

Service
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Service

226V4LSB/00	226V4LSB2/10	226V4LAB/00
226V4LSB/01	226V4LSB2/57	226V4LAB/01
226V4LSB/25	226V4LSB2/62	226V4LAB/69
226V4LSB/69	226V4LSB2/69	226V4LAB/75
226V4LSB/71	226V4LSB2/70	
226V4LSB/73	226V4LSB2/71	
226V4LSB/75	226V4LSB2/75	
226V4LSB/93	226V4LSB2/93	
226V4LSB/94	226V4LSW/93	
226V4LSB/96		



Service Manual

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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 TRANSFORMER FOR THIS UNIT WHEN SERVICING

REFER TO BACK COVER FOR IMPORTANT SAFETY GUIDELINES

Revision List

Version	Release Date	Revision History
A00	Jun.29,2012	Initial release, Draft Version
A01	Jul.11,2012	Add new models 226V4LAB/00, 226V4LSB/00
A02	Jul.13,2012	Add new model 226V3LSB2571
A03	Jul.27,2012	Add new models 226V4LSB/00,226V4LSB/93
A04	Sep.14,2012	Add new model 226V4LSB2/93
A05	Oct.12,2012	Add new model 226V4LSB2/57(BOE)
A06	Oct.25,2012	Add new model 226V4LSB/93(TPV)
A07	Nov.02,2012	Add new model 226V4LSB/94(TPV&AUO&CMI)
A08	Nov.08,2012	Add new model 226V4LSB/94(TPV)
A09	Nov.28,2012	Add new models 226V4LSB/00(TPV),226V4LSB2/75(TPV&AUO)
A10	Dec.20,2012	Add new model 226V4LSB2/62(TPV)
A11	Dec.28,2012	Add new models 226V4LSB/00(CMI),226V4LSB2/93(TPV)
A12	Jan.10,2013	Add new model 226V4LSB/25(TPV)
A13	Feb.05,2013	Add new models 226V4LSW/93(TPV&AUO&CMI), 226V4LAB/00(TPV)
A14	Feb.21,2013	Add new model 226V4LSB2/70(TPV)
A15	Feb.28,2013	Add new models 226V4LSB/75(TPV&CMI), 226V4LSB2/93(AUO)
A16	Mar.14,2013	Add new model 226V4LSB2/62(TPV)
A17	Apr.17,2013	Add new model 226V4LSB2/69(TPV)
A18	Apr.25,2013	Add new models 226V4LSB/00(CMI), 226V4LSB2/93(TPV)
A19	May.08,2013	Add new models 226V4LSB/00(TPV),226V4LSB/25(CMI),226V4LSB/93(TPV)
A20	May.15,2013	Add new models 226V4LSB/73(TPV&CMI), 226V4LSB/93(TPV)
A21	May.23,2013	Add new models 226V4LAB/01(CMI),226V4LAB/75(TPV&CMI),226V4LSB/01(TPV&CMI),226V4LSB/69(TPV&CMI),226V4LSB/96(TPV&CMI),226V4LSB2/10(TPV)
A22	May.29,2013	Add new model 226V4LSB/00(TPV)
A23	Jun.04,2013	Add new models 226V4LSB/69(TPV),226V4LSB2/10(TPV)
A24	Jun.08,2013	Add new models 226V4LSB/69(TPV),226V4LSB2/71(TPV),226V4LSB2/93(TPV)
A25	Jun.19,2013	Add new models 226V4LAB/00(TPV),226V4LSB/71(TPV&AUO&CMI),226V4LSB/96(TPV),
A26	Jun.27,2013	Add new models 226V4LSB/01(TPV), 226V4LAB/01(TPV)
A27	Jul.12,2013	Add new model 226V4LAB/69(TPV)

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	21.5" W (54.6cm)
Aspect Ratio	16:9
Pixel Pitch	0.248 x 0.248 mm
Brightness	250 cd/m2
SmartContrast	10,000,000:1
Contrast Ratio (typ.)	1000:1
Response Time (typ.)	5ms
Optimum Resolution	1920 x 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)
Input Signal	Separate Sync, Sync on Green
Convenience	
User Convenience	226V4LA:  226V4L: 
OSD Languages	English, French, German, Spanish, Italian, Russian, Simplified Chinese, Portuguese, Turkish
Other Convenience	Kensington Lock
Plug & Play Compatibility	DDC/CI, sRGB, Windows 7/Vista/XP, Mac OSX, Linux
Stand	
Tilt	-5 / +20

226V4LA:

Power	
On Mode	21.45 W (typ.), 25.65 W (max.)
Sleep (Standby)	0.5W
Off	0.5W
Power LED indicator	On mode: White, Standby/Sleep mode: White (blinking)
Power Supply	Built-in, 100-240VAC, 50-60Hz

226V4L:

Power	
On Mode	21.5 W (typ.), 23 W (max.)
Sleep (Standby)	0.5W
Off	0.5W
Power LED indicator	On mode: White, Standby/Sleep mode: White (blinking)
Power Supply	Built-in, 100-240VAC, 50-60Hz

Dimension	
Product with stand (WxHxD)	514 x 388 x 213 mm
Product without stand(WxHxD)	514 x 320 x 48 mm
Weight	
Product with stand	3.34kg
Product without stand	3.00kg
Product with packaging	4.59kg
Operating Condition	
Temperature range (operation)	0°C to 40 °C
Temperature range(Non-operation)	-20°C to 60°C
Relative humidity	20% to 80%
Altitude	Operation: + 12,000ft (3,658m) Non-operation: + 40,000ft (12,192m)
MTBF	30,000hrs(LED)
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 (Only for selective models), UL/cUL, ISO9241-307
Cabinet	
Color	Black
Finish	Glossy/Texture

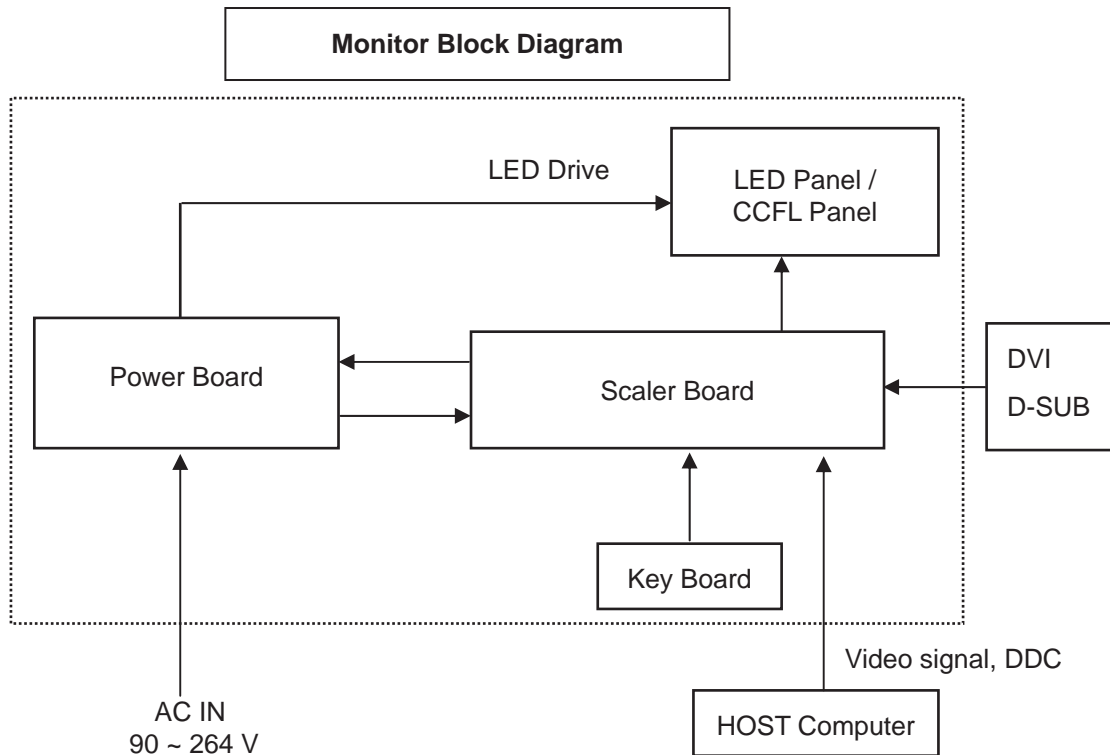
**Note:**

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 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.

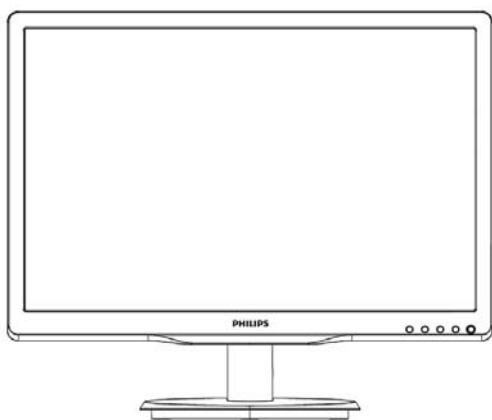
The other control knobs are located at front panel of the monitor. By changing these setting, the picture can be adjusted to your personal preference.

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

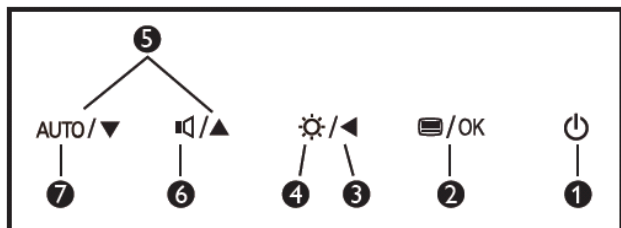
3.2 Control Buttons

1. Operating the Monitor

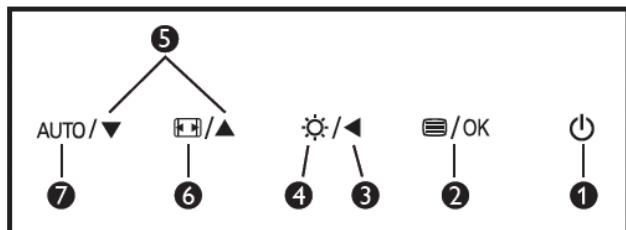
Front view product description



Model 226V4LA:

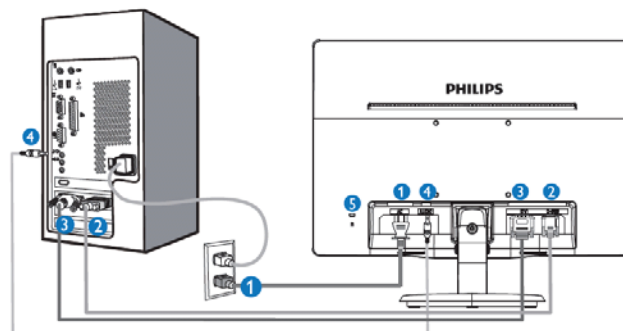


Model 226V4L:



1		Switch monitor's power ON and OFF.
2		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.

2. Connecting to your PC



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

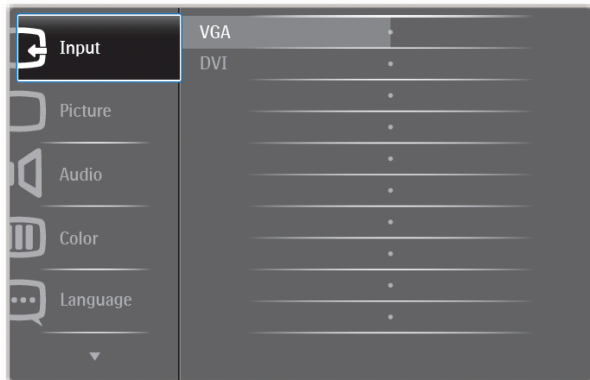
Connect to PC

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.

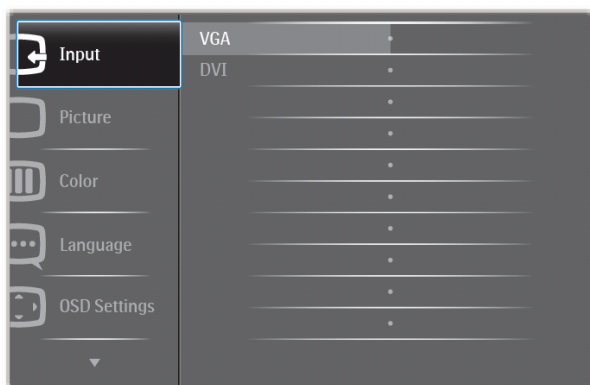
3.3 OSD Menu

On-screen Display (OSD) is 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:

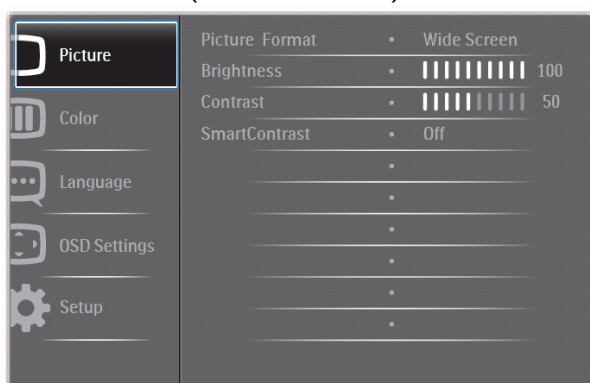
Model 226V4LA:



Model 226V4L:

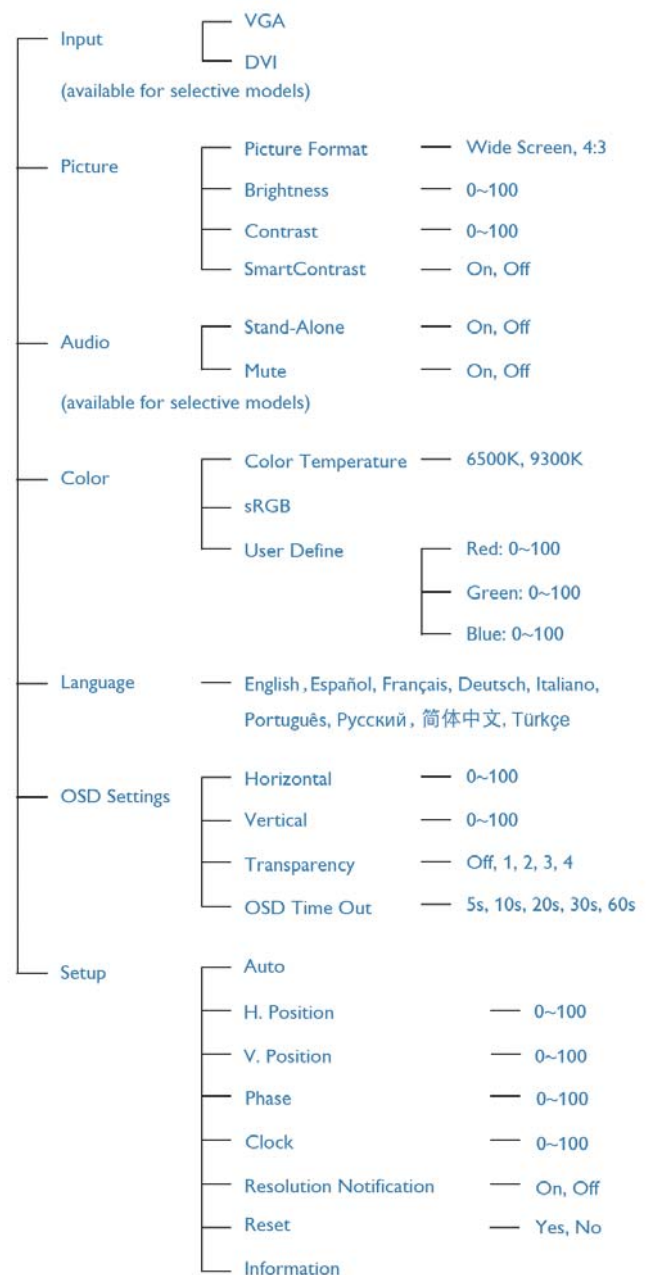


Model 226V4L (for 1A model):



The OSD tree

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.



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.

4. Input/ Output Specification

4.1 Input Signal Connector

D-sub Connector

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

DVI-D Connector

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

4.2 Resolution & Preset Modes

Maximum Resolution

1440 x 900 @ 60 Hz (analog input)

1440 x 900 @ 60 Hz (digital input)

Recommended Resolution

1440 x 900 @ 60 Hz (digital input)

H. freq (kHz)	Resolution	V. freq (Hz)
31.47	720x400	70.09
31.47	640x480	59.94
35	640x480	66.67
37.5	640x480	75
37.88	800x600	60.32
46.88	800x600	75
48.36	1024x768	60
60.02	1024x768	75.03
63.89	1280x1024	60.02
79.98	1280x1024	75.03
55.94	1440x900	59.89
70.64	1440x900	74.98

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

226V4LA:

Power Management Definition					
VESA Mode	Video	H-sync	V-sync	Power Used	LED Color
Active	ON	Yes	Yes	21.45 W (typ.)	White
Sleep (Standby)	OFF	No	No	0.5W (typ.)	White (blink)
Switch Off	OFF	-	-	0.5W (typ.)	OFF

226V4L:

Power Management Definition					
VESA Mode	Video	H-sync	V-sync	Power Used	LED Color
Active	ON	Yes	Yes	21.5 W (typ.)	White
Sleep (Standby)	OFF	No	No	0.5W (typ.)	White (blink)
Switch Off	OFF	-	-	0.5W (typ.)	OFF

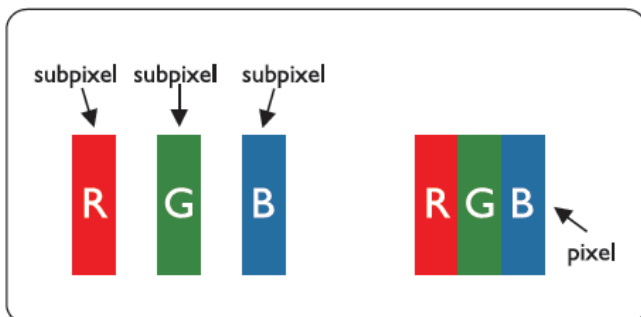


Note:

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

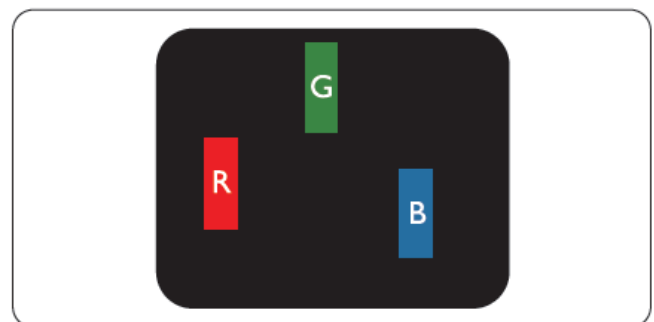
Pixel and sub pixel defects appear on the screen in different ways. There are two categories of pixel
Pixel and sub pixel defects appear on the screen in

different ways. There are two categories of pixel defects and several types of sub pixel defects within each category.

Bright Dot Defects

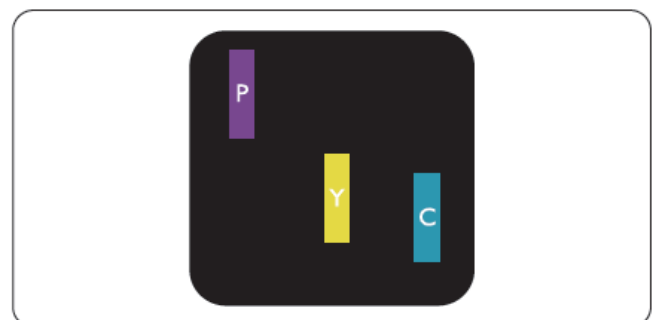
Bright dot defects appear as pixels or sub pixels that are always lit or 'on'. That is, a bright dot is a sub-pixel that stands out on the screen when the monitor displays a dark pattern. There are the types of bright dot defects.

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)

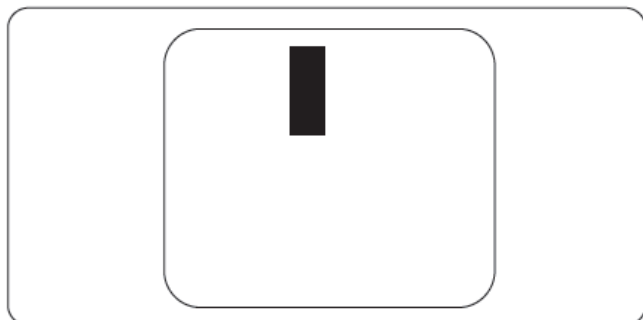


**Note:**

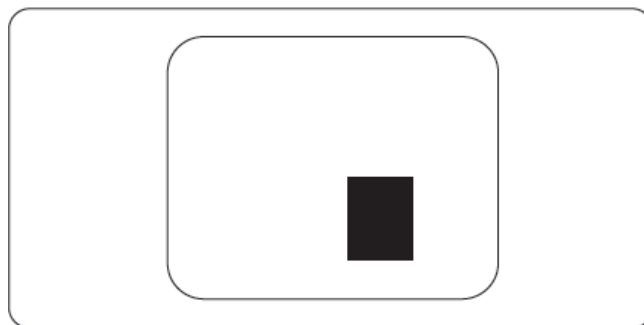
A red or blue bright dot must be more than 50 percent brighter than neighboring dots while a green bright dot is 30 percent brighter than neighboring dots.

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 Monitor 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 or 2 adjacent sub pixel defects = 1 dot defect.
- This monitor is ISO9241-307 compliant (ISO9241-307: Ergonomic requirement , analysis and compliance test methods for electronic visual displays)

4.4 Failure Mode Of Panel

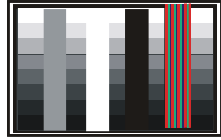
Quick reference for failure mode of LCD panel

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.

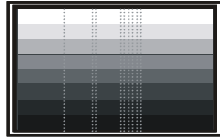
Failure description

Phenomenon

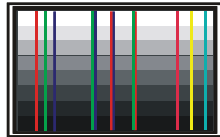
Vertical block defect



Vertical dim lines



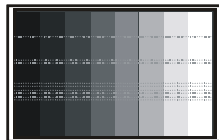
Vertical lines defect
(Always bright or dark)



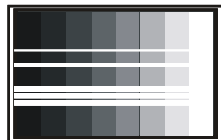
Horizontal block defect



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



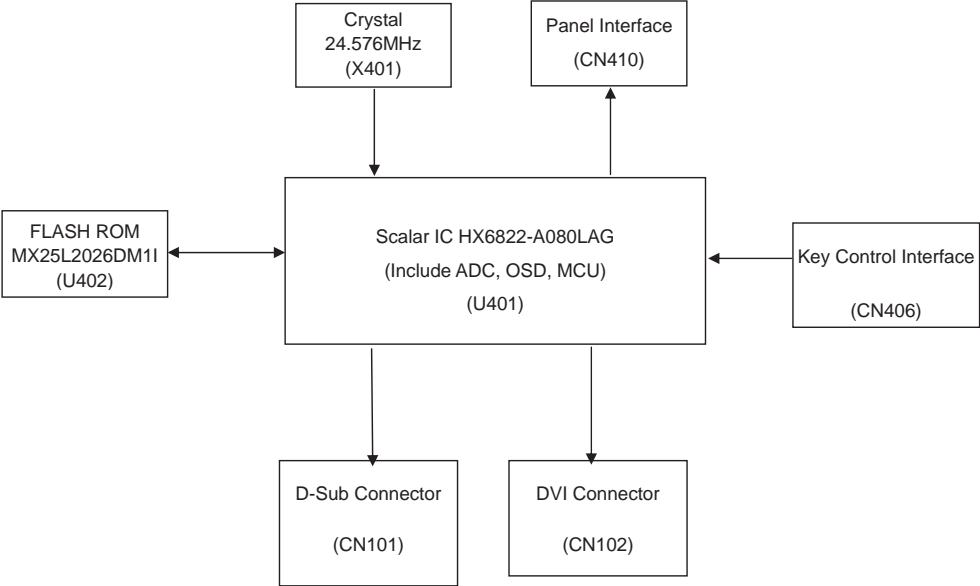
Back light un-uniformity



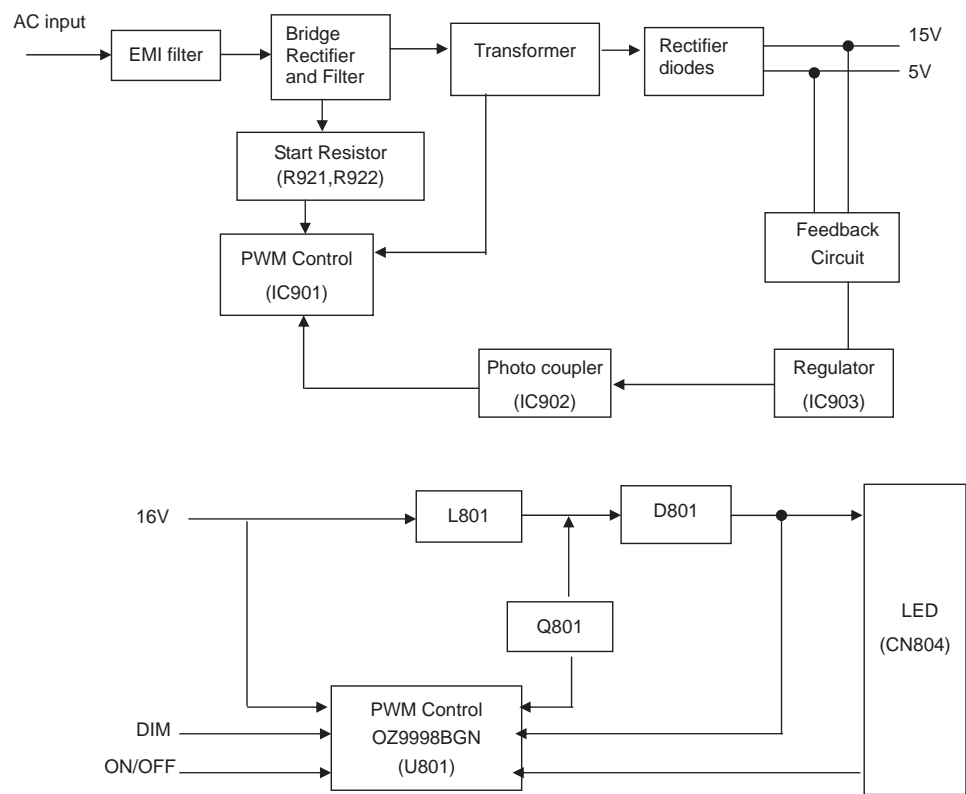
Backlight has foreign material.
Black or white color, liner or
circular type



