

雅佳46寸等离子电视维修培训手册

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等离子的组件构成

- 模组

1个模组由1个PDP屏、10个印刷线路板（包括1个X驱动板、2个X柔性电缆板、1个Y驱动板、2个Y柔性电缆板、2个线板、1个数字输入板和电源板）组成。

- 副电路

1台等离子有1个声表面滤波器、1个音频板、1个数字输入接口板、1个电源滤波器、1个按键板、1个接收板、2个左右喇叭和1个影像板、1个高频头板。

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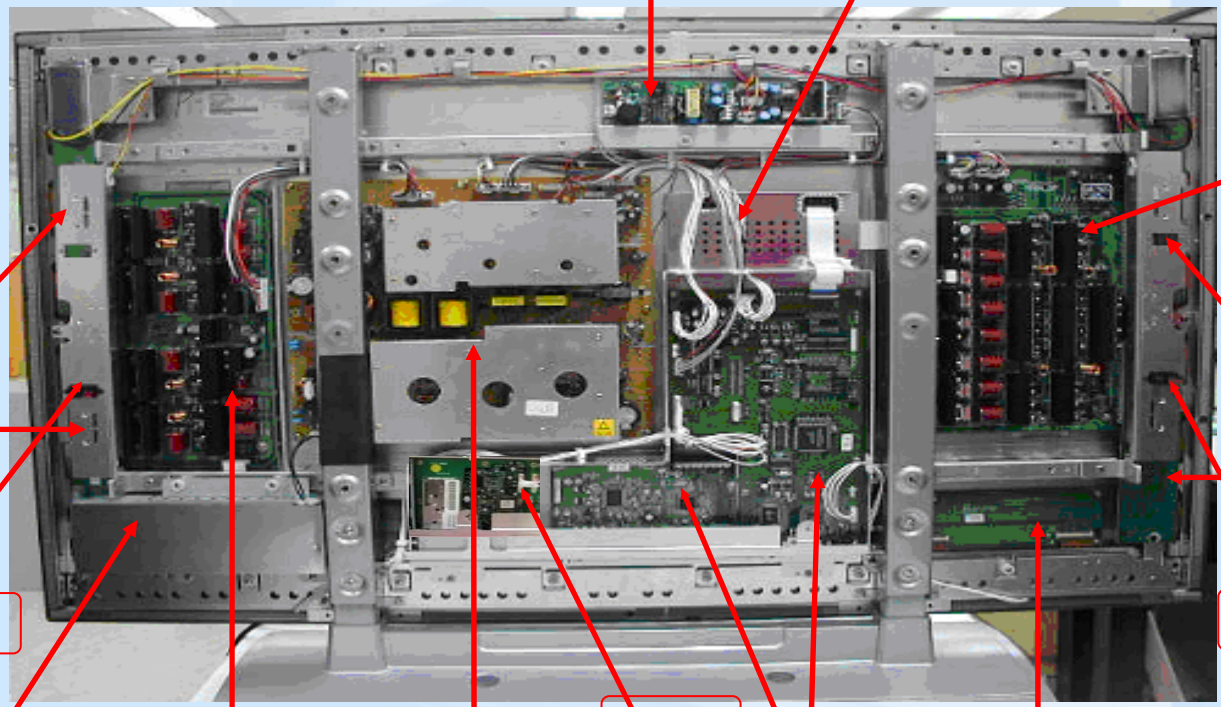
等离子的简要维护

