60 %

Transportation tests

Refer to 5.15.2

Display disturbances from external environment

According to IEC 801-2 for ESD disturbances

Display disturbances to external environment

TELEVISION/MONITOR SAFFTY GUIDELINES FOR THE PROFESSIONAL SERVICE TECHNICIAN

Safety Checks
After the original service problem has been corrected,a complete safety check should be made. Be sure to check over the entire set, not just the areas where you have worked. Some previous servicer may have left an unsafe condition,which could be unknowingly passed on to your customer. Be sure to check all of the following:

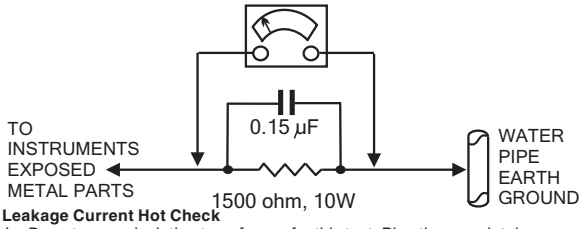
Fire and Shock Hazard
1. Be sure all components are positioned in such a way as to avoid the possibility of adjacent component shorts. This is especially important on those chassis which are transported to and from the service shop.
2. Never release a repaired unit unless all protective devices such as insulators, barries, covers, strain reliefs, and other hardware have been installed in accordance with the original design.
3. Soldering and wiring must be inspected to locate possible cold solder joints,solder splashes,sharp solder points, frayed leads, pinched leads, or damaged insulation (including the ac cord).Be certain to remove loose solder balls and all other loose foreign particles.
4. Check across-the-line components and other components for physical evidence of damage or deterioration and replace if necessary. Follow original layout,lead length, and dress.
5. No lead or component should touch a receiving tube or a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces or edges must be avoided.
6. Critical components having special safety characteristics are identified with ans by the Ref. No. in the parts list and enclosed within a broken line * (where several critical components are grouped in one area) along with the safety symbols on the schematic diagrams and/or exploded views.
7. When servicing any unit, always use a separate isolation transformer for the chassis Failure to use a separate isolation transformer may expose you to possible shock hazard, and may cause damage to servicing instruments.
8. Many electronic products use a polarized ac line cord (one wide pin on the plug.) Defeating this safety feature may create a potential hazard to the service and the user. Extension cords which do not incorporate the polarizing feature should never be used.
9. After reassembly of the unit, always perform an leakage test or resistance test from the line cord to all exposed metal parts of the cabinet. Also check all metal control shafts(with knobs removed), antenna terminals, handles, screws, etc. to be sure the unit may be safety operated without danger of electrical shock.

* Broken line

Implosion
1. All picture tubes used in current model receivers are equipped with an integral implosion system. Care should always be used, and safety glasses worn,whenever handling any picture tube. Avoid scratching or otherwise damaging the picture tube during installation.
2. Use only replacement tubes specified by the manufacturer.

X-radiation
1. Be sure procedures and instructions to all your service personnel cover the subject of X-radiation. Potential sources of X-rays in TV receivers are the picture tube and the high voltage circuits. The basic precaution which must be exercised is to keep the high voltage at the factory recommended level.
2. To avoid possible exposure to X-radiation and electrical shock, only the manufacturer's specified anode connectors must be used.
3. It is essential that the service technician has an accurate HV meter available at all times. The calibration of this meter should be checked periodically against a reference standard.
4. When the HV circuitry is operating properly there is no possibility of an x-radiation problem. High voltage should always be kept at the manufacturer's rated value-no higher - for optimum performance. Every time a color set is serviced, the brightness should be run up and down while monitoring the HV with a meter to be certain that the HV is regulated correctly and does not exceed the specified value. We suggest that you and your technicians review test procedures so that HV and HV regulation are always checked as a standard servicing procedure, and the reason for this prudent routine is clearly understood by everyone. It is important to use an accurate and reliable HV meter. It is recommended that the HV recorded on each customer's invoice, which will demonstrate a proper concern for the customer's safety.
5. When troubleshooting and making test measurements in a receiver with a problem of excessive high voltage, reduce the line voltage by means of a Variac to bring the HV into acceptable limits while troubleshooting. Do not operate the chassis longer than necessary to locate the cause of the excessive HV.
6. New picture tubes are specifically designed to withstand higher operathng voltages without creating undesirable X-radiation. It is strongly recommended that any shop test fixture which is to be used with the new higher voltage chassis be equipped with one of the new type tubes designed for this service. Addition of a permanently connected HV meter to the shop test fixture is advisable. The CRT types used in these new sets should never be replaced with any other types, as this may result in excessive X-radiation.
7. It is essential to use the specified picture tube to avoid a possible X-diation problem.
8. Most TV receivers contain some type of emergency "Hold Down" circuit to prevent HV from rising to excessive levels in the presence of a failure mode. These various circuits should be understood by all technicians servicing them, especially since many hold down circuits are inoperative as long as the receiver performs normally.

Leakage Current Cold Check
1. Unplug the ac line cord and connect a jumper between the two prongs of the plug.
2. Turn on the power switch.
3. Measure the resistance value between the jumpered ac plug and all exposed cabinet parts of the receiver, such as screw heads, antennas, and control shafts. When the exposed metallic part has a return path to the chassis, the reading should be between 1 megohm and 5.2 megohms. When the exposed metal does not have a return path to the chassis, the reading must be infinity. Remove the jumper from the ac line cord.



Leakage Current Hot Check
1. Do not use an isolation transformer for this test. Plug the completely reassembled receiver directly into the ac outlet.
2. Connect a 1.5k, 10w resistor paralleled by a 0.15uf. capacitor between each exposed metallic cabinet part and a good earth ground such as a water pipe, as shown above.
3. Use an ac voltmeter with at least 5000 ohms volt sensitivity to measure the potential across the resistor.
4. The potential at any point should not exceed 0.75 volts. A leakage current tester may be used to make this test; leakage current must not exceed 0.5 milliamps. If a measurement is outside of the specified limits, there is a possibility of shock hazard. The receiver should be repaired and rechecked before returning it to the customer.
5. Repeat the above procedure with the ac plug reversed.(Note: An ac adapter is necessary when a polarized plug is used. Do not defeat the polarizing feature of the plug.)

Picture Tube Replacement
The primary source of X-radiation in this television receiver is the picture tube. The picture tube utilized in this chassis is specially constructed to limit X-radiation emissions. For continued X-radiation protection, the replacement tube must be the same type as the original, including suffix letter, or a Philips approved type.

Parts Replacement
Many electrical and mechanical parts in Philips television sets have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. The use of a substitute part which does not have the same safety characteristics as the Philips recommended replacement part shown in this service manual may create shock, fire, or other hazards

WARNING : Before removing the CRT anode cap, turn the unit **OFF** and short the HIGH VOLTAGE to the CRT DAG ground.
SERVICE NOTE : The CRT DAG is not at chassis ground.