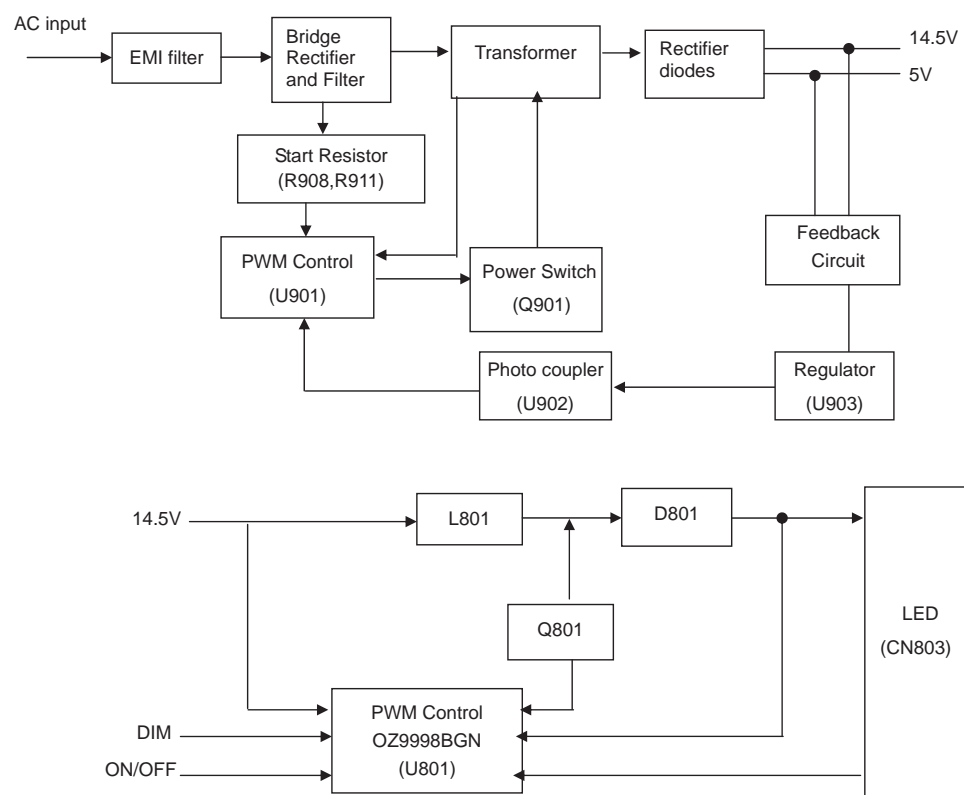
5. Block Diagram
5.1 Scaler Board



5.2 Power Board
715G4452P02002001M



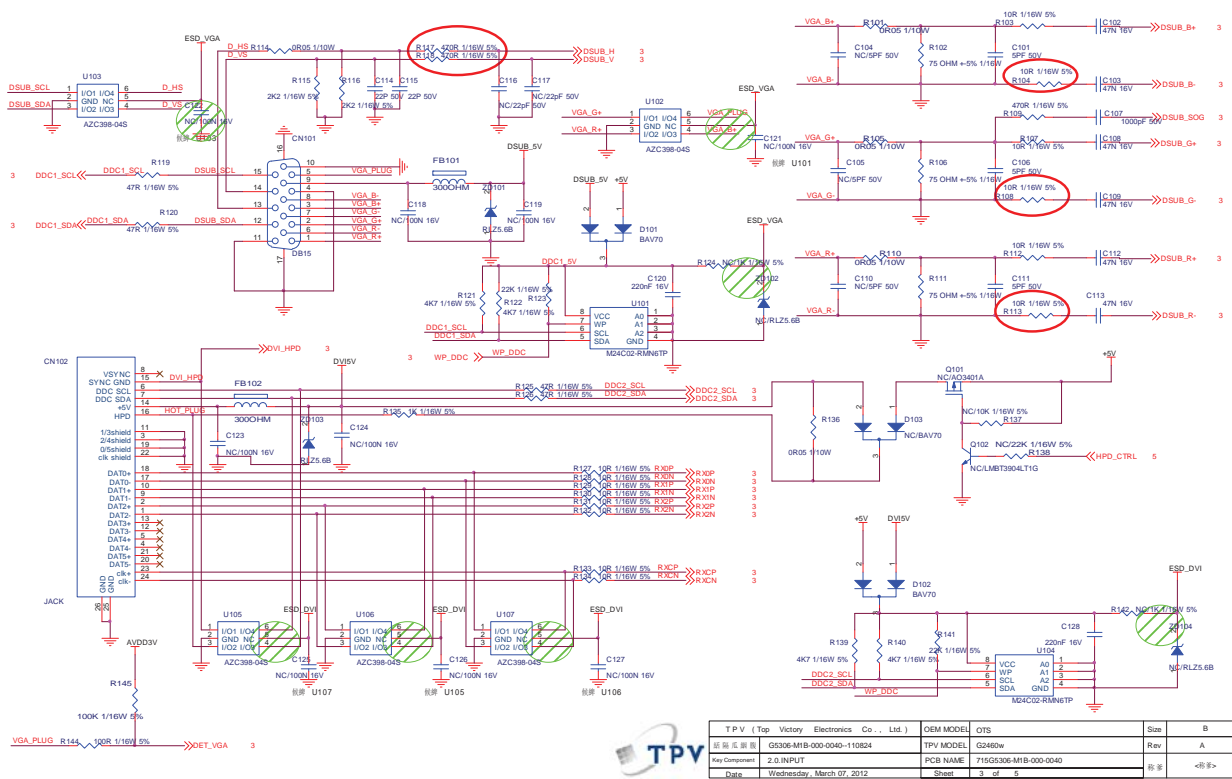
715G4497P05000001C



6. Schematic

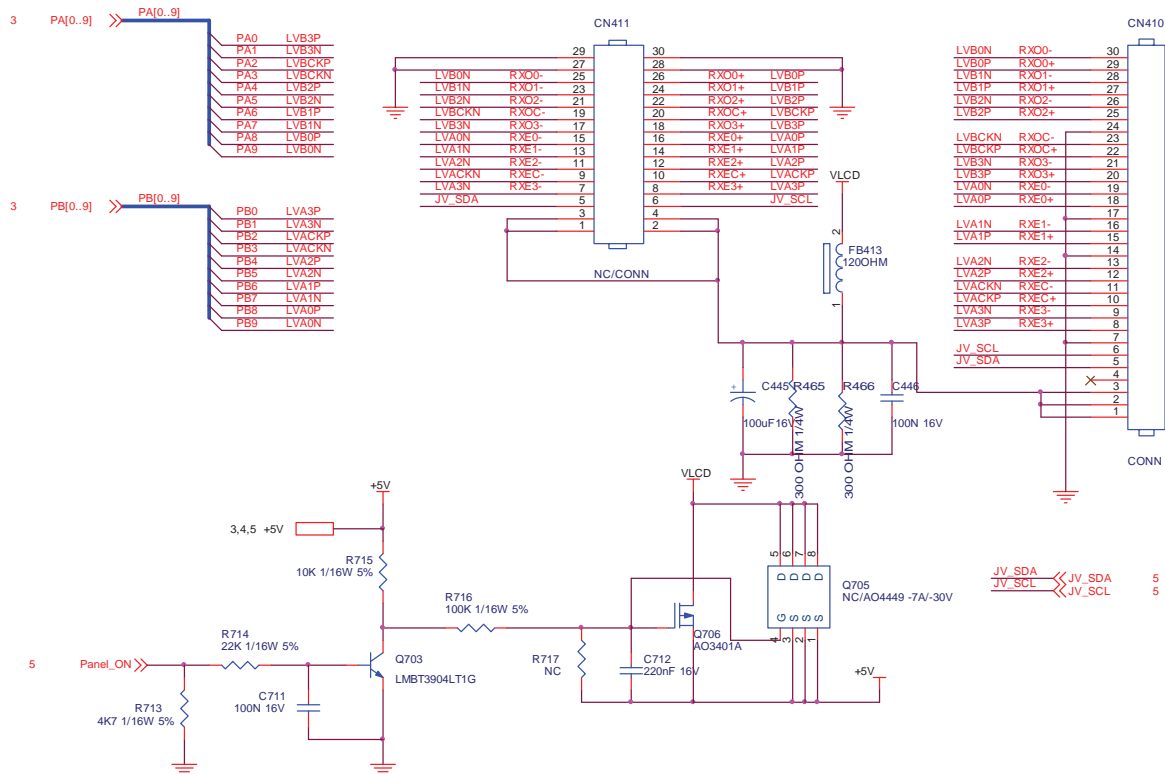
6.1 Scaler Board (715G5306M02000004C)

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



TPV (Top Victory Electronics Co., Ltd.)	OEM MODEL	OTS	Size	B
新樂元電通	G5306-M1B-000-0040-110824	TPV MODEL	G2460w	Rev A
Key Component	2.0 INPUT	PCB Name	715G5306-M1B-000-0040	
Date	Wednesday, March 07, 2012	Sheet	3 of 5	商家 <密>

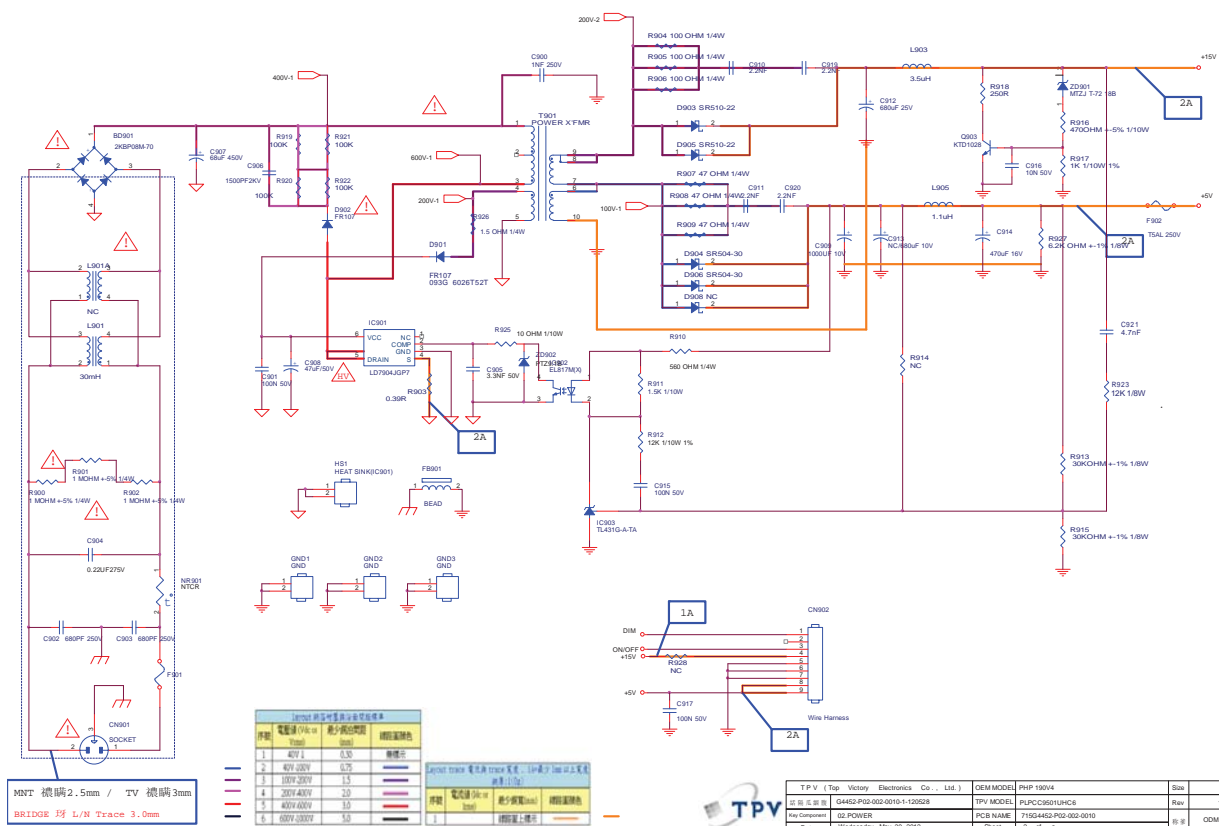
Remark: Parts position can be searched by using FIND function in PDF.



TPV (Top Victory Electronics Co., Ltd.)	OEM MODEL	OTS	Size	A
紙隔瓜銅版	G5306-M1B-000-0040-110824	TPV MODEL	G2460w	Rev
Key Component	3.0 OUTPUT	PCB NAME	715G5306-M1B-000-0040	称爹
Date	Tuesday, March 06, 2012	Sheet	4 of 5	<指爹>

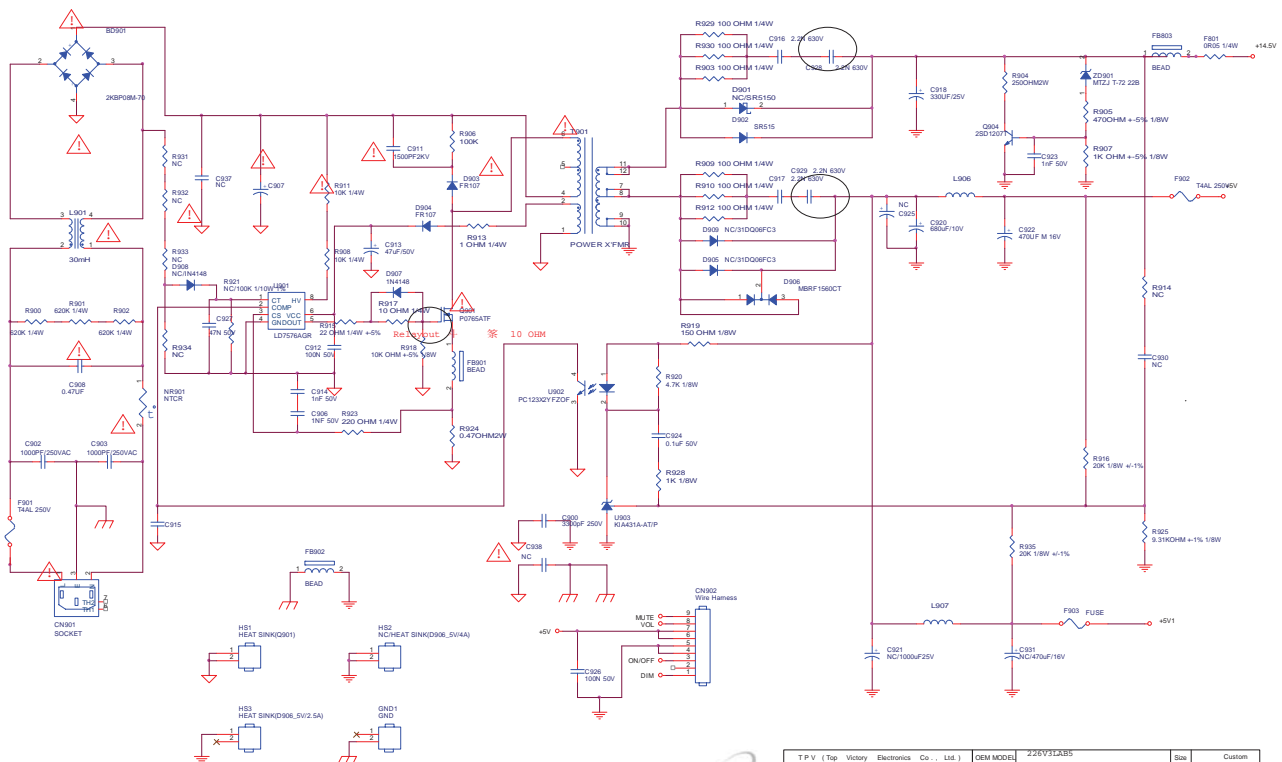
6.2 Power Board(715G4452P02002001M)

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



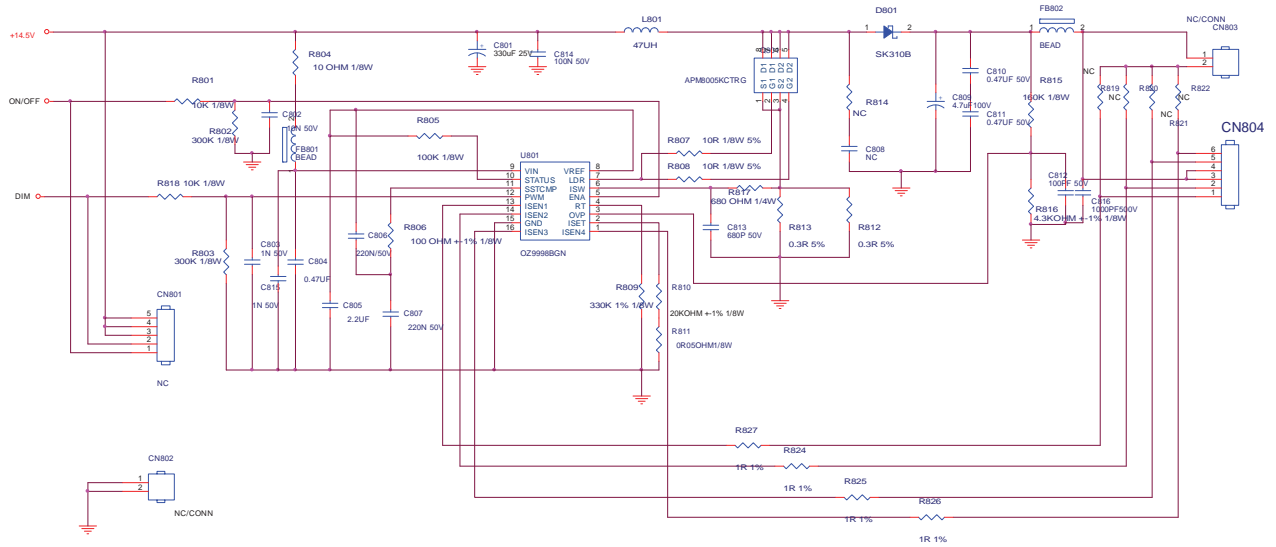
TPV (Top Victory Electronics Co., Ltd.)		OEM MODEL	PHP 190V4	Size	Custom
振興元電機	G4452-P02-002-0010-1-120528	TPV MODEL	PLPC63501UHC6	Rev	1
Key Component	02.POWER	PCB NAME	71504452-P02-002-0010	修書	ODM MODEL
Date	Wednesday, May 30, 2012	Sheet	2 of 3		

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



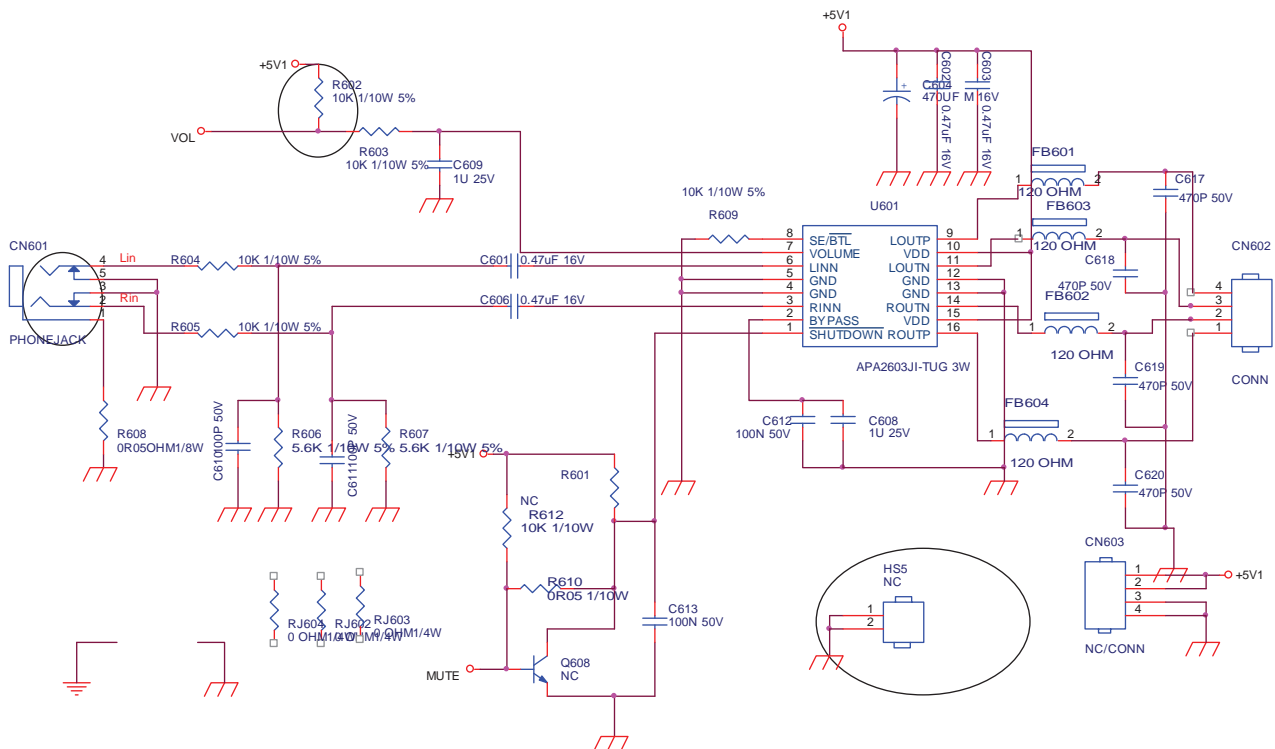
T P V (Top Victory Electronics Co., Ltd.)		OEM MODEL	226V31AB5		Size	Custom
TPV MODEL	G4497-P03-000-010-8-120102	PLPCBBE41AHC2	Rev	1		
Key Component	01.POWER	PCB NAME	715G4497-P03-000-0010	Rev	0	
Date	Monday, January 02, 2012	Sheet	1 of 3	DEM MODEL		

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



TPV (Top Victory Electronics Co., Ltd.)	OEM MODEL	226V31A85	Size	Custom
型号位置	G4497-P03-000-0010-8-120102	TPV MODEL	PLPCBB541ARC2	Rev
Key Component	OZ CONVERTER	PCB NAME	715G4497-P03-000-0010	Rev
Date	Monday, January 02, 2012	Sheet	2 of 3	COM MODEL

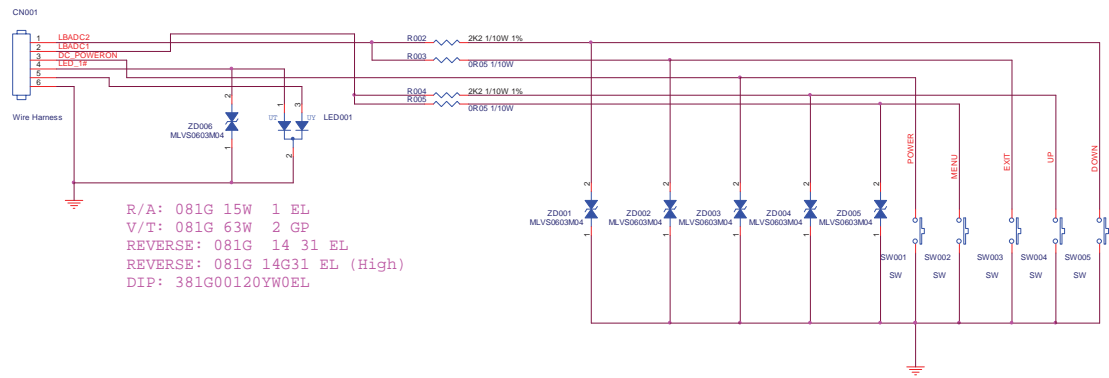
Remark: Parts position can be searched by using FIND function in PDF.