部件位置图



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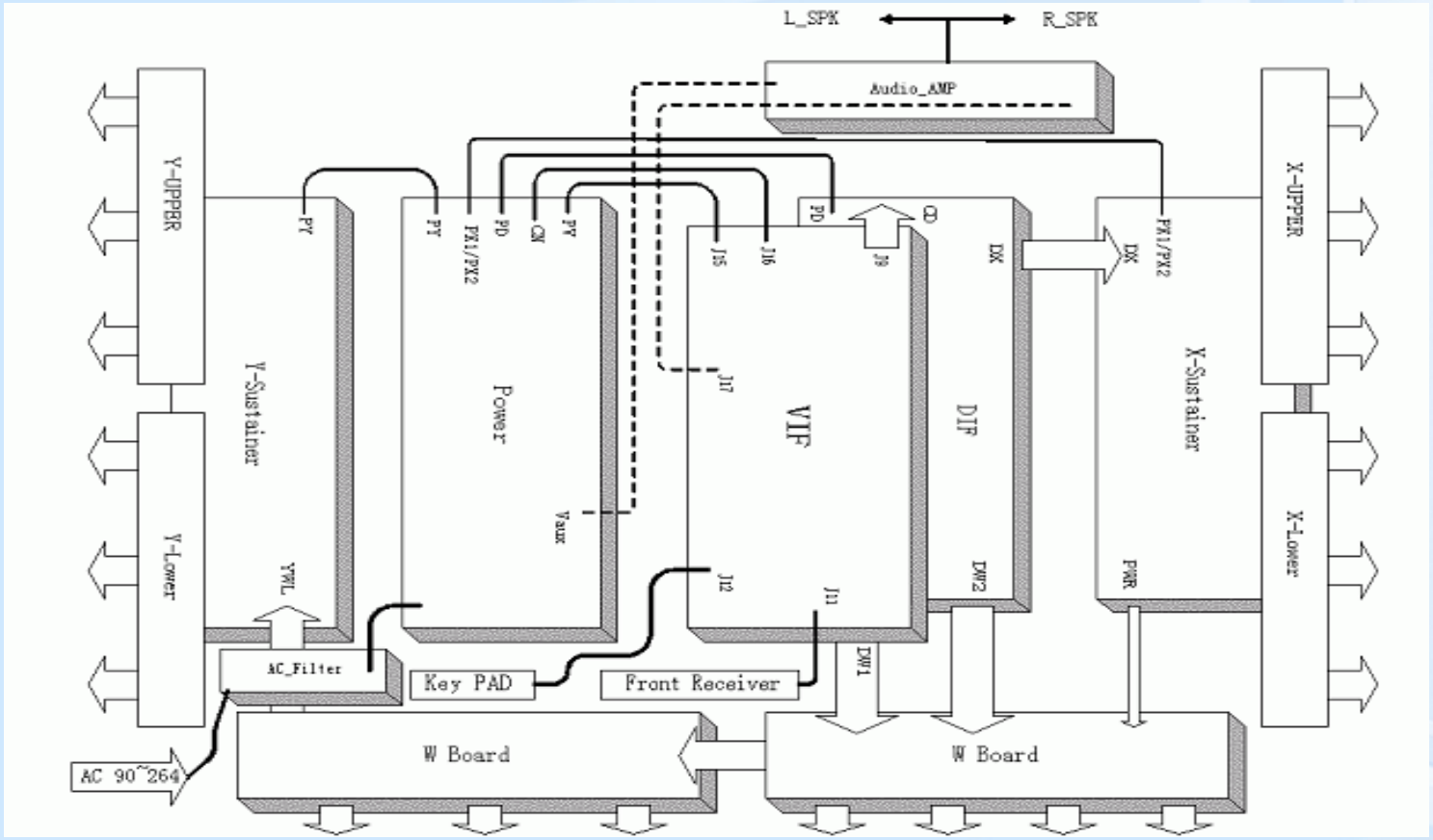
系统原理框图