TPV (Top Victory Electronics Co., Ltd.)	OEM MODEL	226V3LAB5	Size	A
经隔瓜膜版	TPV MODEL	PLPCBB541AHC2	Rev	1
Key Component	PCB NAME	715G4497-P03-000-0010	称爹	ODM MODEL
Date	Monday, January 02, 2012	Sheet	4 of 4	

6.3 Key Board (715G5579K01000001C)

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



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	DOWN(2.2K)	1.2V
	EXIT(1.5K)	0.9V
LBADC1	UP (2.2K)	1.2V
	MENU(1.5K)	0.9V

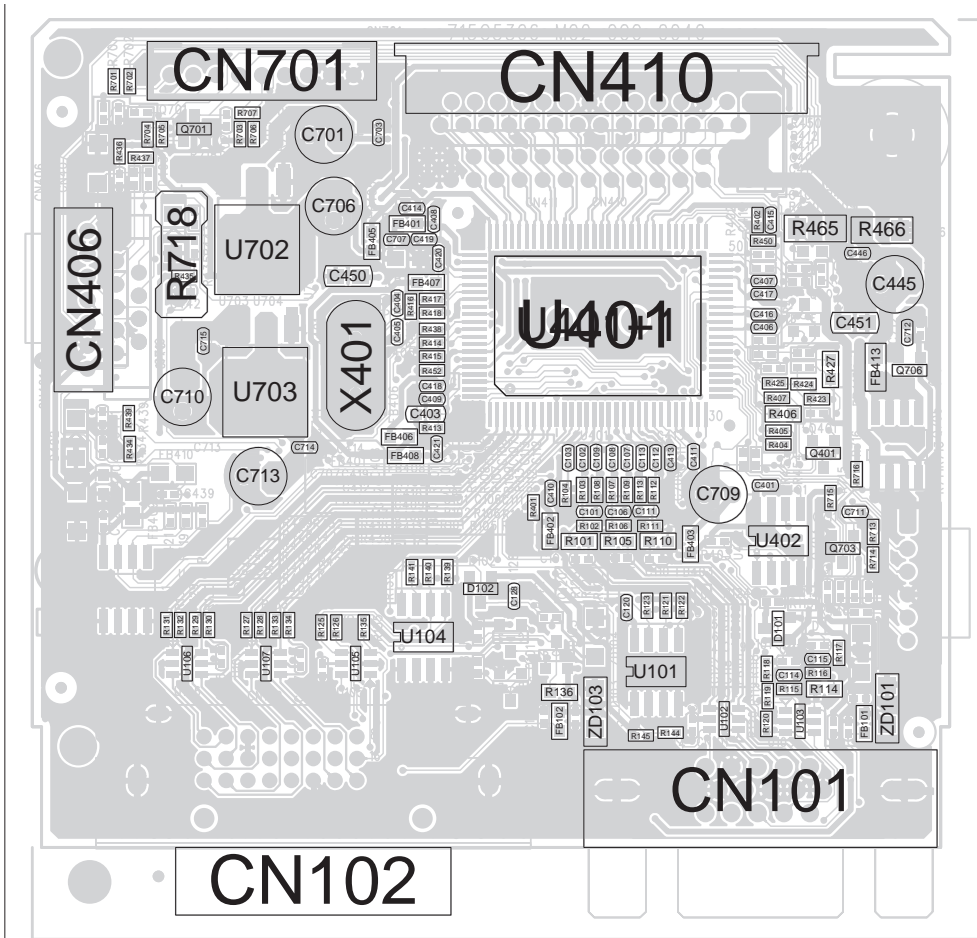
(Power)	LED	(MENU)	(EXIT)	(UP)	(DOWN)	CONNECTOR



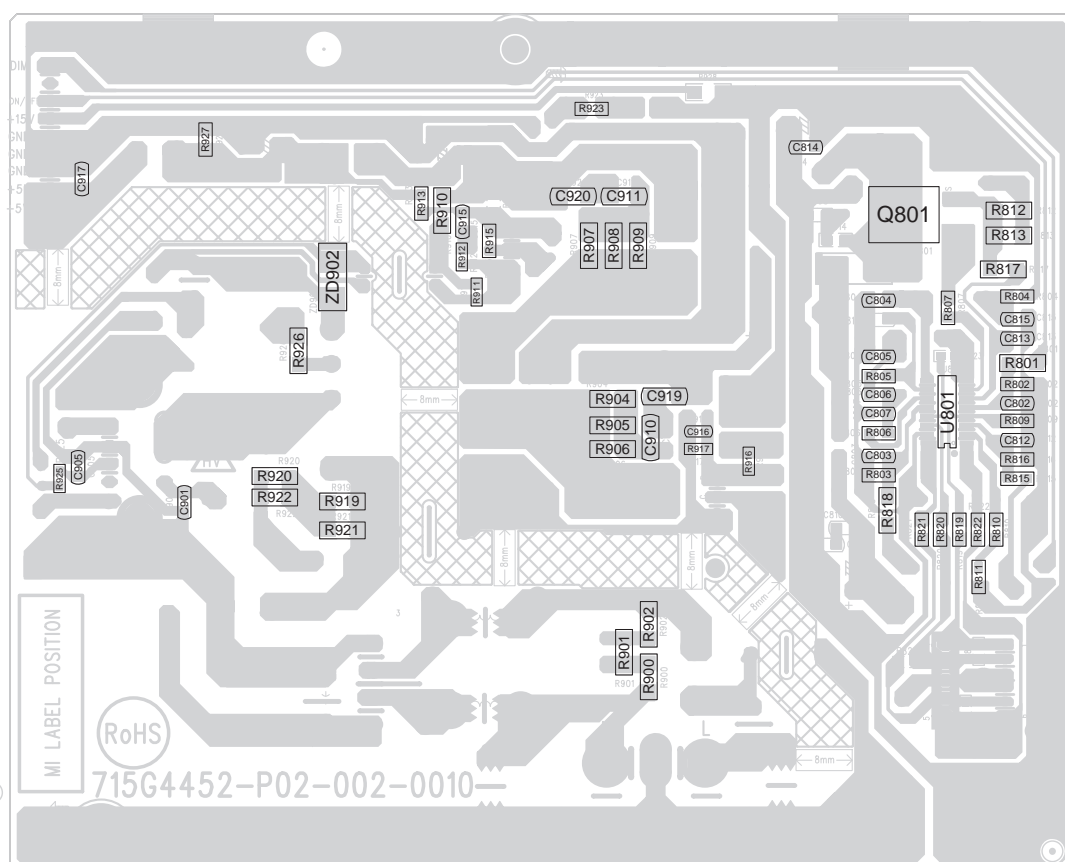
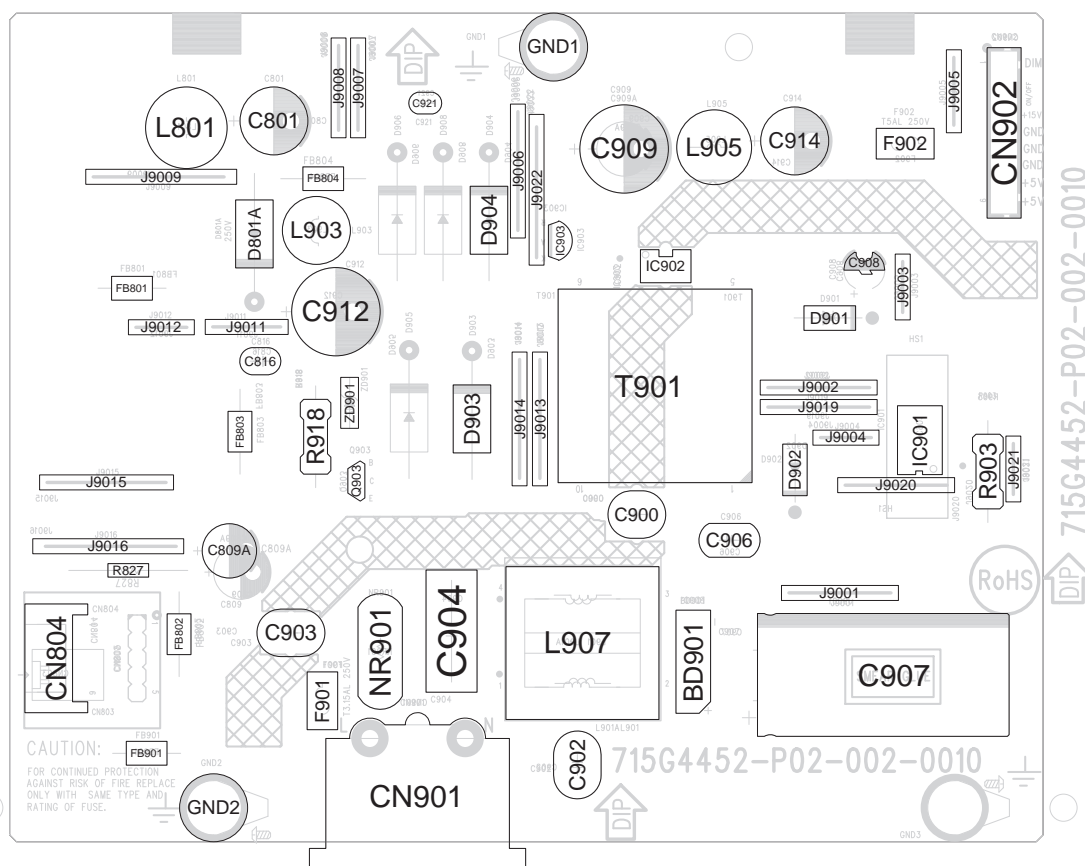
TPV (Top Victory Electronics Co., Ltd.)	OEM MODEL	PHILIPS	See	B
715G000XK0A-000-0010-1-120105	TPV MODEL	190V4LAB	Rev	B
Key Component	12.KEY-TACT SWITCH_LED	PCB NAME	715G000XK0A-000-0010	
Date	Thursday, January 19, 2012	Sheet	2 of 2	<前>>

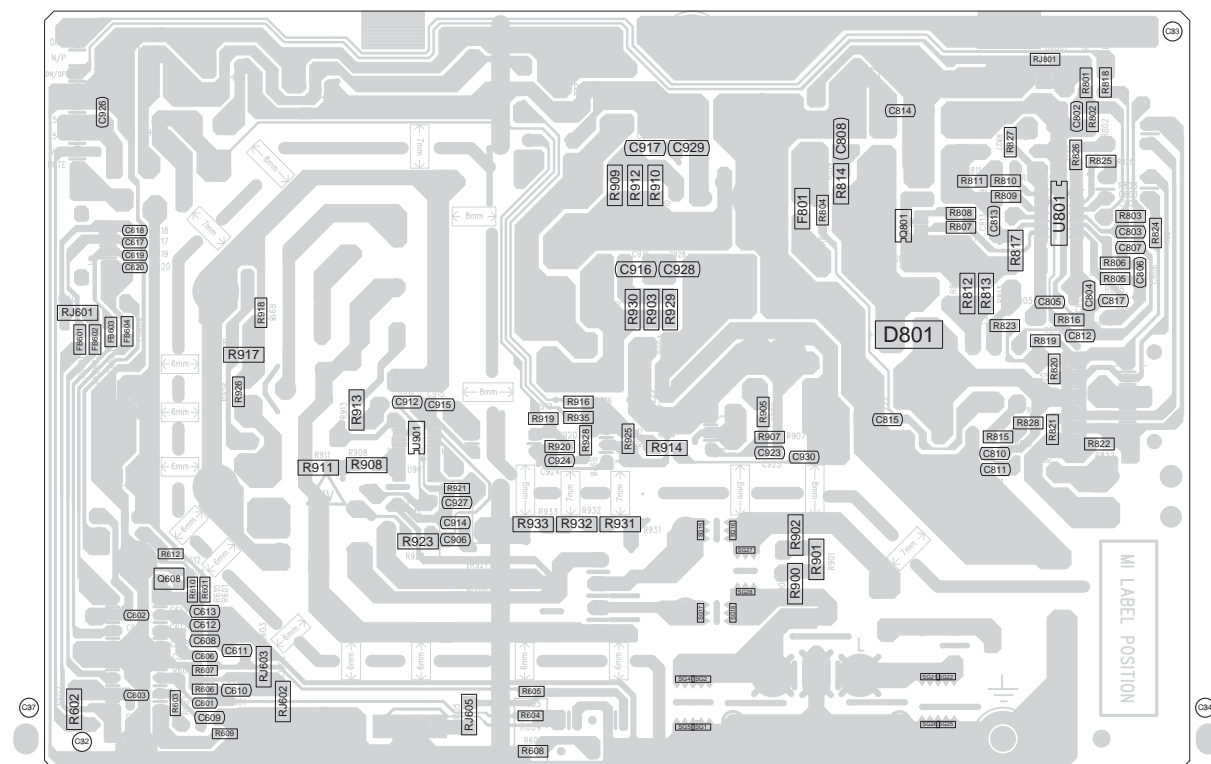
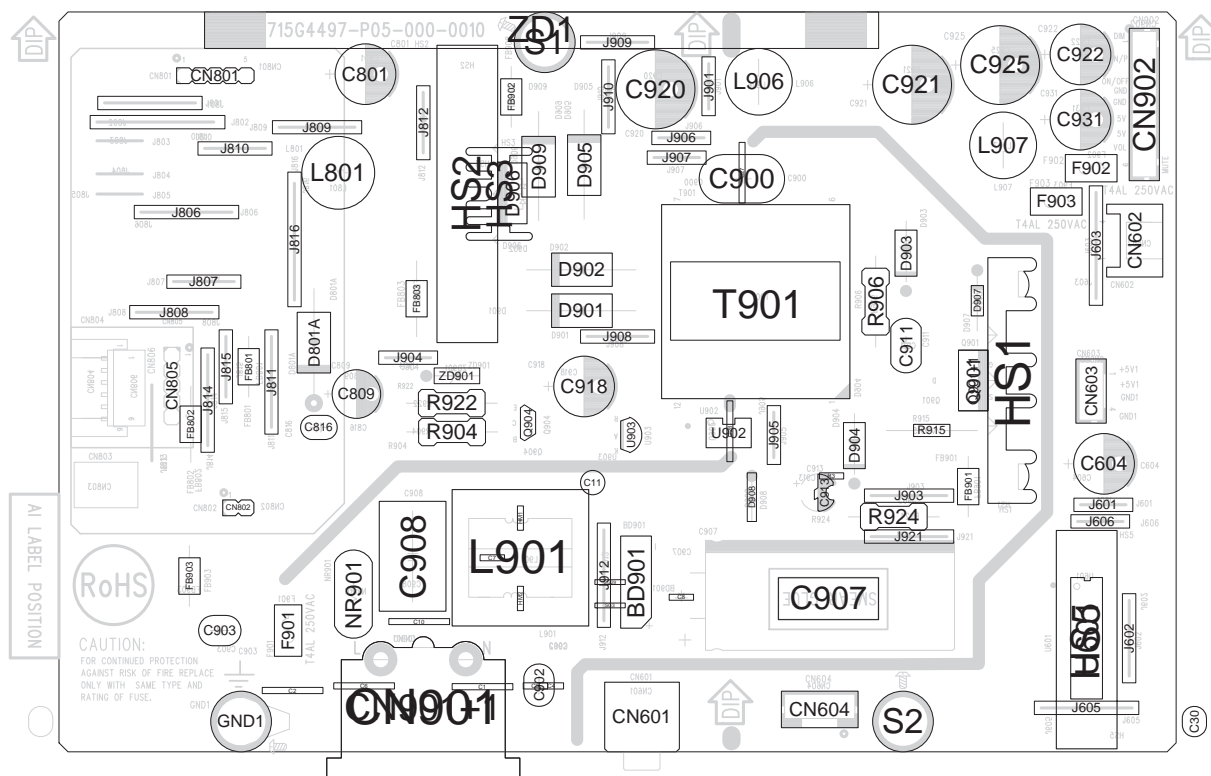
7. PCB Layout

7.1 Scaler Board (715G5306M02000004C)

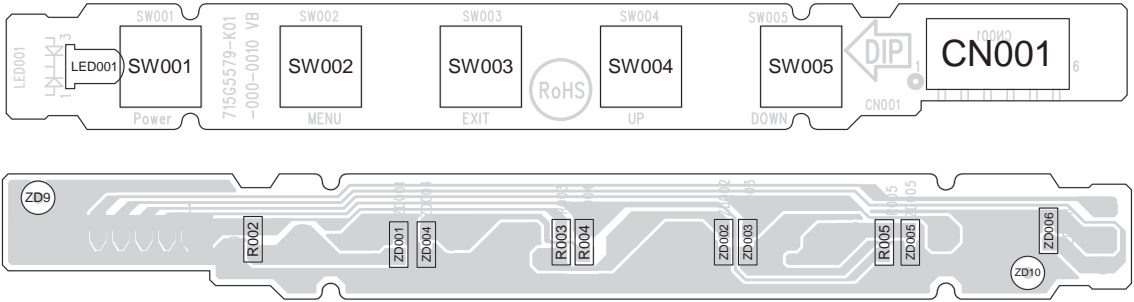


7.2 Power Board (715G4452P02002001M)

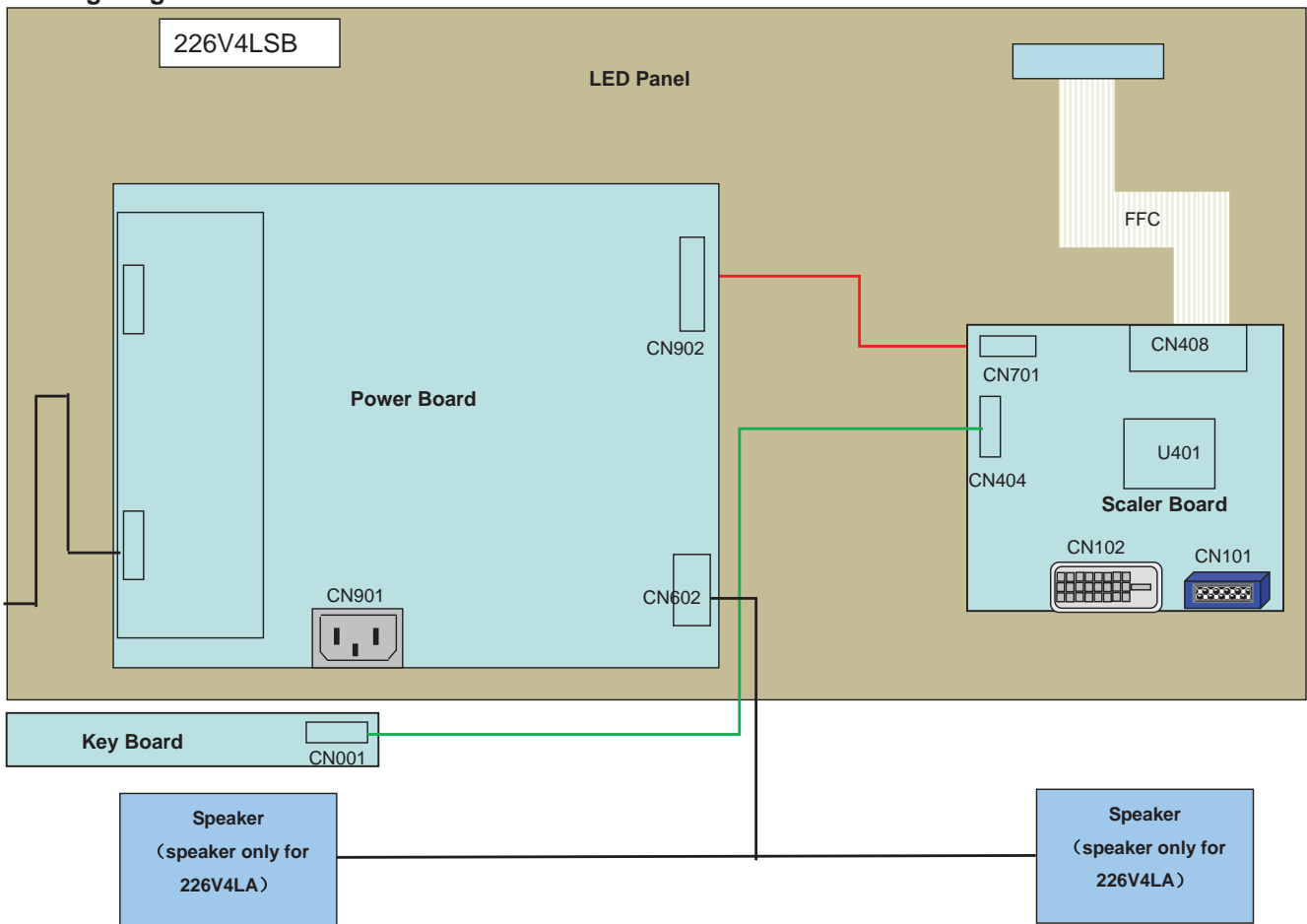




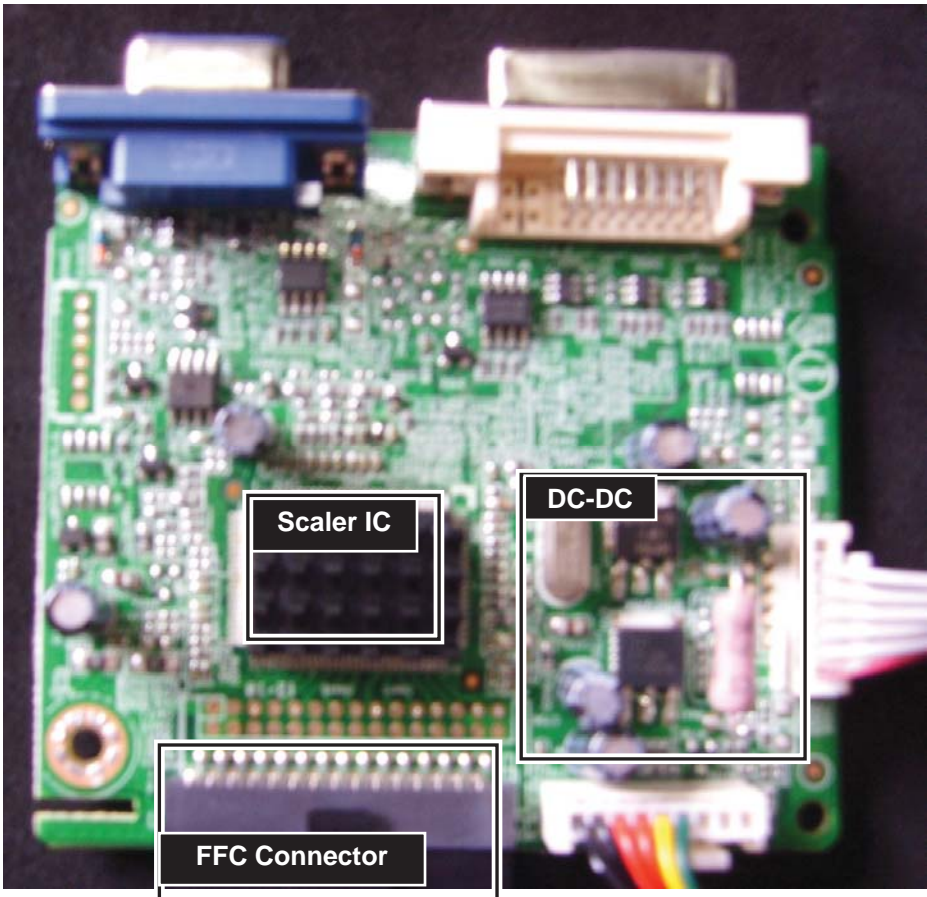
7.3 Key Board (715G5579K01000001C)



8. Wiring Diagram



9. Scaler Board Overview



10. Mechanical Instructions



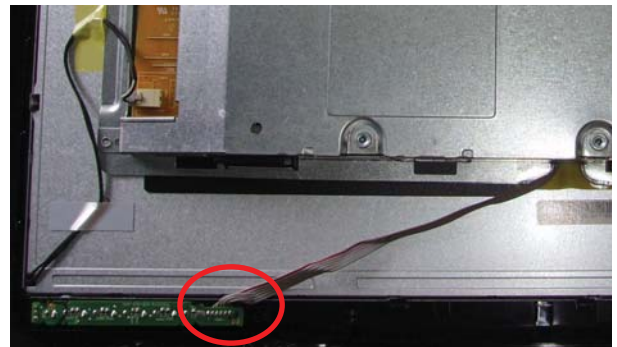
1. Place the monitor face on a safe surface, and unscrew the screws to remove the hinge.



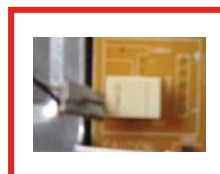
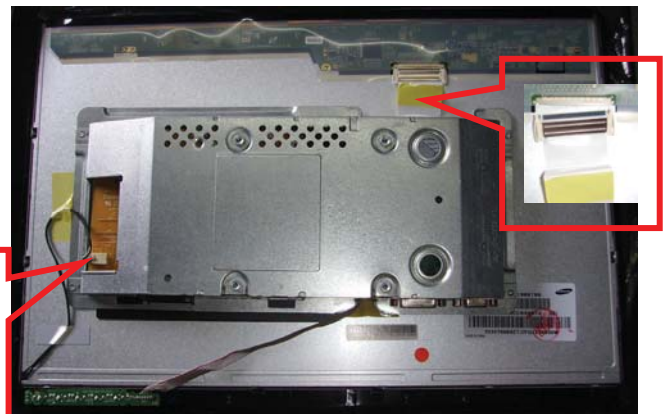
2. Open the latches and along the red arrowhead direction as the picture to open other latches.



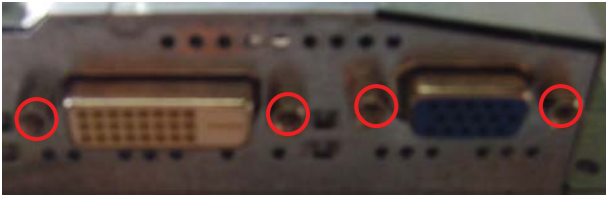
3. Disconnect the key cable to remove the rear cover.



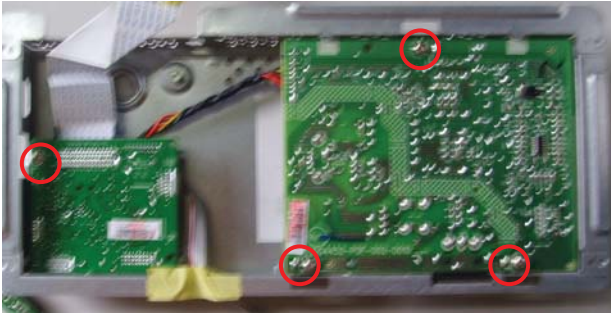
4. Disconnect the cables.



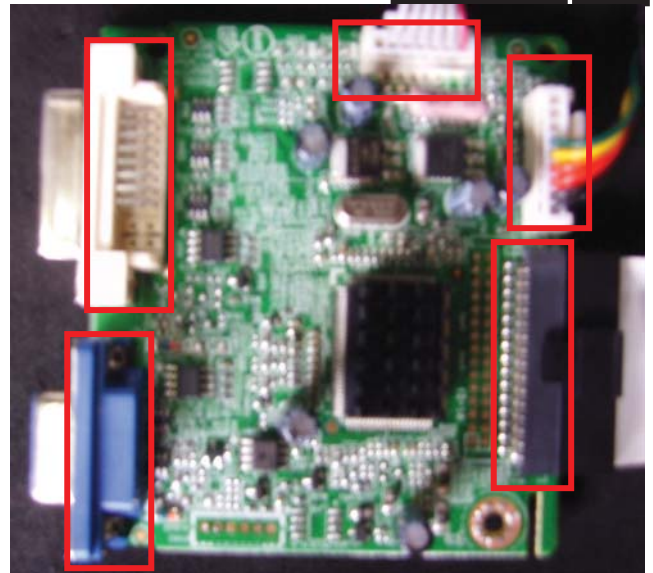
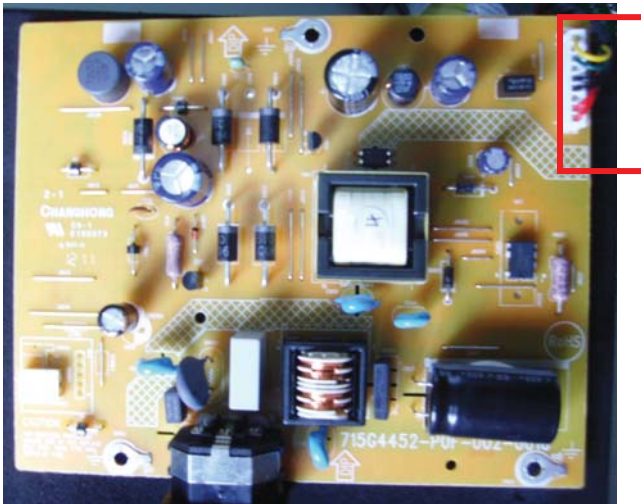
5. Release the **four** screws that secure the connector.



6. Release the **four** screws to remove the boards from the MAIN_FRAME.

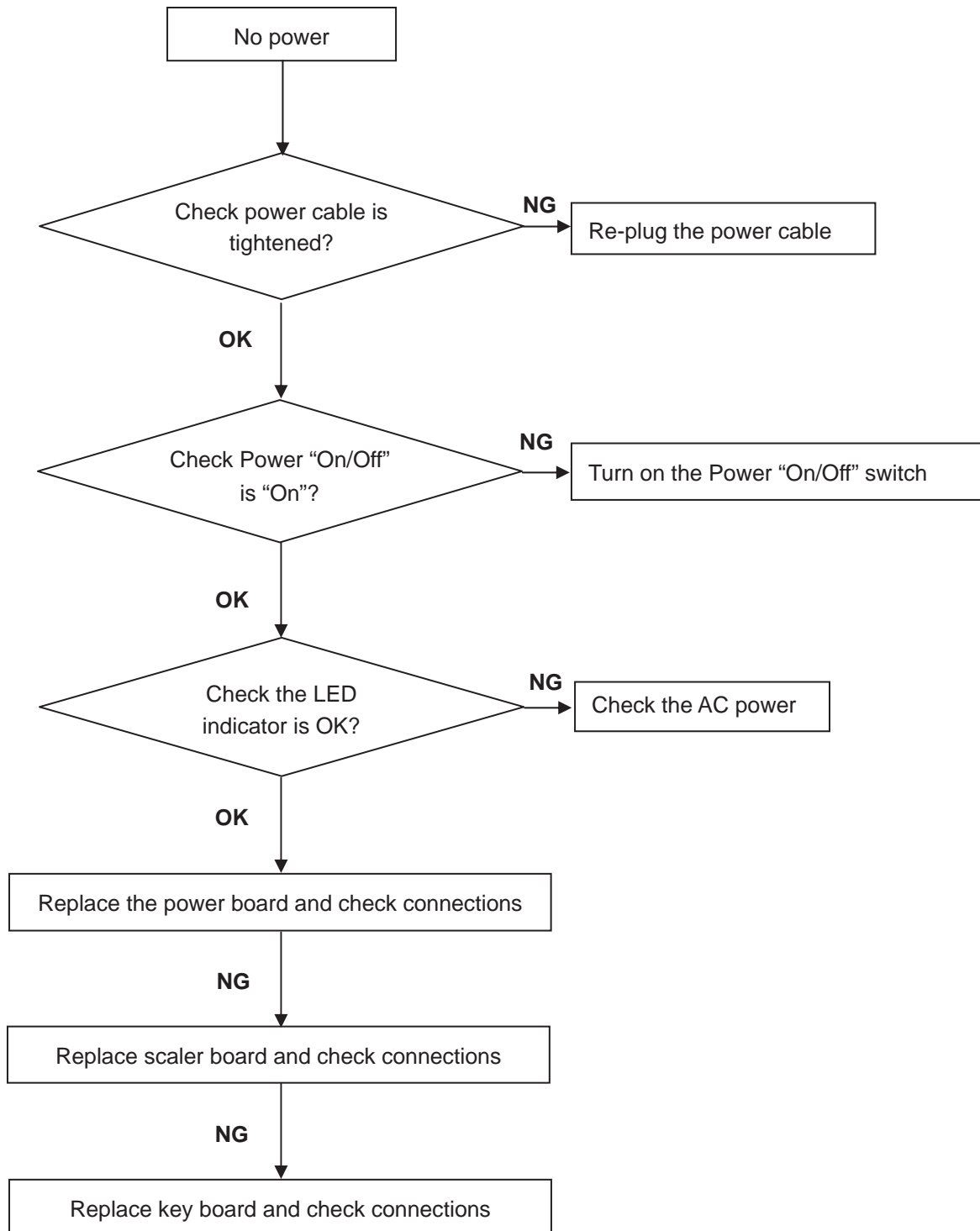


7. Disconnect the cables

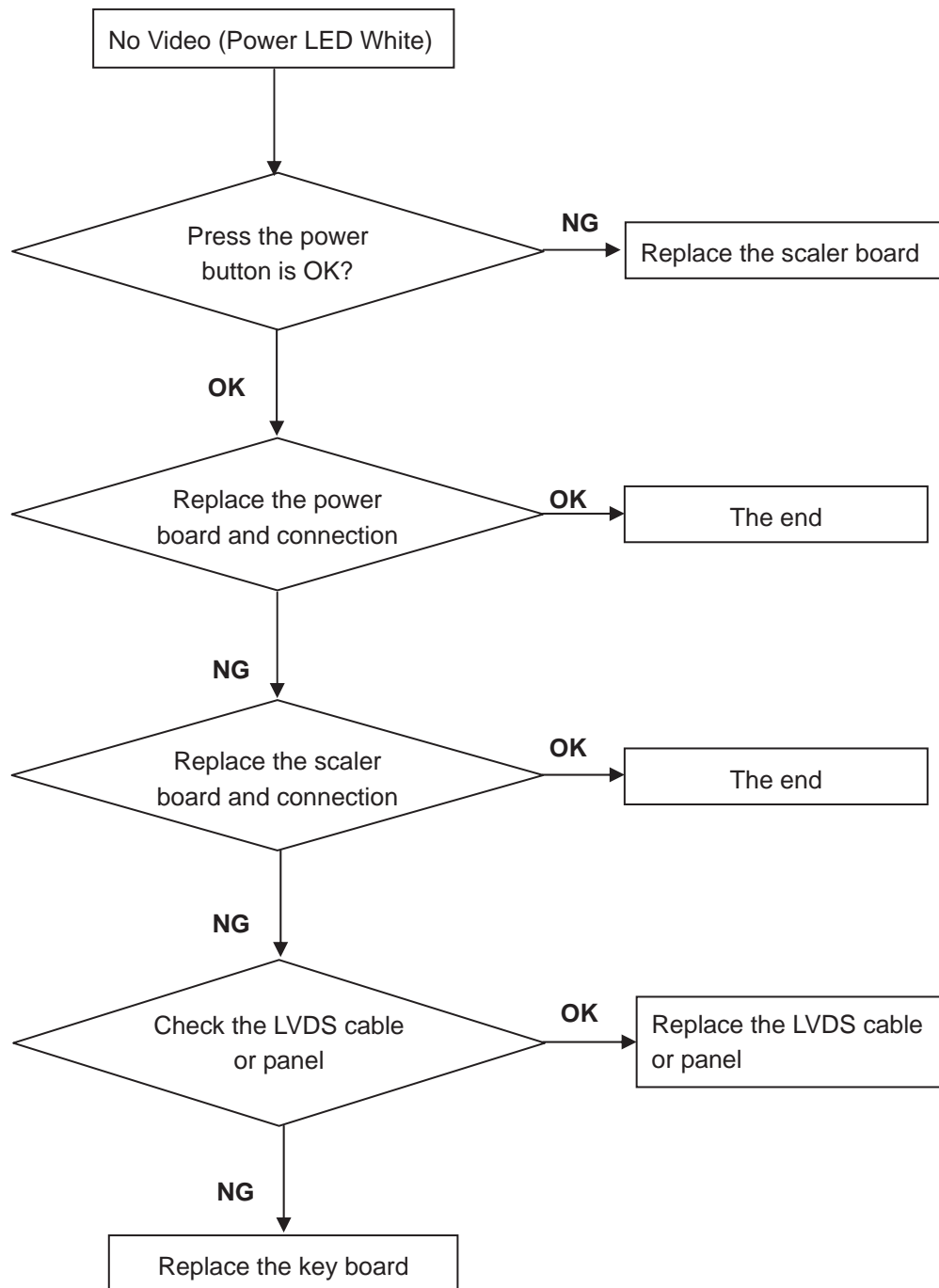


11. Repair Flow Chart

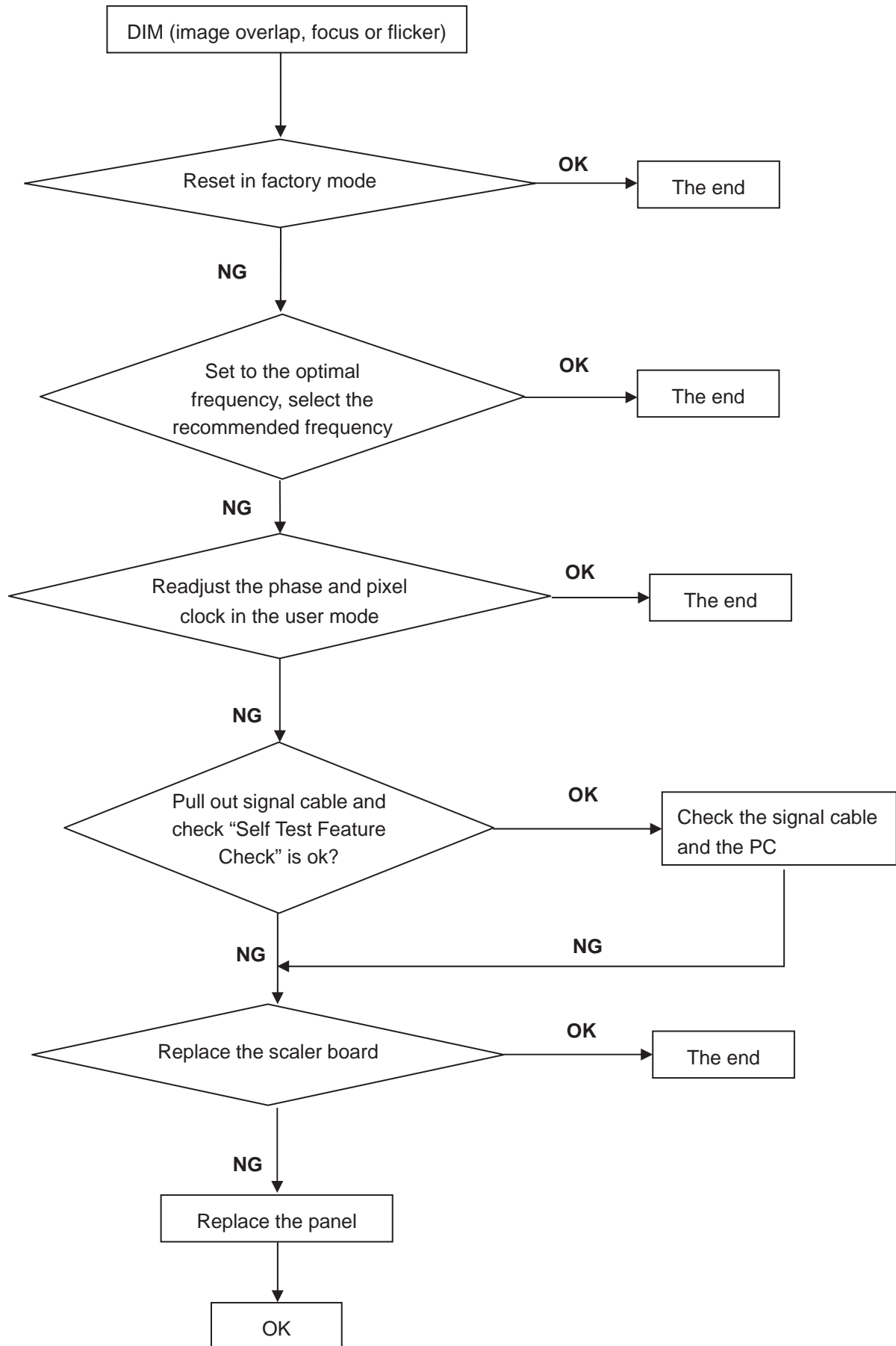
1. No Power



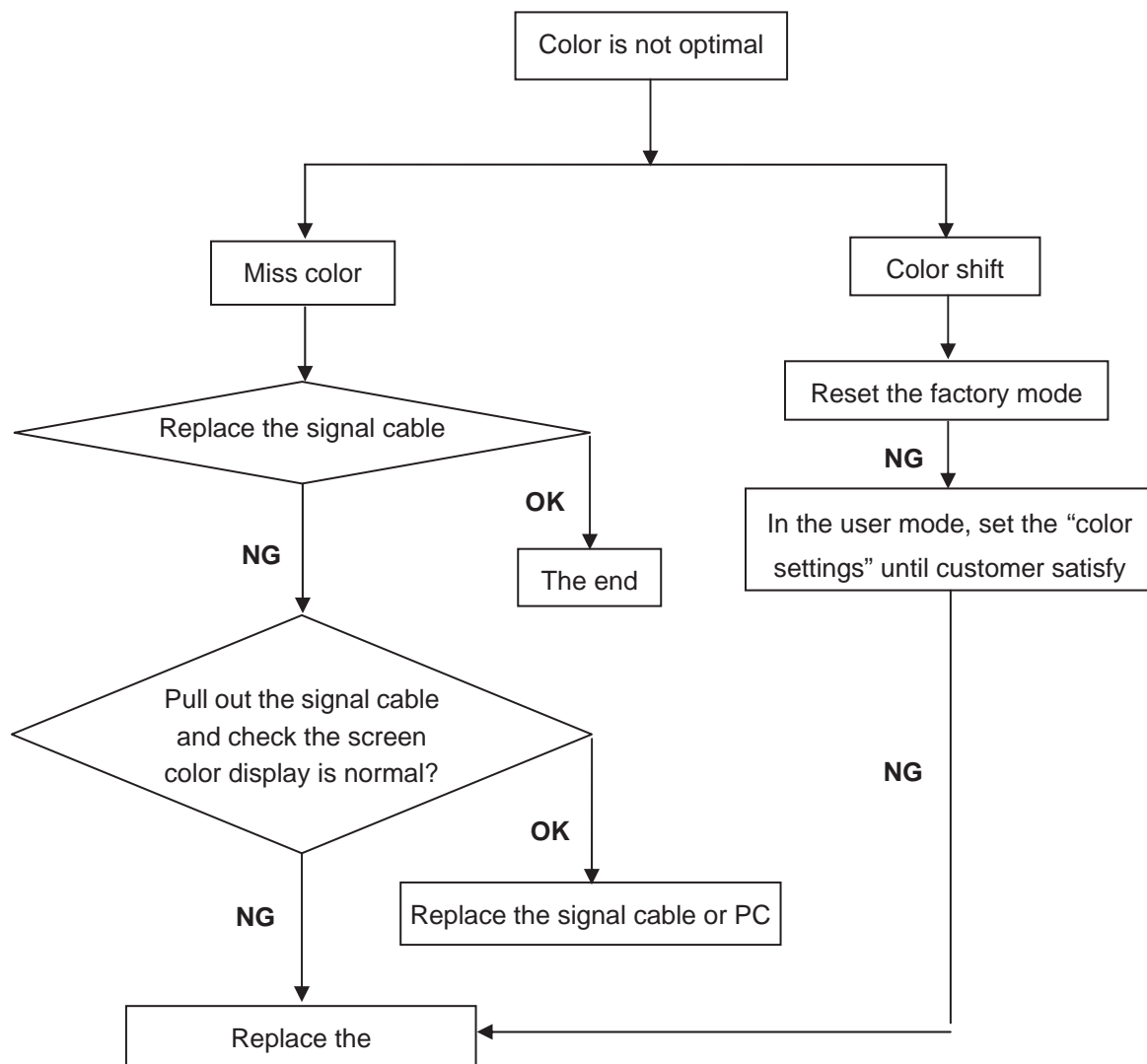
2. No Video (Power LED White)



3. DIM



4. Color is not optimal



12. ISP Instruction

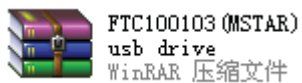
Novatek IC ISP for example NT68676

Step 1: Operation conditions:

- 1) USB cable and VGA cable.
- 2) Three-core power cable
- 3) ISP board (PN: 715GT089-B).



- 4) Mastar USB Drive

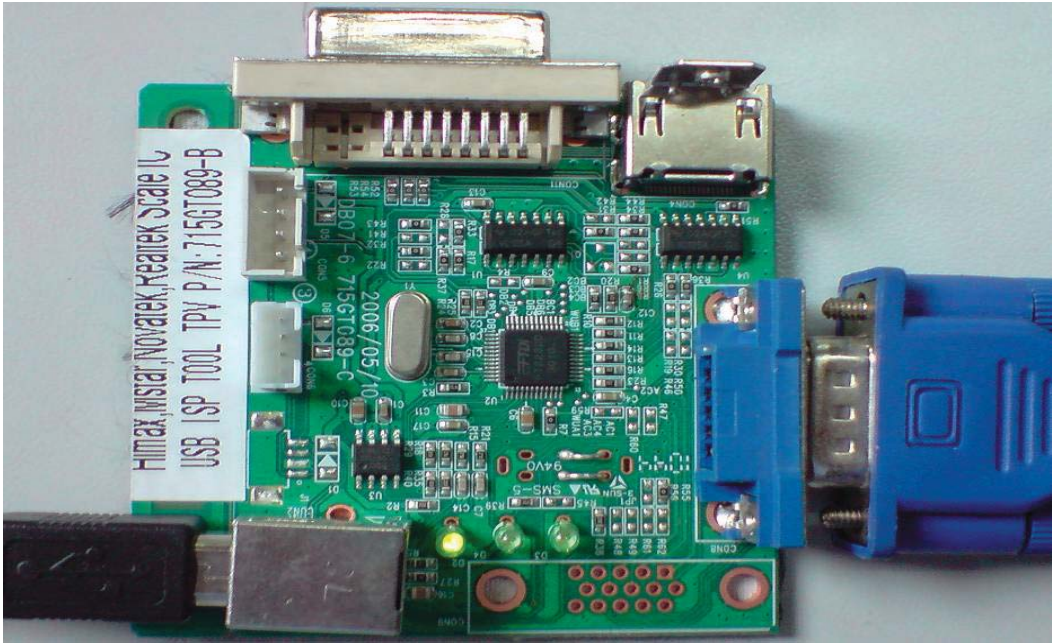


- 5) HIMAX tool



Step 2: Programming and Connection:

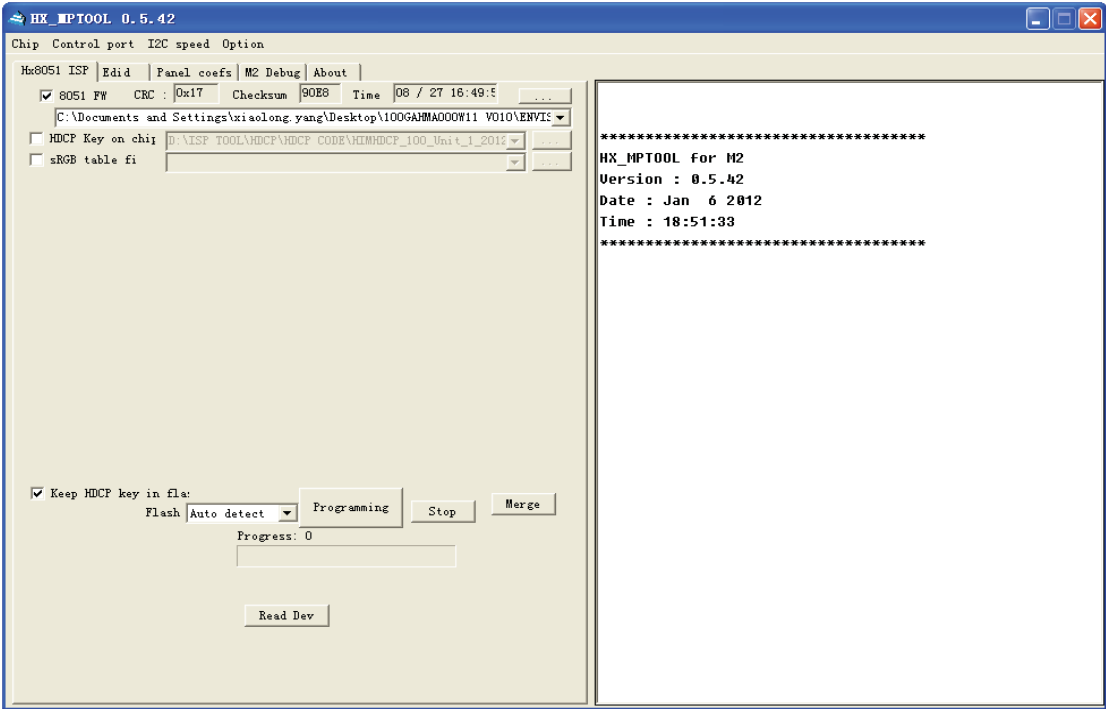
1. Double-click Mastar USB Drive  FTC100103 (MSTAR) usb drive WinRAR 压缩文件 to install USB driver,
2. Double-click Mastar HIMAX tool  Hx_MPTool Release 0.5.42 lite 4,310 KB to install HIMAX TOOL,
3. Reference picture as below



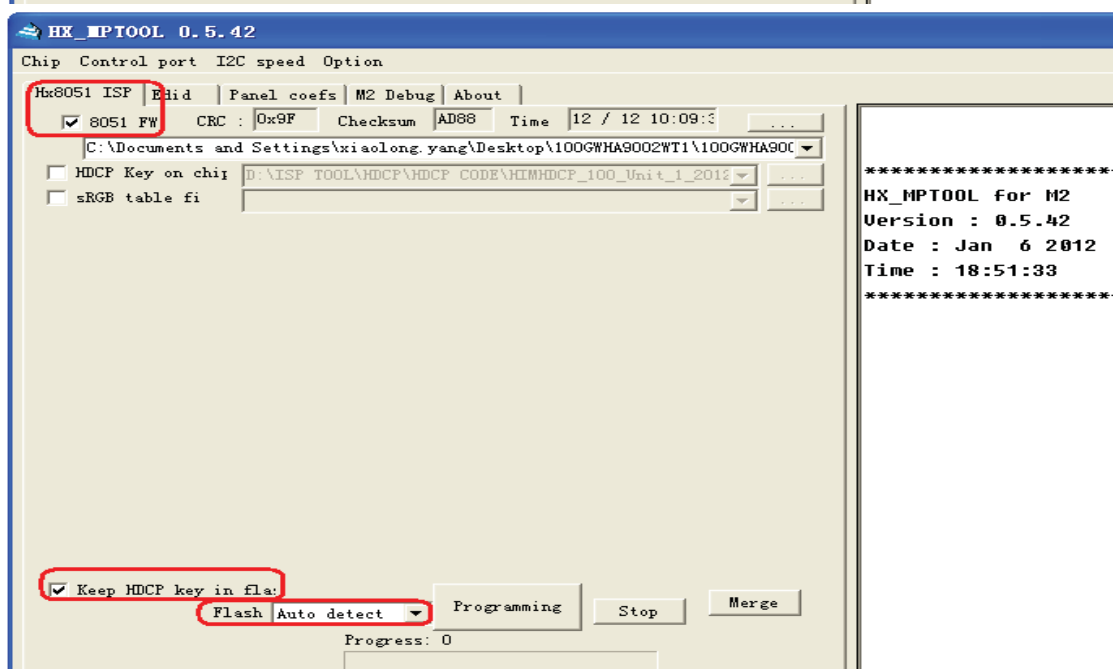
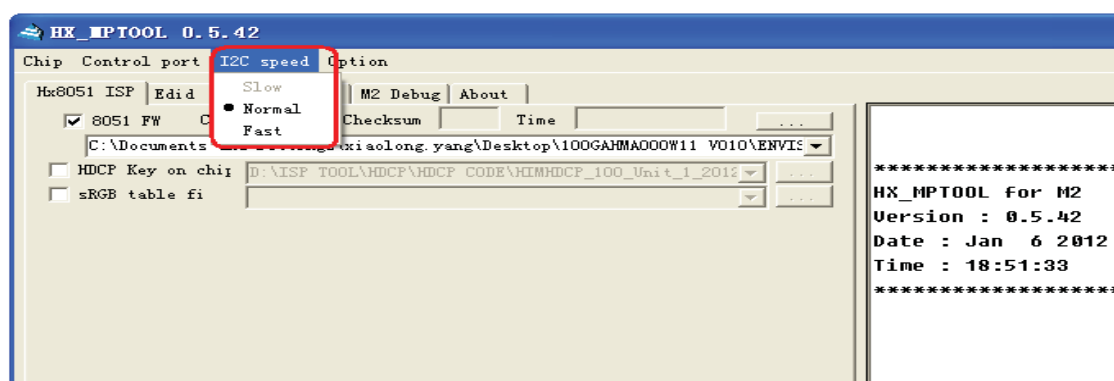
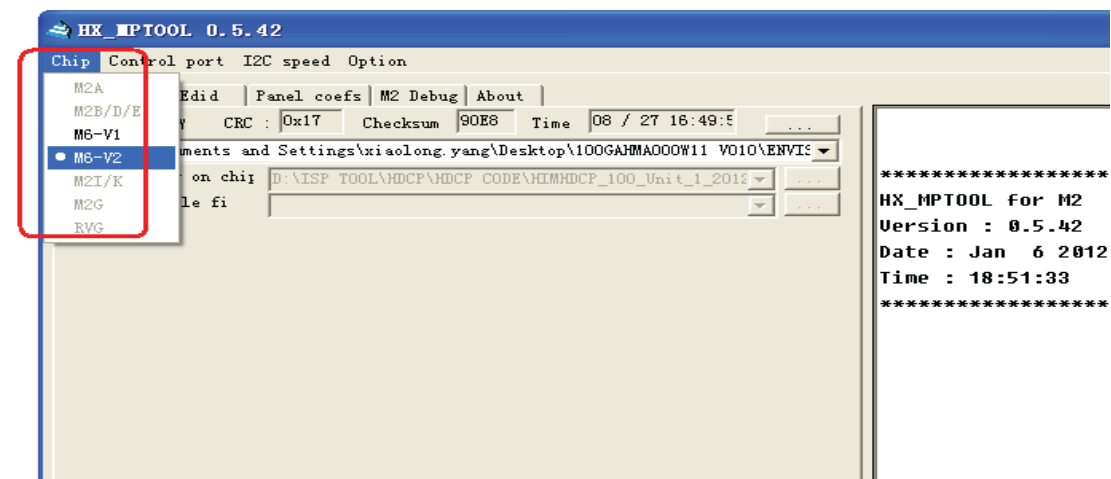
Step : Programming

- 

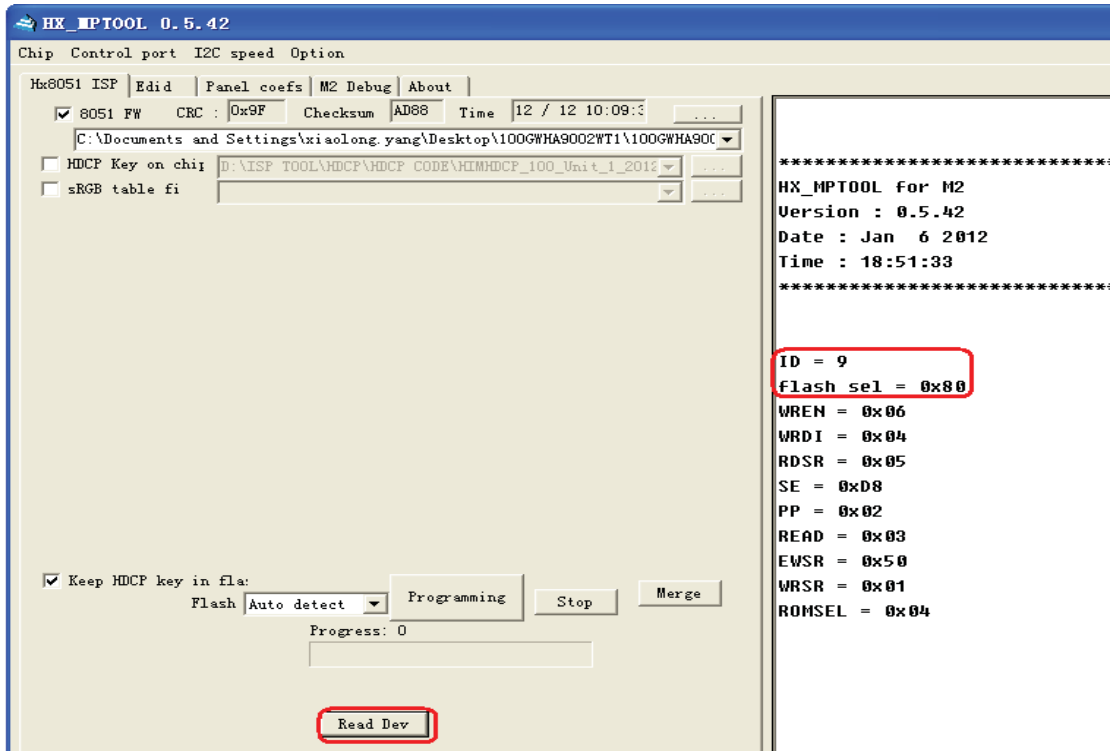
HX_MPTool_lite
Himax MP Tool
1. Double-click
- to run it as follow picture.





1. Click “chip” ,the first generation chose M6-V1, the second generation and above chose M6-V2

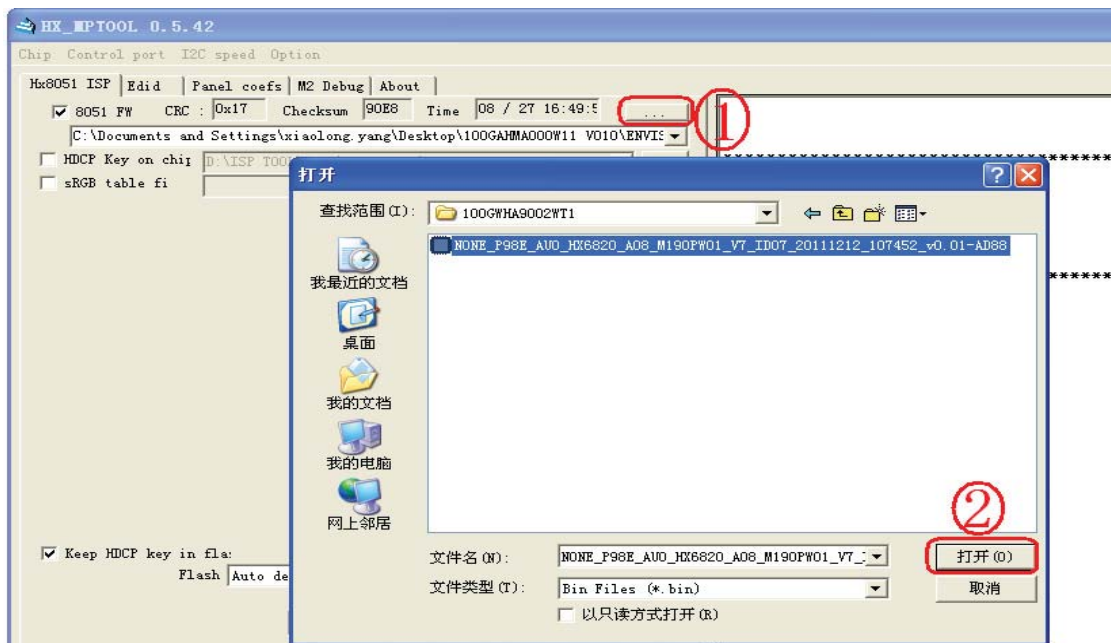


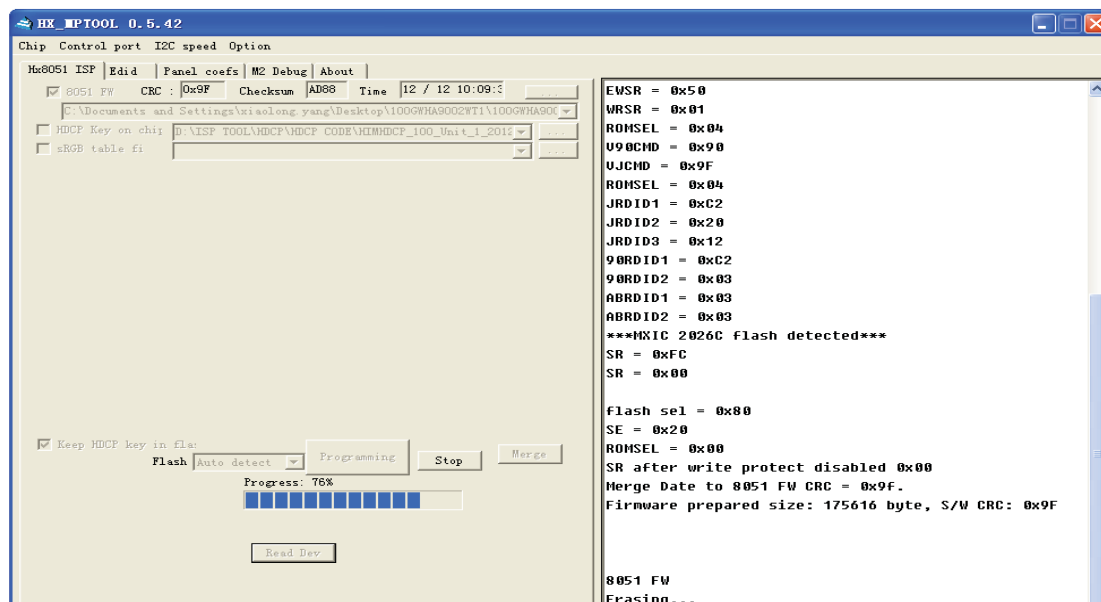
- Click "Read De", When appear "ID=9" and "flash --sel=0x80" as follow picture that the connection is ok, and read flash



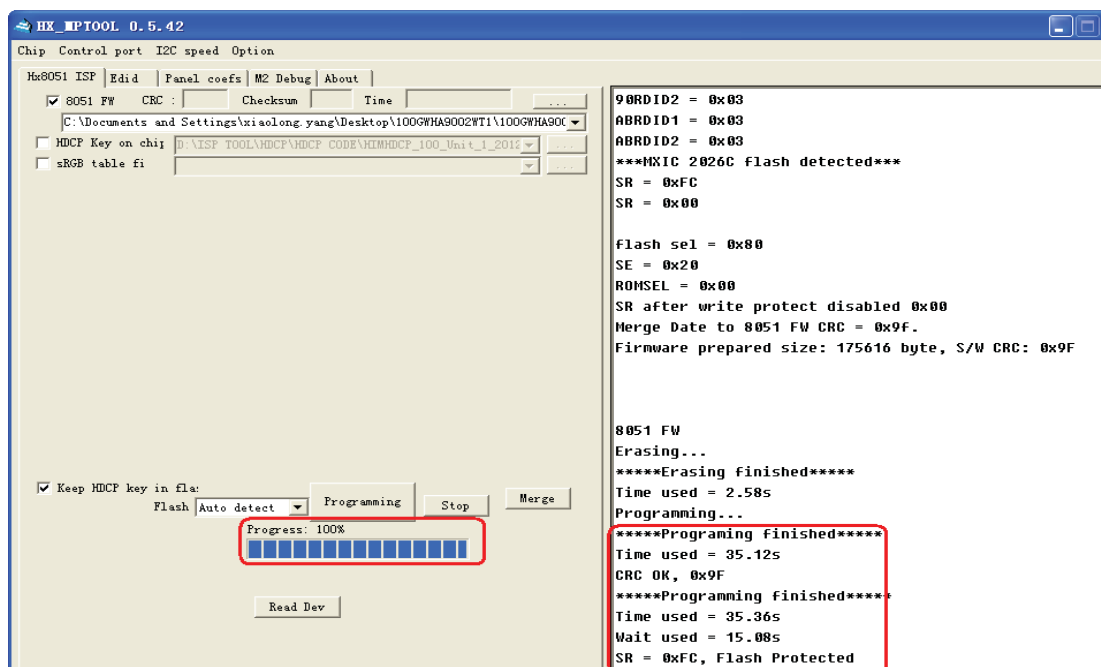
Please check USB cable , signal cable and power cable whether connect is ok,when appear "ID=255, flash--sel=0x84"or "0xFF"

4.Click  to upload the software and click  to start burning





3. when appear “Progress 100%” as follow picture that burning is successful :

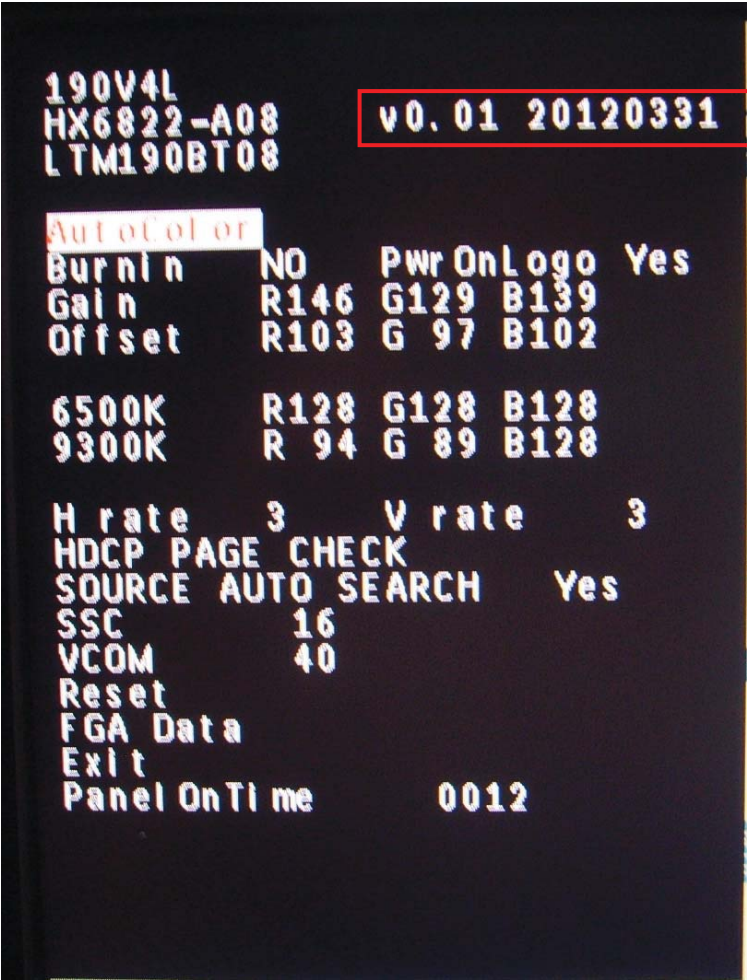


Note: After installation, you must restart the PC to take the setup to effect and check whether the FW version is correct and the picture is normal.

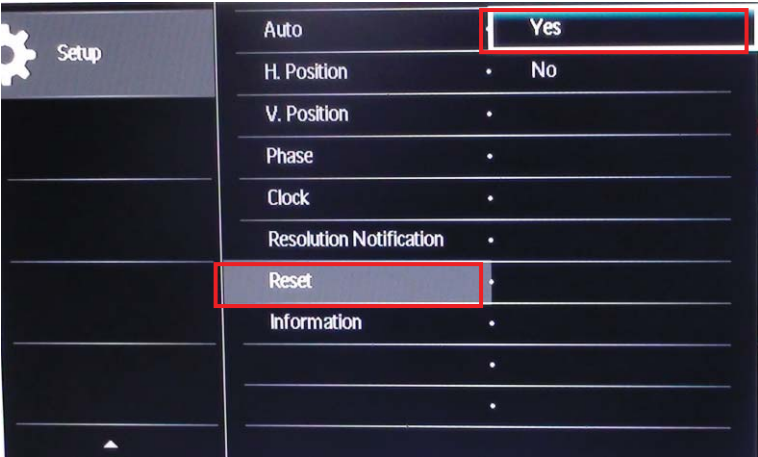
Enter into the factory mode:

1. Connect the VGA or DVI source and power off the monitor.
2. Press **AUTO/▼** 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.

eg:190V4L

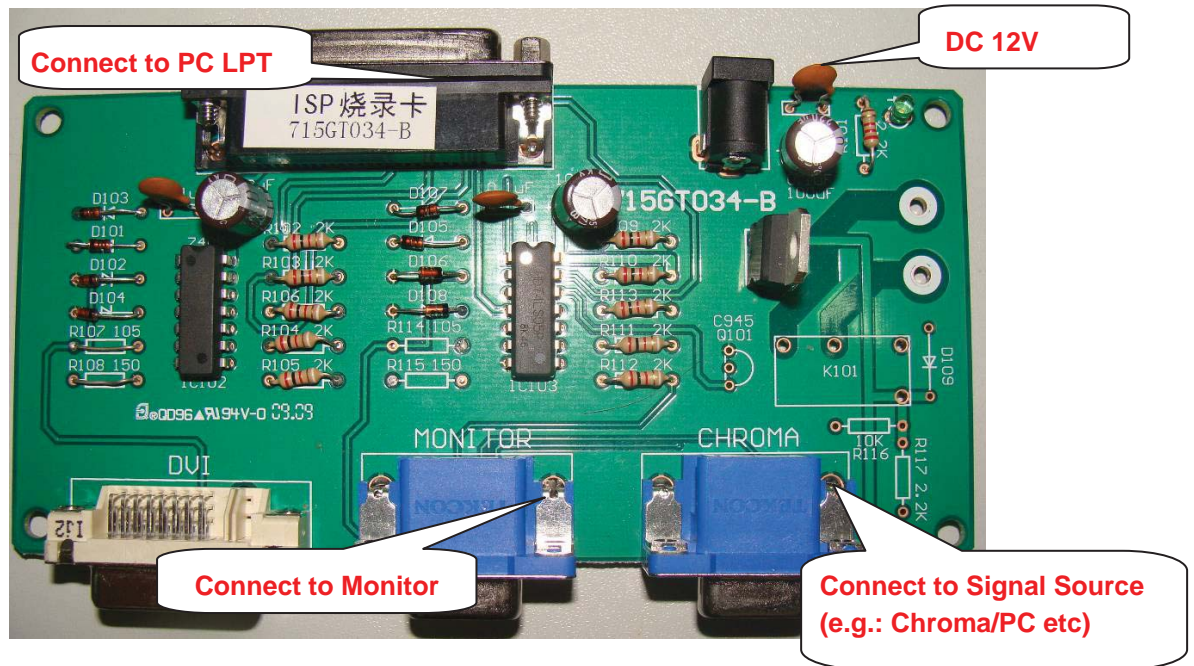


4. Power off/on to exit the factory mode.
5. Press the “MENU” button to enter the user menu, choose the “Reset” to do factory reset.



- Step5: HDCP Write SOP**
- I. Prepare condition:**
1. Prepare one PC and the system is WIN98/NT/2000/XP, make sure the PC have Print Port.
 2. Install Port95nt Software, the way of the install Port95 (LPT PORT drive):
 - a. selects the software of Port95nt.exe, and run it,
 - b. After install ok, restart the PC.
 3. Connect the cable and Jig:
 - a. Use the Print cable to connect the PC and HDCP card.

b. Connect the VGA cable with the ISP record card, the picture of Print cable, VGA cable and ISP card as below:

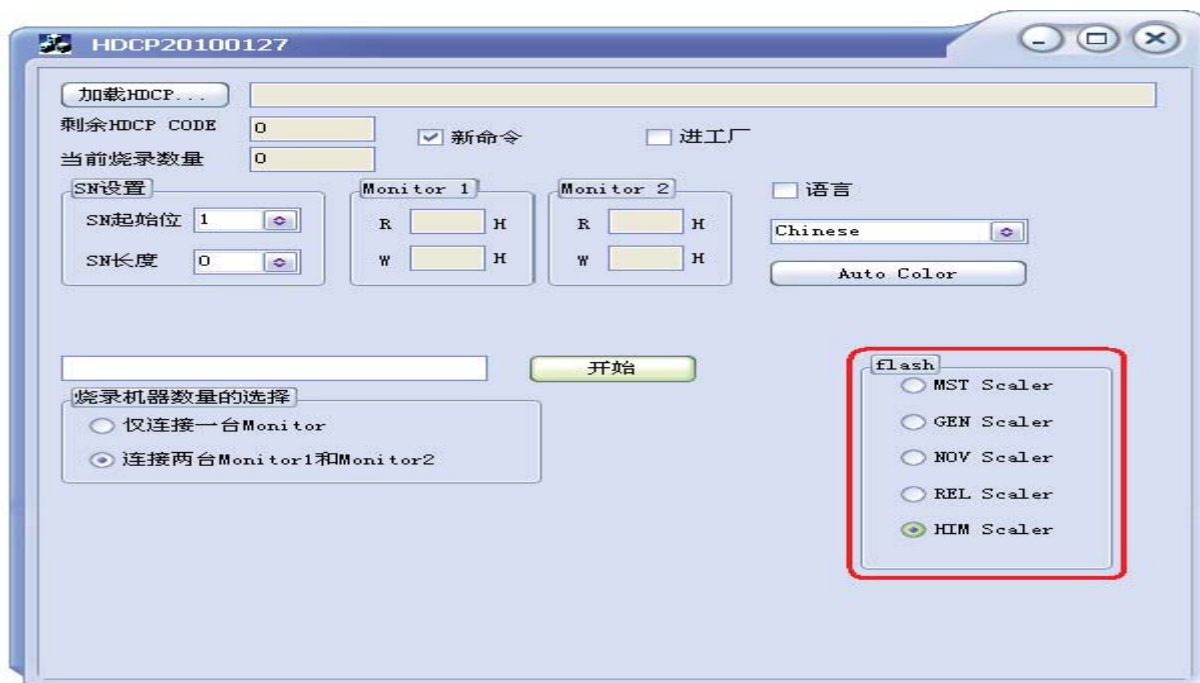


ISP Tool TPV P/N: 715GT034-B

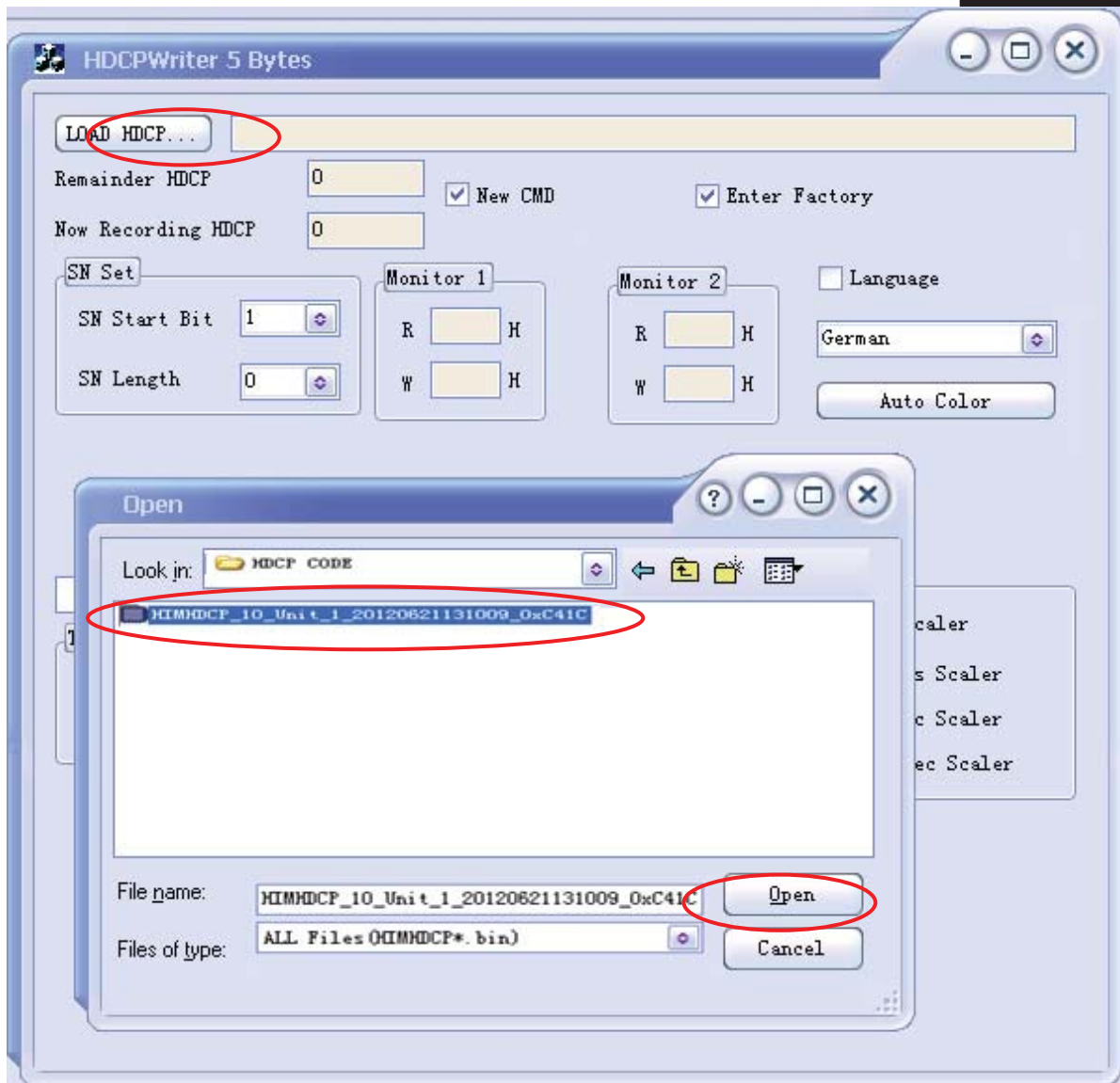
II. HDCP Write Step:



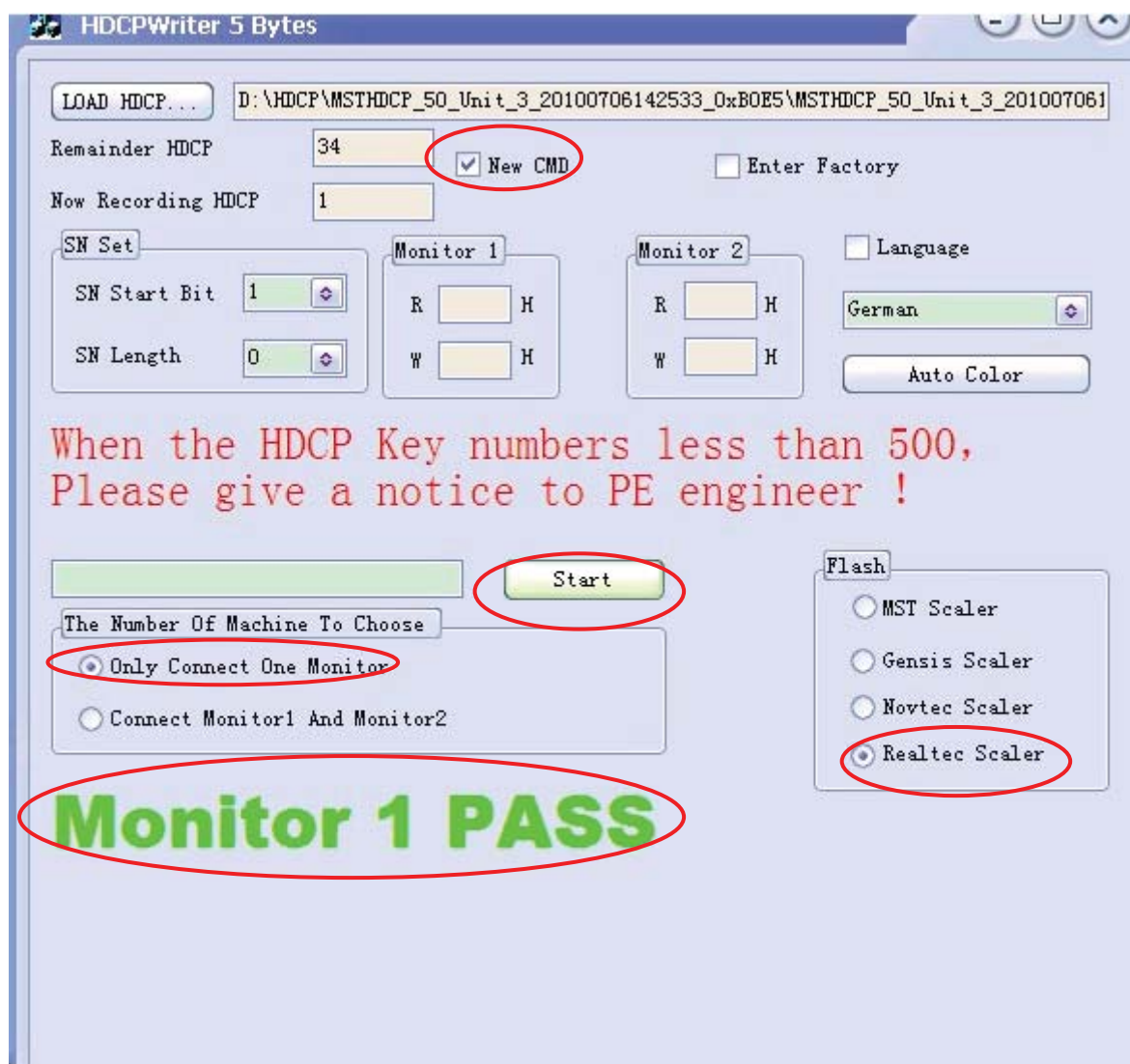
Step1. Double click , chose the right Flash



Step2. Click "Load HDCP...". choose the corresponding "*.BIN" by scaler IC (HIM Scaler) ,then click "Open" as below.



Step3. Pls choose the item remarked in red (i.e.: New CMD/Only Connect One Monitor/MST Scaler), then click "Start" to write HDCP, when display "Monitor 1 PASS" means Write OK.



III. Check HDCP.

USE "Blu-Ray Disc" DVD to check whether the monitor with DVI connector displays normally.

If error message appeared "**Monitor 1 NG(CRC)**" as below:



1. Check whether the HDCP writer is correct.
2. Check whether the tool is correct or not, and check the connection between PC, Monitor and tool. In addition, check whether the tool's power supply is available.
3. If still no work, pls modify the "config.ini" as below, and then try again.

Modify Step: Right click "config.ini"-> Open with "Notepad"->"OK"-> Modify the HDCP value->Save.

```
Config - 记事本
文件(F) 编辑(E) 格式(O) 查看(V) 帮助(H)
[[Cmd]
    Cmd_Class=1

[Language]
    WriteLanguageFlag=0
    LanguageType=German
    SelectLanguageDelay=300

[Auto]
    EnterFactoryFlag=0
    EnterFactoryDelay=200

    AutoFlag=0
    AutoDelay=1000

[HDCP]
    SendHDCPLengthDelay=350
    SendHDCPDataDelay=500
    CheckHDCPCRCDelay=800
    DataCRCDelay=200
    m_SelectScaler=2
```

```
Config - 记事本
文件(F) 编辑(E) 格式(O) 查看(V) 帮助(H)
[Cmd]
    Cmd_Class=1

[Language]
    WriteLanguageFlag=0
    LanguageType=German
    SelectLanguageDelay=300

[Auto]
    EnterFactoryFlag=0
    EnterFactoryDelay=200

    AutoFlag=0
    AutoDelay=1000

[HDCP]
    SendHDCPLengthDelay=350
    SendHDCPDataDelay=500
    CheckHDCPCRCDelay=1500
    DataCRCDelay=200
    m_SelectScaler=2
```

13. DDC Instruction

take the 273E3 for example

General

DDC Data Re-programming

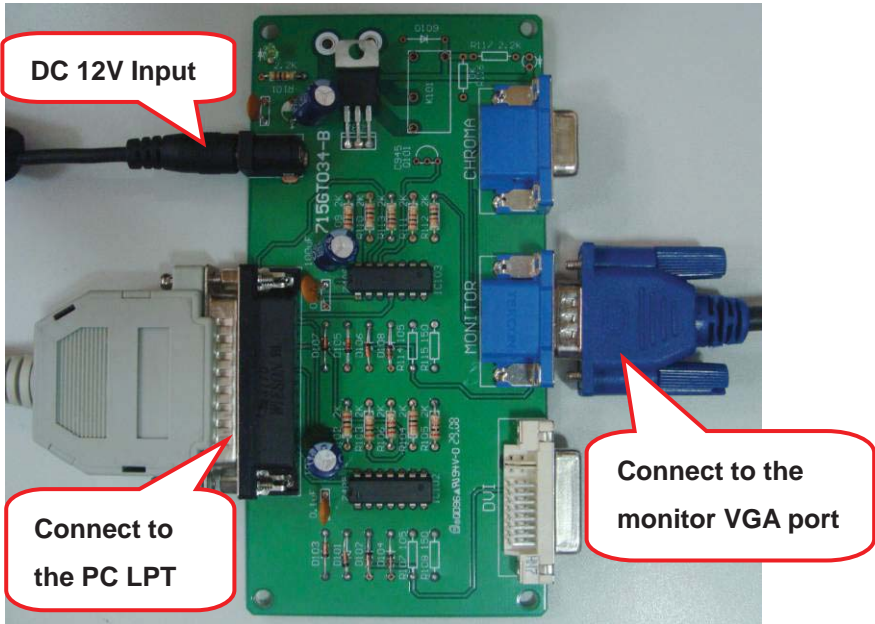
In case the main EEPROM with Software DDC which store all factory settings were replaced because a defect repaired monitor' the serial numbers have to be re-programmed.

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

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

- 1. An i486 (or above) personal computer or compatible.
- 2. Microsoft operation system Windows 95/98/2000/XP.
- 3. LPT drive "PORT95NT.exe" and EDID tool "VGA_PHL.exe"
- 4. EDID Board (715GT034-B) x1,
- 5. Printer cablex1, VGA cable x 1, DVI-D cable x 1
- 6. 12V DC power source
- 7. EDID data

13.1 Connect the ISP board, PC and monitor as follow:

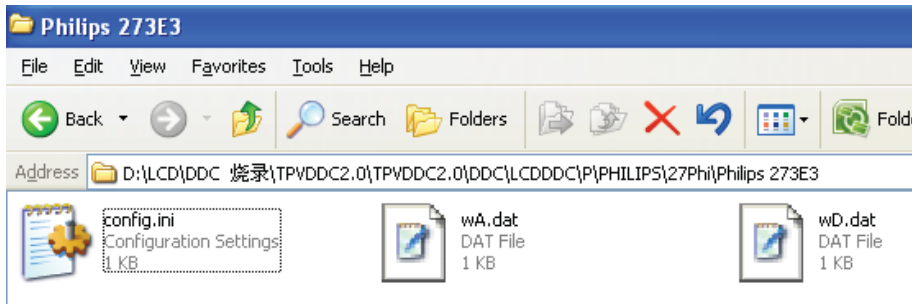


13.2 Install the LPT drive

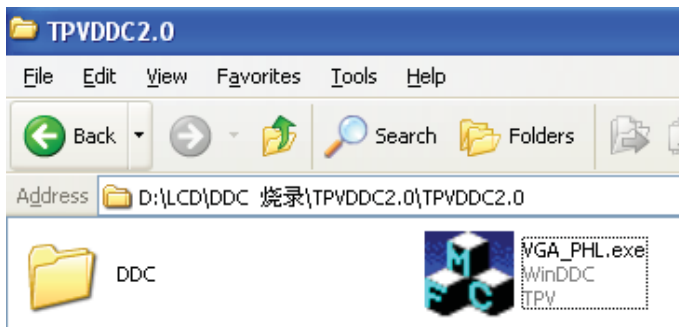
- 1. Double click the icon  PORT95NT.EXE PackageForTheWeb Stub InstallShield Software Corpora. to install the driver.
- 2. Restart the PC after the LPT driver installation

13.3 The process of writing EDID and SN

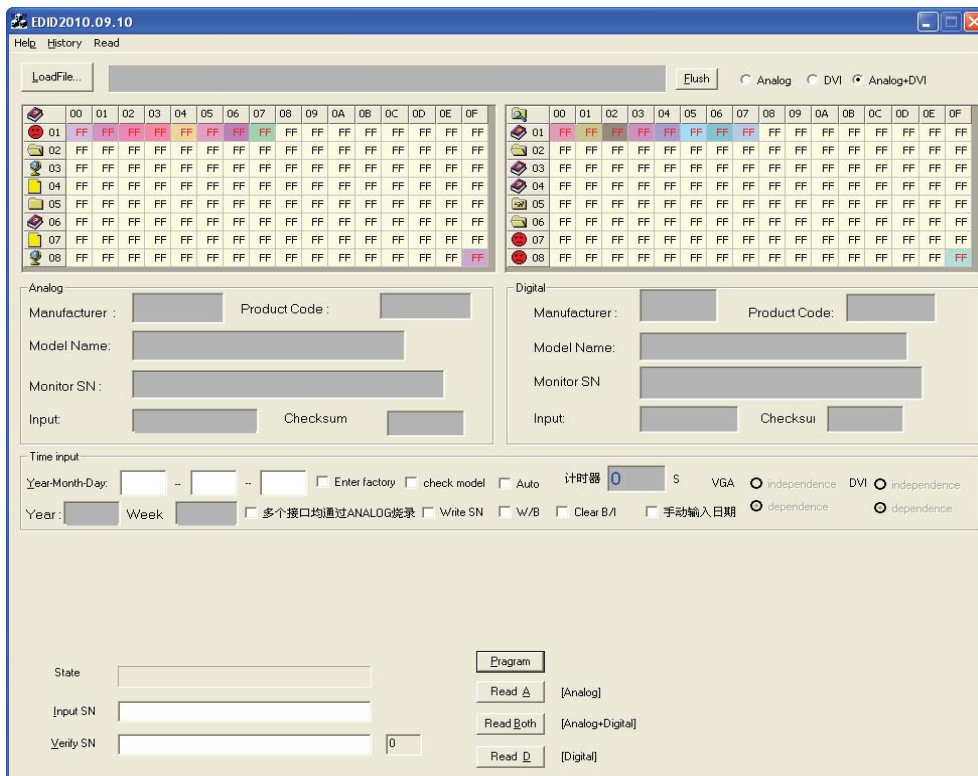
1. Rename the analog EDID to “wa.dat” and digital EDID to “wd.dat”.
2. Put the “wa.dat”, “wd.dat” and “config.ini” files into one folder named Philips 273E3.



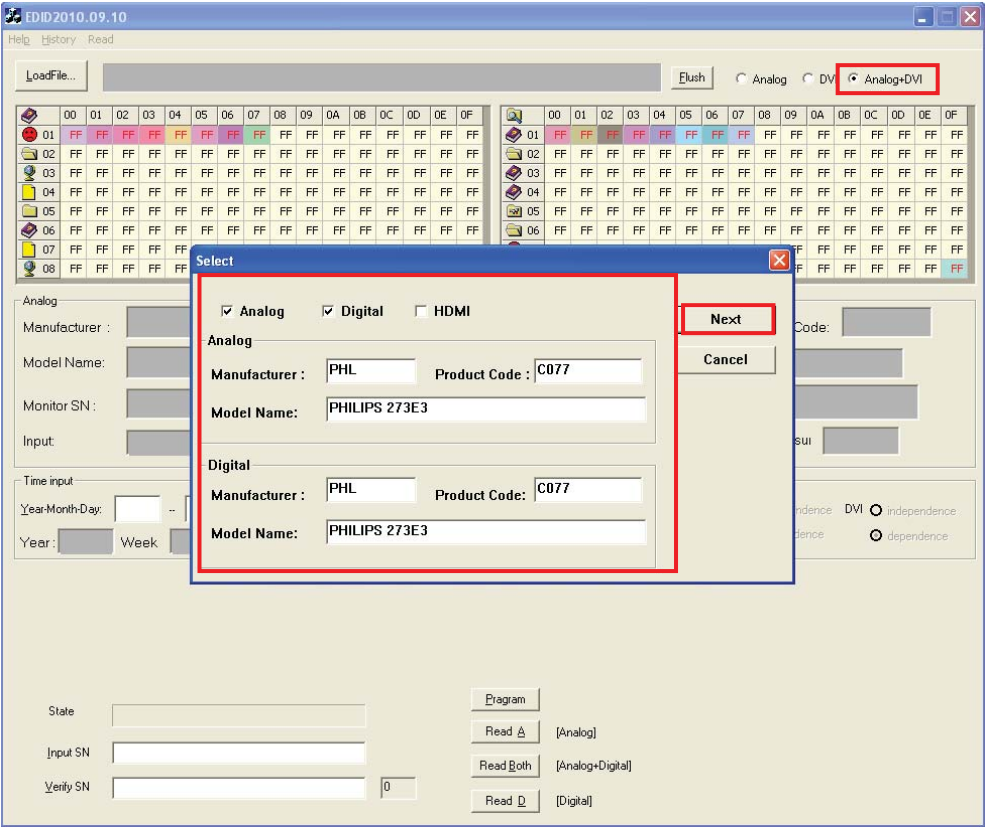
3. Copy the folder named Philips 273E3 to the “ddc” folder. (It must be “ddc” instead of other names).



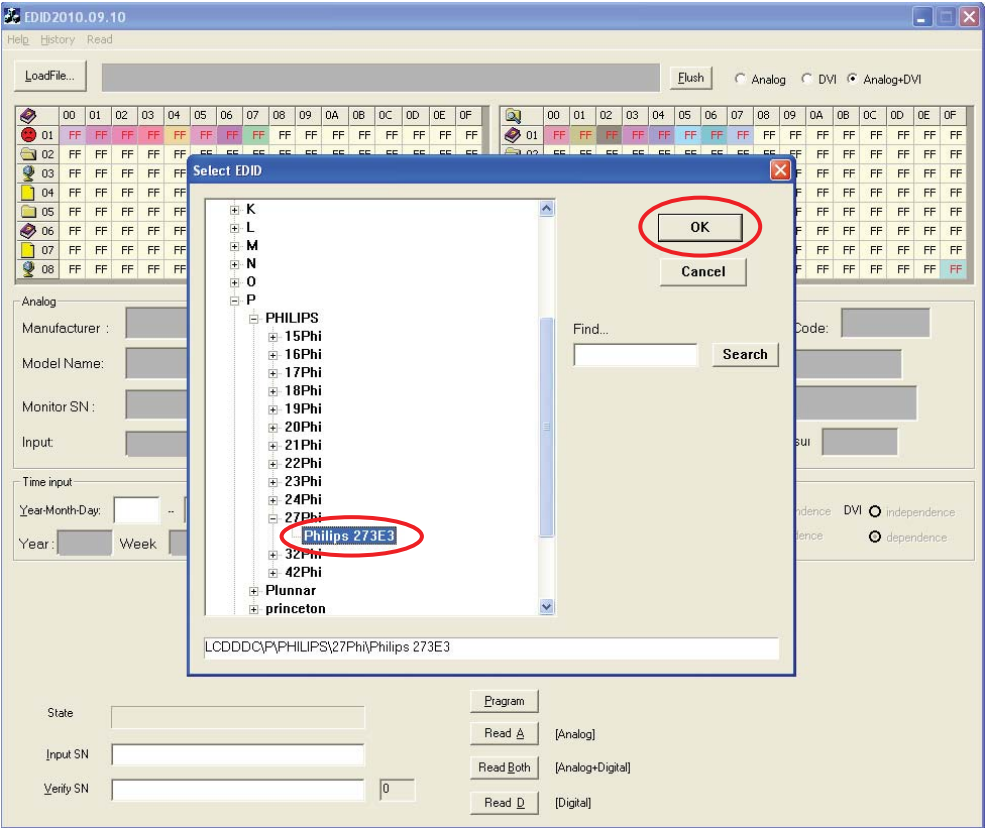
4. Double-click the icon  to open the tool.



5. Choose the “Analog and DVI”, and click “Loadfile” to set the parameters as below picture:



6. Click the “Next” to load the EDID file.



7. Click “OK”, the tool will read the EDID information:

EDID2010.09.10

Help History Read

LoadFile... LCDDDC:\PHILIPS\27Phi\Philips 273E3

Flush Analog DVI Analog+DVI

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
01	00	FF	FF	FF	FF	FF	00	41	0C	77	C0	01	01	01	01	01
02	00	13	01	03	6E	3C	22	78	2E	CA	45	A4	56	4B	9C	25
03	12	50	54	BD	4B	00	D1	C0	B3	00	95	00	81	80	95	0F
04	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
05	45	00	56	50	21	00	00	1E	00	00	00	FF	00	0A	20	20
06	20	20	20	20	20	20	20	20	20	20	20	00	00	FC	00	50
07	68	69	6C	69	70	73	20	32	37	33	45	33	00	00	00	FD
08	00	38	4C	1E	53	11	00	0A	20	20	20	20	20	20	01	A7

Analog

Manufacturer: PHL Product Code: C077

Model Name: Philips 273E3

Monitor SN: [16843009]

Input: Analog Checksum: A7

Digital

Manufacturer: PHL Product Code: C077

Model Name: Philips 273E3

Monitor SN: [16843009]

Input: Digital Checksum: 94

Time input

Year-Month-Day: Year: 2009 Week: 0

Enter factory check model Auto 计时器 0 S VGA independence DVI independence

多个接口通过ANALOG烧录 Write SN W/B Clear B/I 手动输入日期

State

Input SN

Verify SN 14

Program

Read A [Analog]

Read Both [Analog+Digital]

Read D [Digital]

8. Choose the “多个接口通过 ANALOG 烧录” and “Write SN”, and key in the 14 digital S/N which must be the same as the barcode S/N of monitor.

EDID2010.09.10

Help History Read

LoadFile... LCDDDC:\PHILIPS\27Phi\Philips 273E3

Flush Analog DVI Analog+DVI

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
01	00	FF	FF	FF	FF	FF	00	41	0C	77	C0	01	01	01	01	01
02	00	13	01	03	6E	3C	22	78	2E	CA	45	A4	56	4B	9C	25
03	12	50	54	BD	4B	00	D1	C0	B3	00	95	00	81	80	95	0F
04	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
05	45	00	56	50	21	00	00	1E	00	00	00	FF	00	0A	20	20
06	20	20	20	20	20	20	20	20	20	20	20	00	00	FC	00	50
07	68	69	6C	69	70	73	20	32	37	33	45	33	00	00	00	FD
08	00	38	4C	1E	53	11	00	0A	20	20	20	20	20	20	01	A7

Analog

Manufacturer: PHL Product Code: C077

Model Name: Philips 273E3

Monitor SN: [16843009]

Input: Analog Checksum: A7

Digital

Manufacturer: PHL Product Code: C077

Model Name: Philips 273E3

Monitor SN: [16843009]

Input: Digital Checksum: 94

Time input

Year-Month-Day: Year: 2009 Week: 0

Enter factory check model Auto 计时器 0 S VGA independence DVI independence

多个接口通过ANALOG烧录 Write SN W/B Clear B/I 手动输入日期

State

Input SN 22222222222222

Verify SN 22222222222222 14

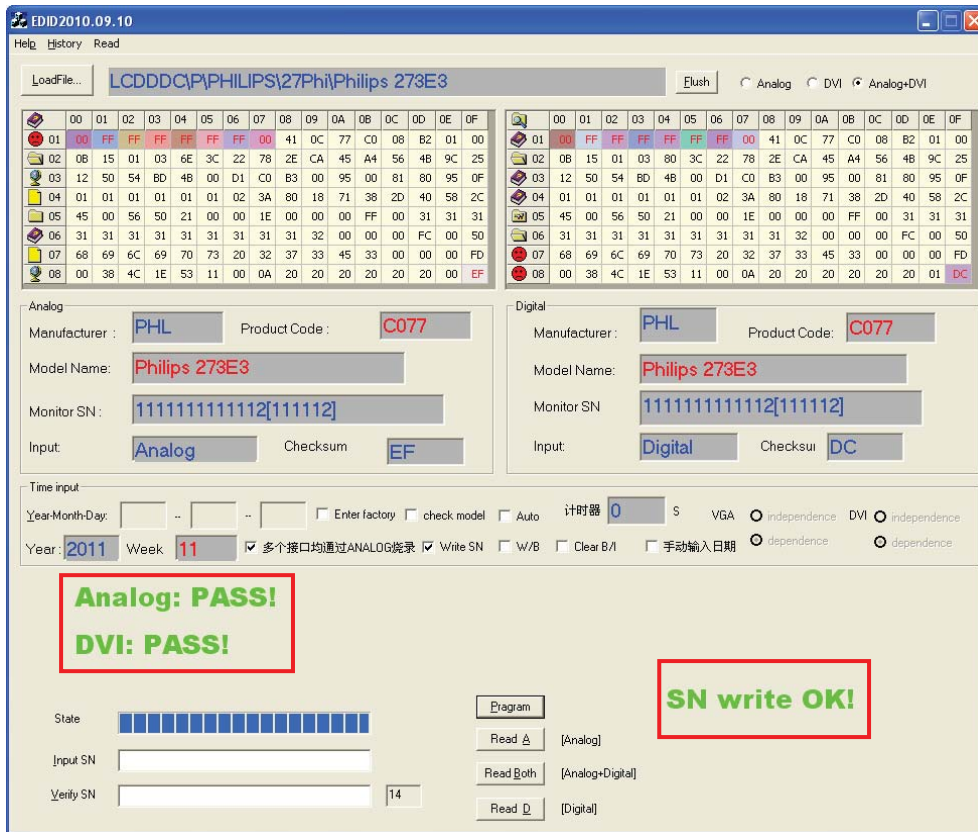
Program

Read A [Analog]

Read Both [Analog+Digital]

Read D [Digital]

9. Click the “Program” to start programming after monitor power on. When it shows “Analog: PASS, DVI: PASS and SN write OK”. The EDID and SN writing process are finished.



13.4 Check the SN

1. Connect the VGA or DVI source and power on monitor.
2. Press the “MENU” button to enter the user menu. We can check the 14 digital SN on the bottom right of the menu.

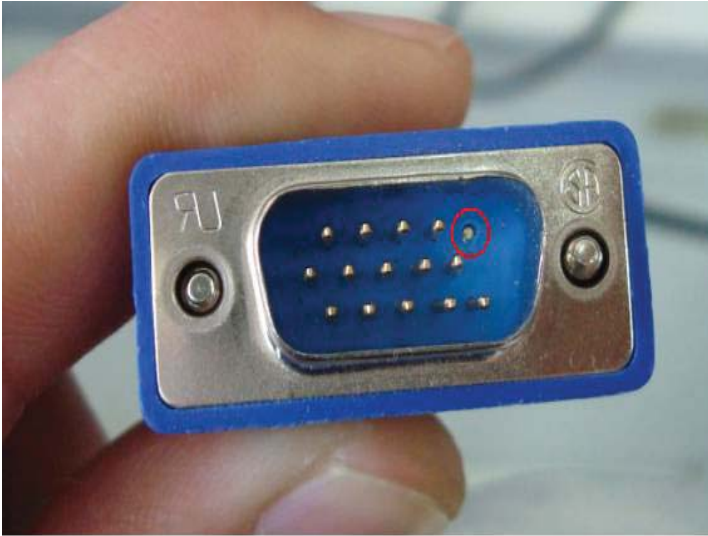
eg: 190V4L



3. If this SN number is the same as what we had written by EDID tool, the EDID and SN writing is completed finally

Note: When you can't burn in the EDID and SN, try the following ways.

1. AC on the monitor and turn on it.
2. Cut off the 5 pin of VGA cable terminal connected to monitor



3. Take apart the monitor and connect the 7pin of EEPROM to GND to disable write protection.

13.5 Troubleshooting

Can't write error, try below few ways to cure can't write errors!

- 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 to try again.

226V4 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 B1 C0 01 01 01 01
10| 08 16 01 03 6E 30 1B 78 2A 92 C5 A2 59 55 9E 27
20| 0E 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 DD 0C 11 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| 68 69 6C 69 70 73 20 32 32 36 56 34 00 00 00 FD
70| 00 38 4C 1E 53 11 00 0A 20 20 20 20 20 20 00 A4

EDID Structure Version/Revision: 01 03

<-Vendor/Product Identification:->

ID Manufacturer Name: PHL
ID Product Code: C0B1
ID Serial Number: No Use
Week of Manufacture: 8
Year of Manufacture: 2012

<-Basic Display Parameters/Features:->

Video i/p definition: Analog
Max. H. Image Size : 48cm
Max. V. Image Size : 27cm
Display Gamma : 2.2

<-Color Characteristics:->

Rx: 0.635 Gx: 0.332 Bx: 0.155 Wx: 0.313
Ry: 0.349 Gy: 0.619 By: 0.055 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) : Philips 226V4

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 : A4

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 B1 C0 01 01 01 01
10| 08 16 01 03 80 30 1B 78 2A 92 C5 A2 59 55 9E 27
20| 0E 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 DD 0C 11 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| 68 69 6C 69 70 73 20 32 32 36 56 34 00 00 00 FD
70| 00 38 4C 1E 53 11 00 0A 20 20 20 20 20 20 00 92

EDID Structure Version/Revision: 01 03

<-Vendor/Product Identification:->

ID Manufacturer Name: PHL
ID Product Code: C0B1
ID Serial Number: No Use
Week of Manufacture: 8
Year of Manufacture: 2012

<-Basic Display Parameters/Features:->

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Rx: 0.635 Gx: 0.332 Bx: 0.155 Wx: 0.313
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<-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 x 1024 @ 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) : Philips 226V4

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 : 92

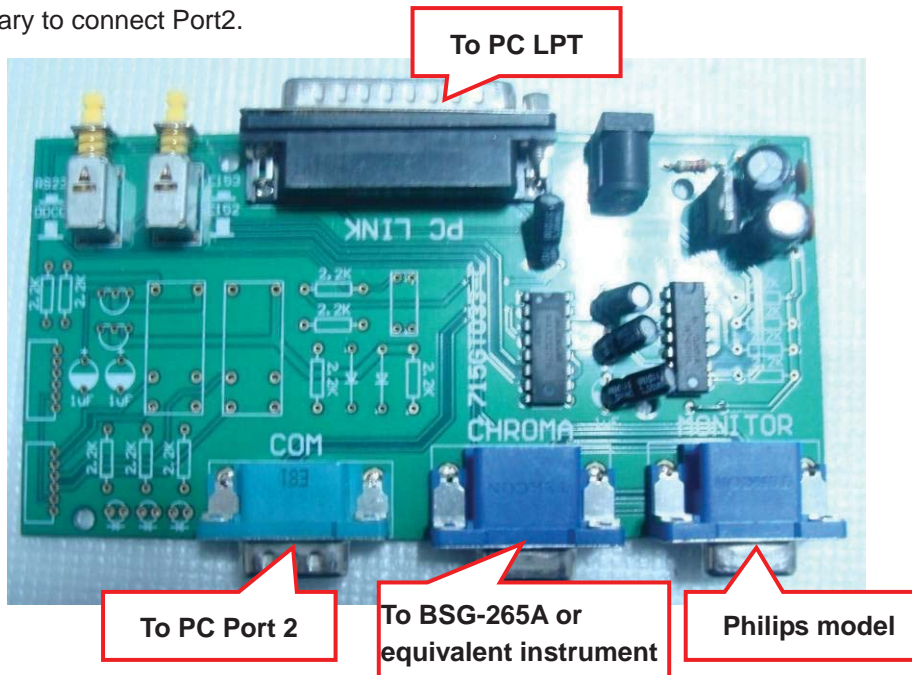
14. White Balance, Luminance Adjustment

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

2. Equipment installation:

- 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
- Install Port95NT drive program, set PC printer connector mode as ECP mode and reset PC after finish installing.
- Connect tool as follow:

Note: It's not necessary to connect Port2.



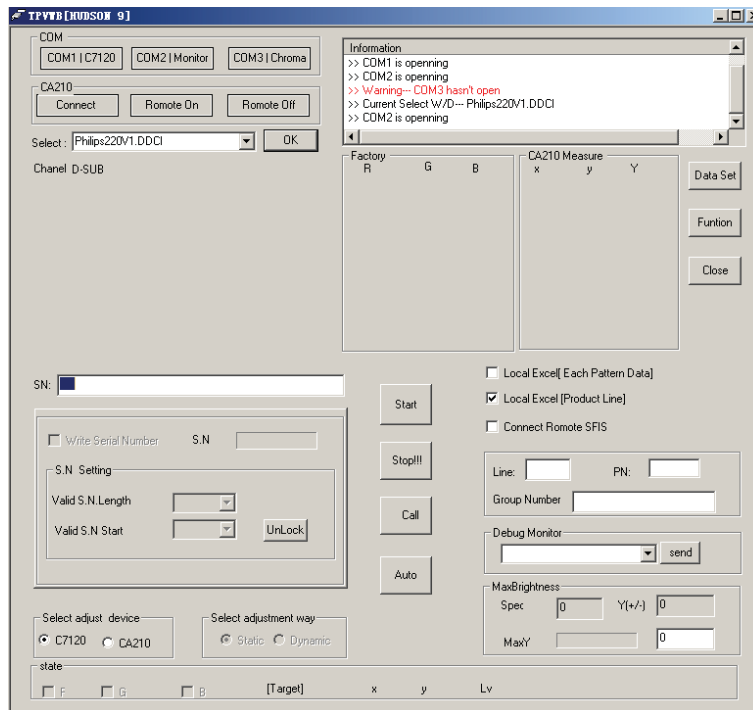
3. Adjustment

Preparation before adjustment:

- Monitor should be warmed up for more than half an hour.
- Make sure that the tools are connected right and drive programs have been installed OK.

4. Adjustment process:

- Press the power of CA-210, shut off the lens, press 0-Cal and open the lens after analyzer reset.
- Open white balance adjustment program, select the right parameter according with the program and click OK.
- Make sure that the lens of CA-210 aims at the center of the screen, then click START to adjust.
- After finish adjusting, the adjustment program displays pass, and the START button changes for NEXT, which means that you can adjust another monitor.



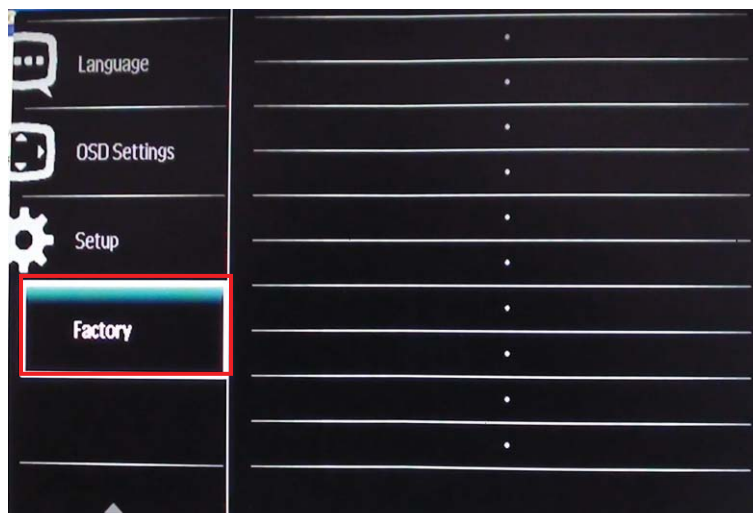
5. Color Temp confirmation

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.

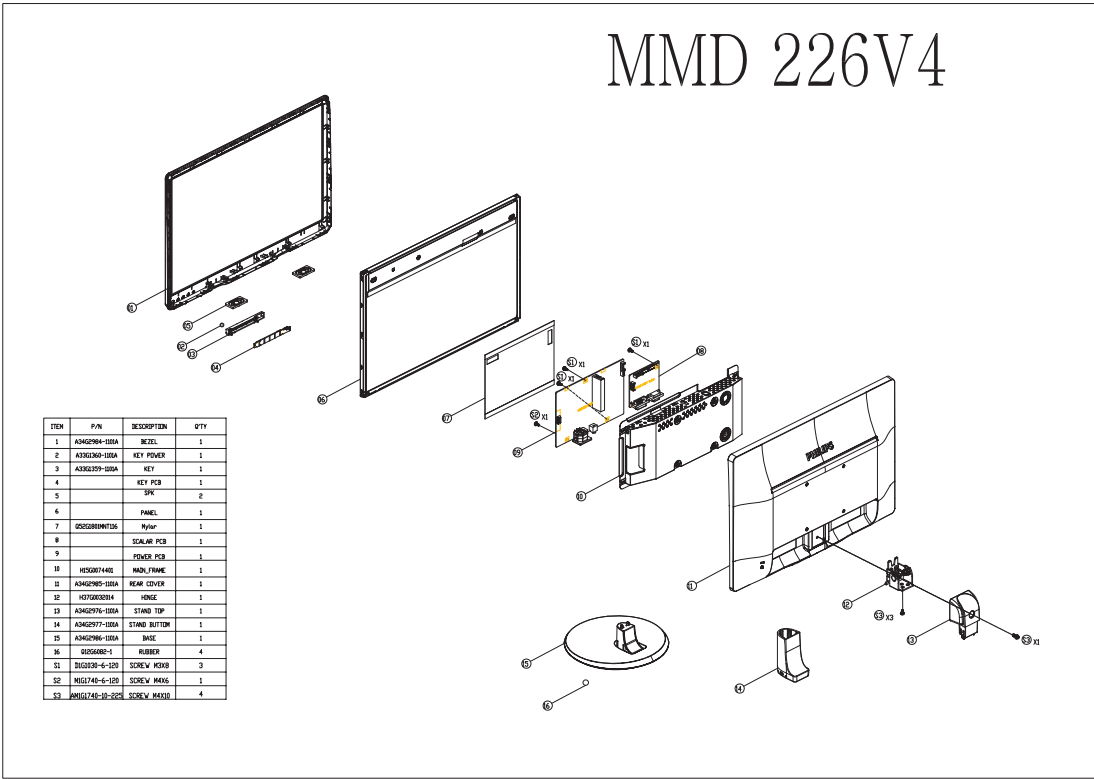
CIE coordinates	11500K	9300K	8200K	7500K	6500K/sRGB	sRGB	5000K
X (± 0.02)	0.270	0.283	0.291	0.298	0.313	0.313	0.345
Y (± 0.02)	0.281	0.297	0.306	0.314	0.329	0.329	0.357

6. How to enter into the factory mode:

1. Connect the video source and DC off the monitor.
2. Press **AUTO/▼** and **≡/OK** buttons at the same time, DC 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



16. Recommended & Spare Parts List

Note: Take the **226V4LSB/93 (tpv)** BOM for example, the parts information listed below are for reference only, and are subject to change without notice. Please go to for the latest information

Item	Location	PCM Codes	Description	Remark
	WH117	H44GB0271010DJ	CUSHION	
	WH117	H44GB0272010DJ	CUSHION	
	E08902	089G 725CAA 2G	D-SUB CABLE 1500MM	
	E08902	089G 725HAA 2G	D-SUB CABLE 1500MM	
	E08901	089G414A15N HL	POWER CORD 1500MM China Reg	
	E08901	089G414A15N IS	POWER CORD 1500MM China Reg	
	ECN803	095G8014 6TJ15	HARNESS 6P(CI1406)-6P(2008) 160MM	
	ECN803	095G8014 6WJ15	HARNESS 6P(A2008)-6P(CI1406S) 160mm	
	ECN408	395G179J30PW23	FFC CABLE 30P 190mm 1.0MM	
	E750	750GBV215W3111N000	LCD TPM215HW01-WU3100 3841 FQ TPV	
	E750	750GBV215W3121N000	LCD TPM215HW01-WU3100 3941 FQ TPV	
	WH201	H40G019N81313B	RATING LABEL V4 CH 1	
	WH201	H40G019N81314B	RATING LABEL V4 CH TCO	
	WH428	A33G1360DBJ01B0100	POWER KEY	
	WH429	H15G0075101101	BKT_HINGE	
	WH206	H41G78S181309A	QSG 226V4 M4226VQ1T	
	WH202	H44GB02781301A00HX	ARTWORK CARTON 226V4	
	WH208	H70G21C181302A	CD MANUAL 226V4 M4226V1T	
	WH405	A33G1359DBJ01B0100	KEY	
	WH109	A34G2976DBJ01B0100	STAND TOP	
	WH109	A34G2977DBJ01B0100	STAND BOTTOM	
	WH111	A34G2986DBJ01B0130	BASE	
	WH110	H15G0074401201	MAIN FRAME	
	WH418	Q12G6082 1	FOOT PAD	
	WH209	Q45G 88609197	PROTECT BAG	
	ECN408	S95G179T30PW23	FFC CABLE 30P 190mm 1.0MM	
	WH108	A34G2984DBJB2B0101	BEZEL	
	WH107	A34G2985DBK04K0130	REAR_COVER	
	WH104	H37G00320140ML	HINGE ASS'Y	
	WH002	CBPCVHGPHH2	SCALER BOARD	
	WH002	756GHCCB0PH0150000	SCALER BOARD ASSY(CBPCVHGPHH2)	
	SMTCV-U402	100GPHBI001W11	MCU ASSY-056G2233501	
	CN406	033G3802 7B Y	WAFER	
	CN406	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	
	CN410	033G801930F CH L	FFC CONN 1.0mm 30P R/A 34mm 6mm	
	CN410	033G801930F CH JS	FFC CONN 1.0mm 30P R/A 34mm 6.3mm	
	R718	061G152M339 64 SY	RST MOFR 3.3 OHM +-5% 2WS FUTABA	
	CN101	088G 35315F HD HF	D-SUB CONN WITH SCREW 15P BLUE	
	CN101	088G 35315F XH HF	D-SUB 15PIN VERTICAL CONN WITH SCREW	
	CN102	088G 35424F C HF	DVI 24PIN CONN F attached Screw	
	CN102	088G 35424F D HF	DVI 24PIN CONN F ATTACHED SCREW	
	U401	090G6250 1 GP	HEAT SINK	
	X401	093G 2258B J	CRYSTAL 24.576MHz 20PF 49US	
	C445	067G 3051013PB	EC 105C 100uF M 16V 5*11mm JH CD263	
	U401	056G 562A30	SCALER HX6822-A080LAG LQFP-100	
	U703	056G 563 31	IC AZ1117D-1.8-E1	
	U702	056G 563 52	LDO AP1117D33G-13	
	U107	056G 662 52	ESD PROTECT AZC398-04S.R7G SOT23-6	
	U101	056G1133 34 1	EEPROM M24C02-RMN6TP 2Kb SO-8	


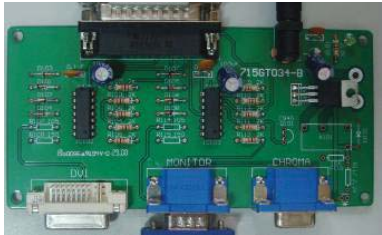
	U402	056G2233501	FLASH MX25L2026DM1I-12G 2Mb SOP-8	
	Q701	057G 417511	MMBT3904	
	Q401	057G 417512	MMBT3906	
	Q401	057G 417517	Tra LMBT3906LT1G -200mA/-40V SOT-23 LRC	
	Q703	057G 417518	TRA LMBT3904LT1G 200mA/40V SOT-23 LRC	
	Q706	057G 763940	MOSFET AO3401A SOT-23	
	R417	061G0402000 JT	RST CHIPR MAX0R05 1/16W TZAI YUAN	
	R423	061G0402000 JY	RST CHIPR MAX 0R05 OHM 1/16W YAGEO	
	R108	061G0402100 JT	RST CHIP 10R 1/16W 5% TZAI YUAN	
	R104	061G0402100 JY	RST CHIPR 10 OHM +-5% 1/16W YAGEO	
	R144	061G0402101 JT	RST CHIP 100R 1/16W 5% TZAI YUAN	
	R707	061G0402101 JY	RST CHIPR 100 OHM +-5% 1/16W YAGEO	
	R439	061G0402102 JT	RST CHIP 1K 1/16W 5% TZAI YUAN	
	R438	061G0402102 JY	RST CHIPR 1KOHM +-5% 1/16W YAGEO	
	R145	061G0402103 JT	RST CHIP 10K 1/16W 5% TZAI YUAN	
	R145	061G0402103 JY	RST CHIPR 10KOHM +-5% 1/16W YAGEO	
	R716	061G0402104 JT	RST CHIP 100K 1/16W 5% TZAI YUAN	
	R716	061G0402104 JY	RST CHIPR 100KOHM +-5% 1/16W YAGEO	
	R416	061G0402105 JT	RST CHIP R 1Mohm 1/16W +/-5% TZAI YUAN	
	R416	061G0402105 JY	RST CHIPR 1000KOHM 1/16W YAGEO	
	R415	061G0402153 JT	RST CHIP 15K 1/16W 5% TZAI YUAN	
	R415	061G0402153 JY	RST CHIPR 15KOHM 1/16W YAGEO	
	R404	061G0402220 JT	RST CHIP 22R 1/16W 5% TZAI YUAN	
	R407	061G0402220 JY	RST CHIPR 22 OHM +-5% 1/16W YAGEO	
	R115	061G0402222 JT	RST CHIP 2K2 1/16W 5% TZAI YUAN	
	R115	061G0402222 JY	RST CHIPR 2.2KOHM +-5% 1/16W YAGEO	
	R714	061G0402223 JT	RST CHIP 22K 1/16W 5% TZAI YUAN	
	R123	061G0402223 JY	RST CHIPR 22KOHM +-5% 1/16W YAGEO	
	R401	061G0402391 JT	RST CHIP 390R 1/16W 5% TZAI YUAN	
	R401	061G0402391 JY	RST CHIP 390R 1/16W 5% YAGEO	
	R436	061G0402392 JF	RST CHIPR 3.9KOHM +-5% 1/16W FENGHUA	
	R434	061G0402392 JT	RST CHIP R 3K9 +/-5% 1/16W TZAI YUAN	
	R119	061G0402470 JF	RST CHIPR 47 OHM 5% 1/16W FENGHUA	
	R126	061G0402470 JT	RST CHIP 47R 1/16W 5% TZAI YUAN	
	R109	061G0402471 JF	RST CHIPR 470 OHM 5% 1/16W FENGHUA	
	R109	061G0402471 JT	RST CHIP 470R 1/16W 5% TZAI YUAN	
	R713	061G0402472 JF	RST CHIPR 4.7KOHM +-5% 1/16W FENGHUA	
	R713	061G0402472 JT	RST CHIP 4K7 1/16W 5% TZAI YUAN	
	R102	061G0402750 JF	RST CHIPR 75 OHM +-5% 1/16W FENGHUA	
	R111	061G0402750 JT	RST 0402 75R 5% 1/16W	
	R101	061G0603000 JF	RST CHIPR MAX 0R05 1/10W FENGHUA	
	R136	061G0603000 JT	RST CHIP MAX 0R05 1/10W TZAI YUAN	
	R406	061G0603220 JF	ST CHIPR 22 OHM +-5% 1/10W FENGHUA	
	R406	061G0603220 JT	RST CHIP 22R 1/10W 5% TZAI YUAN	
	R427	061G0603561 JF	RST CHIP 560R 1/10W 5% FENGHUA	
	R427	061G0603561 JT	RST CHIPR 560OHM +-5% 1/10W TZAI YUAN	
	R465	061G1206301 JF	RST CHIPR 300 OHM +-5% 1/4W fenghua	
	R465	061G1206301 JT	RST CHIPR 300 OHM +-5% 1/4W TZAI YUAN	
	C107	065G040210232K A	CAP 0402 1NF 10% 50V X7R	
	C107	065G040210232K Y	CAP CHIP 0402 1N 50V X7R +/-10%	
	C715	065G040210412K A	CAP CHIP 0402 100nF K 16V X7R	
	C419	065G040210412K Y	CAP 0402 100NF 10% 16V X7R	
	C411	065G0402105A5K A	CAP CHIP 0402 1UF K 10V X5R	
	C413	065G0402105A5K T	CAP 0402 1UF 10% 10V X5R	
	C114	065G040222031J A	CAP 0402 22PF J 50V NPO	
	C114	065G040222031J Y	CAP CHIP 0402 22P 50V NP0 +/-5%	
	C712	065G040222415K A	CAP 0402 220NF 10% 16V X7R	

C120	065G040222415K	Y	CAP CHIP 0402 220nF 16V X5R
C404	065G040233031J	A	CAP 0402 33PF 5% 50V NP0
C405	065G040233031J	Y	CAP CHIP 0402 33P 50V NP0 +/-5%
C102	065G040247312K	A	CAP 0402 47NF 10% 16V X7R
C113	065G040247312K	Y	CAP 0402 47NF 10% 16V X7R
C101	065G040250931C	A	CAP 0402 5PF 0.25pF 50V NP0
C111	065G040250931C	Y	CAP 0402 5PF 0.25pF 50V NP0
C403	065G060310512K	3	CAP 0603 1UF 10% 16V X7R
C403	065G060310512K	A	CAP 0603 1UF 10% 16V X7R
C450	065G0805106A5K	3	CHIP 10uF 10V X5R 10%
C450	065G0805106A5K	T	CHIP 10uF 10V X5R 0805
FB413	071G 56K121	M	CHIP BEAD 120OHM 6A MGLB2012-120T-LF
FB413	071G 56K121	TA	CHIP BEAD 120R/6000mA HCB2012KF-121T60
FB403	071G 59A121	M	CHIP BEAD 0603 120R 25% 1608E121T3R0-LF
FB403	071G 59A121	TA	CHIP BEAD 120R/3000mA HCB1608KF-121T30
FB408	071G 59G301	M	CHIP BEAD 0603 300R 25% 200mA
FB408	071G 59G301	TA	CHIP BEAD 300OHM 200mA FCM1608KF-301T02
D101	093G 64 42	P	BAV70 SOT23 BY PAN JIT
D102	093G 64 42SEM		SWITCHING BAV70 215mA 75V SOT-23
ZD101	093G 39GA01	T	RLZ5.6B
ZD101	093G 39S 24	T	RLZ 5.6B LLDS
WH003	PLPCCB454UHC6		POWER BOARD ASSY
IC902	056G 139 9		IC EL817M(X) photocoupler DIP-4
IC901	056G 379205		AC/DC LD7904JGP7 DIP-6
NR901	061G 58100 WD		RST NTCR 10 OHM +-20% 5A THINKING
NR901	061G 58100 X1		NTCR 10 20% 3.6W
C904	063G107K224 UM		X2 CAP 0.22uF K 275VAC
C904	063G107K2246S1		X2 CAP 0.22UF K 275VAC
C907	067G 43Z68015K		EC 68UF 20% 450V 18*32 2000 hr
C907	067G 43Z68015L		EC 68uF M 450V RGT 18*31.5mm
L901	073G 174 65 H2		LINE FILTER 30mH MIN
L903	073G 253 91 H		IND CHOKE 3.5uH+-10% DADONG
L903	073G 253 91 L		CHOKE COIL 3.5UH 10% CC-015367HF,VOC,HF
L905	073G 253191 H		IND CHOKE 1.1uH DADON
L905	073G 253191 L		CHOKE COIL 1.1uH CC-007802
L801	073G 253242 H		CHOKE COIL 47UH 10% L470M HA 2.5A
L801	073G 253242 CP		CHOKE COIL 47UH 10% L040462-6 2.5A
T901	080GL19P 39 CP		X'FMR 950UH 10% 20UH EFD25 T020543-6
CN901	087G 501 32 DL HF		HF AC SOCKET R/A 3PIN+2PIN GROUND
CN901	087G 501 32 HC HF		HF AC SOCKET R/A 3PIN+2PIN GROUND
BD901	093G 50460517		BRIDGE 2KBP08M-70 2A 800V KBP 80A
BD901	093G 50460519		BRIDGE KBP206G X0 2A 800V KBP 80A
D904	093G 60923		DIODE SR504-30 DO-201AD
D903	093G 60924		DIODE SR510-22 DO-201AD
CN804	311GW200A06ABX		WAFER 2.0mm 6P
D801A	393G0060A0300S		SCHOTTKY SR3100-MK18 3A 100V DO-201AD
CN902	395G082509DW02		HARNESS 9P-9P 120mm
CN902	395G082509TW02		HARNESS 9P-9P 120mm
L901	S73G17465V2		Transformer Ass'Y
T901	S80GL19P39V		X'FMR 950UH 10% 20UH P-EF25-181
U801	056G 700 11		LED DRIVER OZ9998BGN-A1-0-TR SOP-16
Q801	057G 763139		MOSFET AOD478 11A 100V TO-252
Q801	057G 763141		MOSFET APM1105NUC-TRG 16A 100V TO-252-3
R925	061G0603100 JF		RST CHIPR 10 OHM 5% 1/10W FENGHUA
R925	061G0603100 JT		RST CHIP 10R 1/10W 5% TZAI YUAN
R917	061G06031001FF		RST CHIPR 1 KOHM +-1% 1/10W FENGHUA

R917	061G06031001FT	RST CHIP 1K 1/10W 1%	
R912	061G06031202FF	RST 0603 12K 1% 1/10W	
R912	061G06031202FT	RST CHIP 12K 1/10W 1%	
R911	061G0603152 JF	RST CHIPR 1.5KOHM +-5% 1/10W FENGHUA	
R911	061G0603152 JT	RST CHIP 1K5 1/10W 5% TZAI YUAN	
R916	061G0603471 JF	RST CHIPR 470OHM +-5% 1/10W FENGHUA	
R916	061G0603471 JT	RST CHIPR 470OHM +-5% 1/10W TZAI YUAN	
R811	061G0805000 JF	RST CHIPR 0 OHM +-5% 1/8W FENGHUA	
R811	061G0805000 JT	RST 0805 0.05R MAX 1/8W	
R804	061G0805100 JF	RST CHIPR 10 OHM +-5% 1/8W FENGHUA	
R804	061G0805100 JT	RST CHIP 10R 1/8W 5% TZAI YUAN	
R815	061G08051004FF	RST CHIPR 1 MOHM +-1% 1/8W FENGHUA	
R815	061G08051004FT	RST CHIP R 1 MOHM +-1% 1/8W	
R806	061G0805101 JF	RST 0805 100R 5% 1/8W	
R806	061G0805101 JT	RST CHIP 100R 1/8W 5% TZAI YUAN	
R805	061G0805104 JT	RST CHIPR 100KOHM +- 5% 1/8W TZAI YUAN	
R805	061G0805104 JY	RST CHIPR 100KOHM 1/8W YAGEO	
R819	061G0805109 JF	RST CHIPR 1 OHM +- 5% 1/8W FENGHUA	
R822	061G0805109 JT	RST CHIP 1R 1/8W 5% TZAI YUAN	
R923	061G0805123 JF	RST CHIPR 12KOHM +-5% 1/8W FENGHUA	
R810	061G08052002FF	RST CHIPR 20KOHM +-1% 1/8W FENGHUA	
R810	061G08052002FT	RST CHIP 20K 1/8W 1%	
R809	061G08052003FF	RST CHIPR 200KOHM +-1% 1/8W FENGHUA	
R809	061G08052003FT	RST CHIP 200K 1/8W 1%	
R913	061G08053002FF	RST CHIPR 30KOHM +-1% 1/8W FENGHUA	
R913	061G08053002FT	RST CHIP 30K 1/8W 1%	
R802	061G0805304 JF	RST CHIPR 300KOHM +-5% 1/8W FENGHUA	
R802	061G0805304 JT	RST CHIP 300K 1/8W 5% TZAI YUAN	
R816	061G08053602FF	RST CHIPR 36KOHM +-1% 1/8W FENGHUA	
R816	061G08053602FT	RST CHIP 36K 1/8W 1%	
R927	061G0805622 JT	RST CHIPR 6K2 +-5% 1/8W TZAI YUAN	
R927	061G0805622 JY	RST CHIPR 6K2 +-5% 1/8W YAGEO	
R906	061G1206101 JF	RST CHIPR 100 OHM +-5% 1/4W FENGHUA	
R904	061G1206101 JT	RST CHIPR 100 OHM +-5% 1/4W TZAI YUAN	
R801	061G1206103 JF	RST CHIPR 10KOHM +-5% 1/4W FENGHUA	
R801	061G1206103 JT	RST CHIPR 10KOHM +-5% 1/4W TZAI YUAN	
R921	061G1206104 JF	RST CHIPR 100KOHM +-5% 1/4W FENGHUA	
R919	061G1206104 JT	RST CHIPR 100KOHM +-5% 1/4W TZAI YUAN	
R902	061G1206105 JF	RST CHIPR 1 MOHM +-5% 1/4W FENGHUA	
R900	061G1206105 JT	RST CHIPR 1MOHM +-5% 1/4W TZAI YUAN	
R926	061G1206159 JF	RST CHIPR 1.5 OHM +-5% 1/4W FENGHUA	
R926	061G1206159 JT	RST CHIP R 1.5ohm 1/4W +/-5%	
R812	061G1206308 JF	RST CHIPR 0.3 OHM +-5% 1/4W FENGHUA	
R812	061G1206308 JT	RST 1206 0.3R 5% 1/4W	
R907	061G1206470 JF	RST CHIPR 47 OHM +-5% 1/4W FENGHUA	
R909	061G1206470 JT	RST CHIPR 47 OHM +-5% 1/4W TZAI YUAN	
R910	061G1206561 JT	RST CHIPR 560 OHM +-5% 1/4W TZAI YUAN	
R817	061G1206681 JF	RST 1206 680R 5% 1/4W FENGHUA	
R817	061G1206681 JT	RST CHIPR 680 OHM +-5% 1/4W TZAI YUAN	
C916	065G060310332K F	CAP CHIP 0603 10NF K 50V X7R	
C916	065G060310332K Y	CAP CHIP 0603 10N 50V X7R +/-10%	
C812	065G080510131J A	CAP CHIP 0805 100pF J 50V NPO	
C812	065G080510131J F	CAP CHIP 0805 100PF J 50V NPO	
C803	065G080510232K F	CAP 0805 1000PF 10% 50V X7R	
C815	065G080510232K Y	CAP CHIP 0805 1N 50V X7R +/-10%	
C802	065G080510332K F	CAP 0805 10NF K 50V X7R	
C802	065G080510332K Y	CAP CHIP 0805 10N 50V X7R +/-10%	

C814	065G080510432K	3	CAP CHIP 0805 100N 50V X7R +/-10%	
C917	065G080510432K	F	CAP CHIP 0805 0.1UF K 50V X7R	
C901	065G080510432K	Y	CAP CHIP 0805 100N 50V X7R +/-10%	
C806	065G080522432K	F	CAP 0805 220NF 10% 50V X7R	
C806	065G080522432K	Y	CAP CHIP 0805 220N 50V X7R +/-10%	
C805	065G080522512K	3	CAP CHIP 0805 2U2 16V X7R +/-10%	
C805	065G080522512K	M	CAP 0805 2.2UF 10% 16V X7R	
C905	065G080533232K	A	CAP 0805 3.3NF 10% 50V X7R	
C905	065G080533232K	Y	CAP 0805 3.3NF 10% 50V X7R	
C807	065G080547432K	3	CAP 0805 470NF 10% 50V X7R	
C804	065G080547432K	F	0805 0.47UF K 50V X7R	
C804	065G080547432K	T	CAP CHIP 0805 0.47UF K 50V X7R	
C813	065G080568131J	F	CAP 0805 680PF 5% 50V NPO	
C813	065G080568131J	Y	CAP CHIP 0805 680P 50V NP0 +/-5%	
C920	065G120622272K	F	CAP 1206 2.2NF 10% 500V X7R	
C910	065G120622272K	Y	CER 1206 2N2 500V X7R 10%	
ZD902	093G 39S 38	T	PTZ 9.1B	
IC903	056G 563355		Shunt Regu TL431G-A-TA TO-92 42V 150mA	
Q903	057G 761 16		TRA KTD1028 KEC	
R918	061G152M25152T	HX	RST MOF 250R 5% 2W	
R918	061G152M25152T	SY	RST MOF 250R 5% 2W	
R903	061G152M39852T	HX	RST MOF 0.39R 5% 2W	
R903	061G152M39852T	SY	RST MOF 0.39R 5% 2W	
C906	065G 2K152 2T6921		CAP CER 1500pF K 2KV Y5P	
C908	067G215Y4707KT		EC 47uF 20% 50V 6.3*11mm EG	
FB901	071G 55 29		FERRITE BEAD	
F901	084G 56 3 C		FUSE 3.15A 250V MST 3.15A 250V	
F902	084G 56 5 C		FUSE 5A 250V MST 5A 250V	
ZD901	093G 3918252T		ZENER MTZJ T-72 18B 16.82 0.5 DO-34	
D901	093G 6026T52T		CTIFIER DIODE FR107	
C921	065G500K4722HT		CAP CER 4.7NF 10% 50V X7R	
C816	065G517K102 2T6921		CAP CER 1000PF K 500V Y5P	
C801	067G215D3314KT		EC 330UF 20% 25V 10*12 ED	
C902	365G306K6812WR		CAP Y1 680PF 10% 250V Y5P	
C900	065G306M10233R		CAP Y1 1NF 20% 250V Y5U	
C801	367G215X3314AT		EC 330UF 20% 25V - 10*12	
C908	367G215X4707AT		EC 47uF 20% 50V - 6.3*11mm	
Q903	057G 530503	T	2SD1207T	
ZD901	093G 39A0852T		GDZJ18B	
F902	084G 56 5 B		FUSE 5A 250V SS-5-5A-AP	
F901	084G 56 3W		FUSE 3.15A 250V	
C809A	067G 4154799LT		EC 4.7UF 20% 100V 8*11.5	
C809A	067G 4154799KT		EC 4.7UF 20% 100V 8*12 4000 hr ED	
C902	065G306K68123R		CAP Y1 680PF 10% 250V Y5P	
C912	367G215S6814AT		EC 680UF 20% 25V - 12.5*16	
C914	367G415X4713AT		EC 470uf 20% 16V ERS1CM471G13B50TM 10X13	
C912	067G215S6814KT		EC 680UF 20% 25V 12.5*16 -	
C914	067G215S4713KT		EC 470uF 20% 16V 10*13 ED	
C909	367G415X1024AT		EC 1000UF 20% 25V 12.5X20	
C909	067G215S1024KT		EC 1000UF 20% 25V 12.5*20 -	
C909	067G215S1024LT		EC 1000UF 20% 25V 12.5*20	
WH004	KEPCVHA1		KEY BOARD ASSY	
LED001	381G00120YW0EL		LED Y/W 1259-3UYUTC-S530-A3-X9-T5-F45-28	
CN001	395G820H06DW06		HARNESS 6P(SANW)-7P(2008) 320mm	
CN001	395G820H06TW06		HARNESS 6P(SANW)-7P(2008) 320mm	
R003	061G0603000 JF		RST CHIPR MAX 0R05 1/10W FENGHUA	

	R003	061G0603000 JT	RST CHIP MAX 0R05 1/10W TZAI YUAN	
	R002	061G06032201FT	RST CHIP 2K2 1/10W 1%	
	R004	061G06032201FY	RST CHIP 2K2 1/10W 1%	
	ZD001	093G 64 59 SU	ESD MLVS0603M04 0603	
	SW001	077G603S AI HJ	TACT SWITCH AI 2PIN SEALED	

Description	Part No.	Picture
ISP TOOL	715GT089-B	 A green printed circuit board (PCB) for an ISP tool. It features a USB Type-A connector on the left, a USB Type-B connector on the right, and a DVI connector at the bottom. A blue plastic component is attached to the right side. A white label with text is visible on the left side of the board.
EDID TOOL	715GT034-B	 A green printed circuit board (PCB) for an EDID tool. It features a DVI connector on the left, a USB Type-B connector on the right, and a DVI connector at the bottom. A blue plastic component is attached to the right side. The board is populated with various electronic components, including resistors, capacitors, and integrated circuits.

17. General Product Specification

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1. 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.

2. Product Profile

2.1 EDID Header

Data for EDID & .inf file

Philips 196V4

1	User visible strings on .inf file	Philips 196V (18.5inch Wide LCD MONITOR 196V4)
2	Manufacturer ID (EDID data)	PHL
3	Product ID, "xxxx" 4 codes	MSB(byte 12): C0
		LSB (byte 11): AF
4	maximum resolution	1366x768
5	Horizontal Frequency Range	30~83 KHz
6	Vertical Frequency Range	56~76Hz
7	Monitor Name (13 characters max.)	Philips 196V4

Philips 190V4

1	User visible strings on .inf file	Philips 190V (19inch Wide LCD MONITOR 190V4)
2	Manufacturer ID (EDID data)	PHL
3	Product ID, "xxxx" 4 codes	MSB(byte 12): C0
		LSB (byte 11): B0
4	maximum resolution	1400x900
5	Horizontal Frequency Range	30~83 KHz
6	Vertical Frequency Range	56~76Hz
7	Monitor Name (13 characters max.)	Philips 190V4

Philips 206V4

1	User visible strings on .inf file	Philips 206V (20inch WIDE LCD MONITOR 206V4)
2	Manufacturer ID (EDID data)	PHL
3	Product ID, "xxxx" 4 codes	MSB(byte 12): C0
		LSB (byte 11): B4
4	maximum resolution	1600x900
5	Horizontal Frequency Range	30~83 KHz
6	Vertical Frequency Range	56~76Hz
7	Monitor Name (13 characters max.)	Philips 206V4

Philips 226V4

1	User visible strings on .inf file	Philips 226V (21.5inch Wide LCD MONITOR 226V4)
2	Manufacturer ID (EDID data)	PHL
3	Product ID, "xxxx" 4 codes	MSB(byte 12): C0
		LSB (byte 11): B1
4	maximum resolution	1920x1080
5	Horizontal Frequency Range	30~83 KHz
6	Vertical Frequency Range	56~76Hz
7	Monitor Name (13 characters max.)	Philips 226V4

Philips 220V4

1	User visible strings on .inf file	Philips 220V (22inch Wide LCD MONITOR 220V4)
2	Manufacturer ID (EDID data)	PHL
3	Product ID, "xxxx" 4 codes	MSB(byte 12): C0
		LSB (byte 11): B2
4	maximum resolution	1680x1050
5	Horizontal Frequency Range	30~83 KHz
6	Vertical Frequency Range	56~76Hz
7	Monitor Name (13 characters max.)	Philips 220V4

LCD

Suppliers to offer panel specifications.

Panel incoming specification: Follow Philips' specification.

I96V4 :**TPMI85BI-WX3400**

Type NR.	: TPMI85BI-WX3400
Resolution	: 1366 x 768
Pitch (mm)	: 0.3mm x 0.3mm
Color pixel arrangement	: RGB vertical stripe
Color depth	: 16.7M
Backlight	: LED
Active area (W x H)	: 409.8(H) x 230.4(V) mm
View angle (CR=10)	: =90 for Right/Left (Typ)
	: =65 for Up/Down (Typ)
Contrast ratio	: 600:1 (Typ)
White luminance	: 200(Typ.)
Response time	: Tr + Tf <=5 ms (Typ)
Vertical frequency range	: 56~76Hz

CMI M185BGE-L23

Type NR.	: CMI M185BGE-L23
Resolution	: 1366 x 768
Pitch (mm)	: 0.3mm x 0.3mm
Color pixel arrangement	: RGB vertical stripe
Color depth	: 16.7M
Backlight	: LED
Active area (W x H)	: 409.8(H) x 230.4(V) mm
View angle (CR=10)	: =90 for Right/Left (Typ)
	: =65 for Up/Down (Typ)
Contrast ratio	: 700:1 (Typ)
White luminance	: 200(Typ.)
Response time	: Tr + Tf <=5 ms (Typ)
Vertical frequency range	: 56~76Hz

BOE HM185WX1-400

Type NR.	: BOE HM185WX1-400
Resolution	: 1366 x 768
Pitch (mm)	: 0.3mm x 0.3mm
Color pixel arrangement	: RGB vertical stripe
Color depth	: 16.7M
Backlight	: LED
Active area (W x H)	: 409.8(H) x 230.4(V) mm
View angle (CR=10)	: =90 for Right/Left (Typ)
	: =65 for Up/Down (Typ)
Contrast ratio	: 600:1 (Typ)
White luminance	: 200(Typ.)
Response time	: Tr + Tf <=5 ms (Typ)
Vertical frequency range	: 56~76Hz

I90V4 :**TPMI90AI-CGEL02**

Type NR.	: TPMI90AI-CGEL02
Resolution	: 1440 x 900
Pitch (mm)	: 0.2835mm x 0.2835mm
Color pixel arrangement	: RGB vertical stripe
Color depth	: 16.7M
Backlight	: LED
Active area (W x H)	: 408.24(H) x 255.15(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.)
Response time	: Tr + Tf <=5 ms (Typ)
Vertical frequency range	: 56~76Hz

SEC LTM190BT08 60I

Type NR.	: SEC LTM190BT08 60I
Resolution	: 1440 x 900
Pitch (mm)	: 0.2835mm x 0.2835mm
Color pixel arrangement	: RGB vertical stripe
Color depth	: 16.7M
Backlight	: LED
Active area (W x H)	: 408.24(H) x 255.15(V) mm
View angle (CR=10)	: =160 for Right/Left (Typ) : =160 for Up/Down (Typ)
Contrast ratio	: 1000:1 (Typ)
White luminance	: 250 (Typ.)
Response time	: Tr + Tf <=5 ms (Typ)
Vertical frequency range	: 56~76Hz

CMI MI90CGE-L23

Type NR.	: CMI MI90CGE-L23
Resolution	: 1440 x 900
Pitch (mm)	: 0.2835mm x 0.2835mm
Color pixel arrangement	: RGB vertical stripe
Color depth	: 16.7M
Backlight	: LED
Active area (W x H)	: 408.24(H) x 255.15(V) mm
View angle (CR=10)	: =90 for Right/Left (Typ) : =65 for Up/Down (Typ)
Contrast ratio	: 600:1 (Typ)
White luminance	: 200 (Typ.)
Response time	: Tr + Tf <=5 ms (Typ)
Vertical frequency range	: 56~76Hz

TPMI90AI-CGEL03

Type NR.	: TPMI90AI-CGEL03
Resolution	: 1440 x 900
Pitch (mm)	: 0.2835mm x 0.2835mm
Color pixel arrangement	: RGB vertical stripe
Color depth	: 16.7M
Backlight	: LED
Active area (W x H)	: 408.24(H) x 255.15(V) mm
View angle (CR=10)	: =90 for Right/Left (Typ) : =65 for Up/Down (Typ)
Contrast ratio	: 600:1 (Typ)
White luminance	: 200 (Typ.)
Response time	: Tr + Tf <=5 ms (Typ)
Vertical frequency range	: 56~76Hz

206V4 :**TPV-SEC LTM200KT10 Y01**

Type NR.	: TPV-SEC LTM200KT10 Y01
Resolution	: 1600 x 900
Pitch (mm)	: 0.276mm x 0.276mm
Color pixel arrangement	: RGB vertical stripe
Color depth	: 16.7M
Backlight	: LED
Active area (W x H)	: 442.8(H) x 249.1(V) mm
View angle (CR=10)	: =160 for Right/Left (Typ) : =160 for Up/Down (Typ)
Contrast ratio	: 1000:1 (Typ)
White luminance	: 250(Typ.)
Response time	: Tr + Tf <=5 ms (Typ)
Vertical frequency range	: 56~76Hz

TPV-CMI TPM20001-FGEL03-C1A

Type NR.	: TPV-CMI TPM20001-FGEL03-C1A
Resolution	: 1600 x 900
Pitch (mm)	: 0.272mm x 0.276mm
Color pixel arrangement	: RGB vertical stripe
Color depth	: 16.7M
Backlight	: LED
Active area (W x H)	: 442.8(H) x 249.1(V) mm
View angle (CR=10)	: =90 for Right/Left (Typ) : =65 for Up/Down (Typ)
Contrast ratio	: 700:1 (Typ)
White luminance	: 200(Typ.)
Response time	: Tr + Tf <=5 ms (Typ)
Vertical frequency range	: 56~76Hz

226V4 :**TPV-AUO M215HW03 V1T0**

Type NR.	: TPV-AUO M215HW03 V1T0
Resolution	: 1920 x 1080
Pitch (mm)	: 0.248mm x 0.248mm
Color pixel arrangement	: RGB vertical stripe
Color depth	: 16.7M
Backlight	: LED
Active area (W x H)	: 476.64(H) x 268.11(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.)
Luminance Uniformity	: 80 (Typ)
Response time	: Tr + Tf <=5 ms (Typ)
Vertical frequency range	: 56~76Hz

CMI M215HGE-L21

Type NR.	: CMI M215HGE-L21
Resolution	: 1920 x 1080
Pitch (mm)	: 0.248mm x 0.248mm
Color pixel arrangement	: RGB vertical stripe
Color depth	: 16.7M
Backlight	: LED
Active area (W x H)	: 476.64(H) x 268.11(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.)
Luminance Uniformity	: 75 (Min)

Response time : Tr + Tf ≤ 5 ms (Typ)

Vertical frequency range : 56~76Hz

TPV-BOE TPM215HW01-WU3100

Type NR. : TPV-BOE TPM215HW01-WU3100

Resolution : 1920 x 1080

Pitch (mm) : 0.248mm x 0.248mm

Color pixel arrangement : RGB vertical stripe

Color depth : 16.7M

Backlight : LED

Active area (W x H) : 476.64(H) x 268.11(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.)

Luminance Uniformity : 75 (Min)

Response time : Tr + Tf ≤ 5 ms (Typ)

Vertical frequency range : 56~76Hz

TPV-Panda TPM215HW01-DAT01

Type NR. : TPV-Panda TPM215HW01-DAT01

Resolution : 1920 x 1080

Pitch (mm) : 0.248mm x 0.248mm

Color pixel arrangement : RGB vertical stripe

Color depth : 16.7M

Backlight : LED

Active area (W x H) : 476.64(H) x 268.11(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.)

Luminance Uniformity : 75 (Min)

Response time : Tr + Tf ≤ 5 ms (Typ)

Vertical frequency range : 56~76Hz

TPV-AUO M215HTN01.0TC_Z09

Type NR. : TPV-AUO M215HTN01.0TC_Z09

Resolution : 1920 x 1080

Pitch (mm) : 0.248mm x 0.248mm

Color pixel arrangement : RGB vertical stripe

Color depth : 16.7M

Backlight : LED

Active area (W x H) : 476.64(H) x 268.11(V) mm

View angle (CR=10) : =90 for Right/Left (Typ)

: =65 for Up/Down (Typ)

Contrast ratio : 600:1 (Typ)

White luminance : 200(Typ.)

Luminance Uniformity : 75 (Min)

Response time : Tr + Tf ≤ 5 ms (Typ)

Vertical frequency range : 56~76Hz

TPV-Panda TPM215HW01-DAT03 C1B

Type NR. : TPV-Panda TPM215HW01-DAT03 C1B

Resolution : 1920 x 1080

Pitch (mm) : 0.248mm x 0.248mm

Color pixel arrangement : RGB vertical stripe

Color depth : 16.7M

Backlight : LED

Active area (W x H) : 476.64(H) x 268.11(V) mm

View angle (CR=10) : =90 for Right/Left (Typ)

: =65 for Up/Down (Typ)

Contrast ratio : 600:1 (Typ)

White luminance : 200(Typ.)

Luminance Uniformity : 75 (Min)

Response time : Tr + Tf ≤ 5 ms (Typ)

Vertical frequency range : 56~76Hz

220V4 :**SEC LTM220MT09Y0I**

Type NR.	: SEC LTM220MT09Y0I
Resolution	: 1680 x 1050
Pitch (mm)	: 0.282mm x 0.282mm
Color pixel arrangement	: RGB vertical stripe
Color depth	: 16.7M
Backlight	: LED
Active area (W x H)	: 473.76(H) x 296.1(V) mm
View angle (CR=10)	: =160 for Right/Left (Typ) : =160 for Up/Down (Typ)
Contrast ratio	: 1000:1 (Typ)
White luminance	: 250(Typ.)
Response time	: Tr + Tf <=5 ms (Typ)
Vertical frequency range	: 56~76Hz

CMI M220ZGE-L20

Type NR.	: CMI M220ZGE-L20
Resolution	: 1680 x 1050
Pitch (mm)	: 0.282mm x 0.282mm
Color pixel arrangement	: RGB vertical stripe
Color depth	: 16.7M
Backlight	: LED
Active area (W x H)	: 473.76(H) x 296.1(V) mm
View angle (CR=10)	: =160 for Right/Left (Typ) : =160 for Up/Down (Typ)
Contrast ratio	: 1000:1 (Typ)
White luminance	: 250(Typ.)
Response time	: Tr + Tf <=5 ms (Typ)
Vertical frequency range	: 56~76Hz

TPM220ZI-ZGEL02

Type NR.	: TPM220ZI-ZGEL02
Resolution	: 1680 x 1050
Outside dimensions	: 493.7(H) x 320.1(V) Typ. x 11 (D) Typ.
Pitch (mm)	: 0.282mm x 0.282mm
Color pixel arrangement	: RGB vertical stripe
Color depth	: 16.7M
Backlight	: LED
Active area (W x H)	: 473.76(H) x 296.1(V) mm
View angle (CR=10)	: =160 for Right/Left (Typ) : =160 for Up/Down (Typ)
Contrast ratio	: 1000:1 (Typ)
White luminance	: 250(Typ.)
Response time	: Tr + Tf <=5 ms (Typ)
Vertical frequency range	: 56~76Hz

2.2 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.

2.3 Ambient temperature: 0 °C - 40 °C

2.4 Power Range: Full Range Power Supply: 100-240V AC

3. 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 PerfectTune feature and Philips OSD
- 3) Scaler must support SmartContrast, 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 data into memory.

Resolution \leq 800x600 , do not do auto auto adjustment.

3.1 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-/+))

3). HDMI (option , refer to Quick specification table)

Follow [HDMI 1.4](#) specification

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:

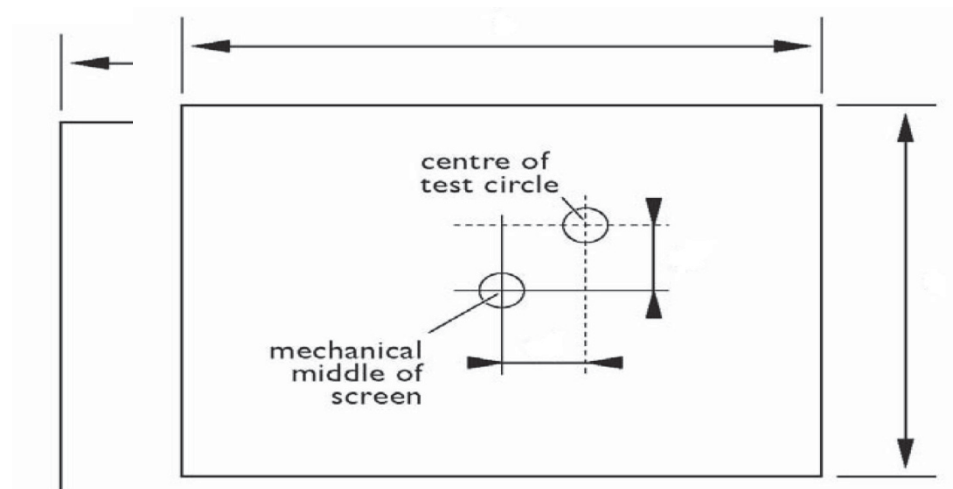
According to High-Definition Content Protection (HDCP) Specification 1.10.

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 - $H \text{ \& V } \leq 0.5 \%$. (for TV, 480i/p, 576i/p, 720p, 1080i/p)

Over Scan -

1. RGB signal : OFF (no this function)
2. YUV signal : (Video timing) 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} :	$3.3V \pm 5\%$
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 :	$1K\Omega \pm 20\%$

(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:	$2.7K\Omega \pm 10\%$
Leakage Current in standby/off :	$< 1.8\mu A$

3.2 Interface

3.2.1 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	Signal Assignment	Pin	Signal Assignment
1	Red	9	DDC +3.3V or +5V
2	Green/ SOG	10	Logic GND
3	Blue	11	Sense (GND)
4	Sense (GND)	12	Bi-directional data
5	Cable Detect (GND)	13	H/H+V sync
6	Red GND	14	V-sync
7	Green GND	15	Data clock
8	Blue GND		

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

3.3 Timing Requirement

Factory Preset Mode Definition:

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

Preset Mode Definition

- Need to support those timings
- Perfect FOS after auto adjustment.

User Mode

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

3.3.1 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.

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



Timing table.xls

3.4 OSD/Keypad functions:

ITEM			
1	OSD/keypad definition	  MMD OSD_Function definition _FW SPdefinition _ 2012 M4 OSD Button	Reset - No: Exit Yes: Auto adjustment for displaying timing mode and recall factory preset
2	OSD Translation	 OSD_String_M4_2011128.xls	English, French, German, Spanish, Italian, Russian, Simplified Chinese, Portuguese, Turkish (9)
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.

3.5 Horizontal scanning

Sync polarity : Positive or Negative
 Scanning frequency : 30 - 83 KHz
 PS: Item 3.4 and 3.5, as far as possible to be display (another Horizontal and Vertical)

3.6 Vertical scanning

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

3.7 Power input connection

Power cord length : please refer to M4 cable bundle summary file
 Power cord type : M3 leads power cord with protective earth plug.

3.8 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	21.5" ,22" 23.6": <30W (typ.), < 35W(max.) 15.6" , 18.5", 19", 20": <20W (typ.), <25W(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: < EPA5.1 spec. (Brightness=20%)

EPA 5.1 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 mode to Power saving mode: 15/s (typ.)

Power Saving to Normal mode: 4/s, (typ.)

b. DVI mode,

Normal mode to Power saving mode: 15/s (typ.)

Power Saving to Normal mode: 3.8s (typ.)

Note 2:

Measurement power saving.



measurement of
power saving.pdf



Power consumption
measure the way -090

3.9 VGA Display Identification

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

3.10 DVI Display Identification

In accordance with DVI requirement (DDWG digital visual interface revision 1.0 use DDC 2B, DDC/CI, and EDID V1.3)

3.11 DDC /CI Support and Smart Manage/Control

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

3.12 Hot-key definition



D:\ENG\monitor
projects\spec\H8\hot k

3.13 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 2 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

4. Visual Characteristics

4.1 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, 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

4.2 Brightness

Follow panel specification

4.3 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)	
11500K	$x = 0.270 \pm 0.02$ $y = 0.281 \pm 0.02$	PerfecTune II
9300K	$x = 0.283 \pm 0.02$ $y = 0.297 \pm 0.02$	PerfecTune II
8200K	$x = 0.291 \pm 0.02$ $y = 0.306 \pm 0.02$	PerfecTune II
7500K	$x = 0.298 \pm 0.02$ $y = 0.314 \pm 0.02$	PerfecTune II
6500K/sRGB	$x = 0.313 \pm 0.02$ $y = 0.329 \pm 0.02$	PerfecTune II
sRGB	$x = 0.313 \pm 0.02$ $y = 0.329 \pm 0.02$	PerfecTune II
5000K	$x = 0.345 \pm 0.02$ $y = 0.357 \pm 0.02$	PerfecTune II

Production Alignment Specification

CIE coordinates	(x, y)	
11500K	$x = 0.270 \pm 0.006$ $y = 0.281 \pm 0.006$	PerfecTune II
9300K	$x = 0.283 \pm 0.006$ $y = 0.297 \pm 0.006$	PerfecTune II
8200K	$x = 0.291 \pm 0.006$ $y = 0.306 \pm 0.006$	PerfecTune II
7500K	$x = 0.298 \pm 0.006$ $y = 0.314 \pm 0.006$	PerfecTune II
6500K/sRGB	$x = 0.313 \pm 0.006$ $y = 0.329 \pm 0.006$	PerfecTune II
sRGB	$x = 0.313 \pm 0.006$ $y = 0.329 \pm 0.006$	PerfecTune II
5000K	$x = 0.345 \pm 0.006$ $y = 0.357 \pm 0.006$	PerfecTune II

Quality Inspection specification:

CIE coordinates	(x, y)	
9300K	$x = 0.283 \pm 0.015$ $y = 0.297 \pm 0.015$	Note 1
6500K/sRGB	$x = 0.313 \pm 0.015$ $y = 0.329 \pm 0.015$	
sRGB	$x = 0.313 \pm 0.015$ $y = 0.329 \pm 0.015$	

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

5. Mechanical Characteristics

5.1 Cosmetic -

Philips ID

5.2 Mechanical data files -

ProE files required

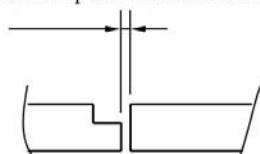
5.3 Location of Philips logo -

Per Philips make-up sheet

5.4 Gap

- Between panel and front bezel 15"~19": <0.8mm, 19"W:<1.0mm, 20W~23"W: <1.2mm, 24"W: <1.4mm

Definition: Gap btw. Front and rear cover



- Between bezel and rear cover: $\leq 0.4\text{mm}$ (without art groove)
- Between stand top and stand bottom & stand bottom and base & rear cover and hinge cover : $\leq 0.5\text{mm}$
- Between Release button and stand hole: $\leq 0.8\text{mm}$

5.5 Location of Control icons

Per Philips graphic sheet

5.6 Color for resin/paint -

Per Philips make-up sheet

5.7 Fire Enclosure Request

Shielding cover should fulfill international standard.

5.8 Resins

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

5.9 If paint is used

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

5.10 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.

5.11 Plastics flammability

- All Plastics to be Flame Retardant UL 94-HB or better.
- Base / Rear 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".

5.12 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

5.13 Tilt and swivel base

Tilt angle: $-5^\circ +2/- 0^\circ$ (forward)

+20 °+ 0/- 3 ° (backward)

Tilt force : 1.0 +/- 0.2kgf (forward and backward)

- Swivel Angle nil
- High Adjustment nil
- Portrait Display nil
- Slant: |A-B| <= 3mm

5.14 Hinge Life Cycle

- Tilt 10,000 times, the hinge life attenuation: ≤15%
- Tilt 2,000 times, can't appear mechanical problem

5.15 Kensington Lock

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

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

5.17 Transportation

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

5.17.1 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.

5.17.2 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)

5.18 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

6. Environmental Characteristics

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

6.1 Susceptibility of display to external environment

Operating

- Temperature: 0 to 40 degree C
- Humidity: 80% max
- Altitude: 0 -3658 m
- 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%.

6.2 Transportation tests

Refer to 5.15.2'

6.3 Display disturbances from external environment

According to IEC 801-2 for ESD disturbances

6.4 Display disturbances to external environment

TELEVISION/MONITOR SAFETY 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 service 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, barriers, 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 an asterisk 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 a 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 safely 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.

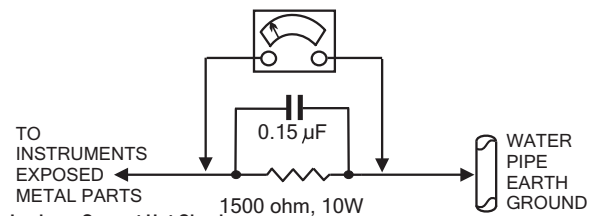
X-radiation

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 operating 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-radiation 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 0.15µf. 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.