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印刷电路板功能

1. 电源板: **(1).** 输入电压： 交流电 **110V～240V**、**47Hz～63Hz.**

输入电压范围 ： 90V ~ 265V

(2). 提供电源给所有印刷电路板。

2. 图像输入接口板: 将TV、AV、S-VIDEO、PC、和D-SUB信号转换成数字信号并传送给数字输入板

3. 数字输入板: 处理输出给屏的数字信号。

4. X/Y 驱动板: （1）接收来自数字输入板的信号和高压源。

（2）输出扫描时序信号给模组。

5. X/Y柔性电缆板: 从**X/Y**驱动器接收信号，输出水平扫描时序给**PDP**屏。

6.W-COF延展板 ： 输出寻址信号。

7.音频板 ： 放大伴音信号给选定的内置或处置喇叭。

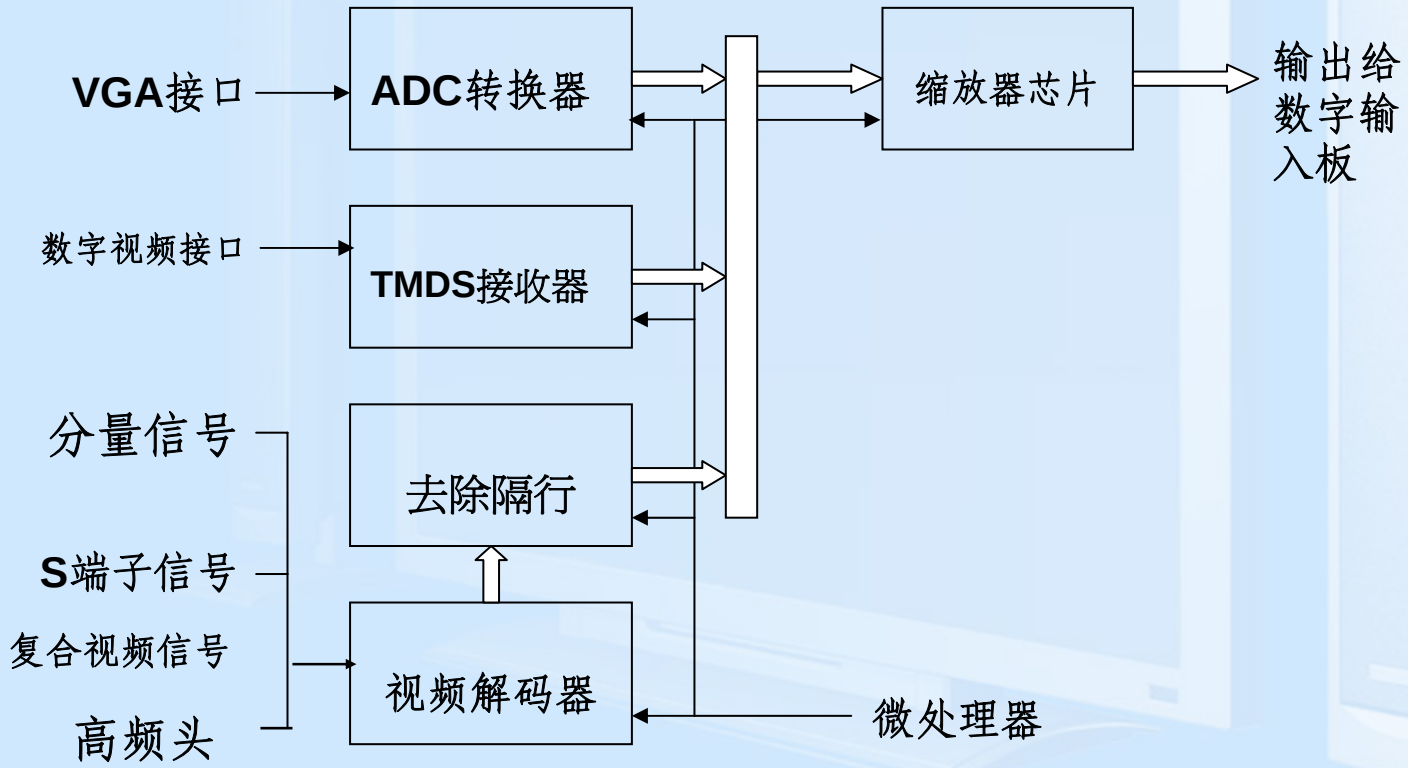
8.高频头板: 转换TV高频头信号成音频和视频信号，再传送给VIF板，音频输出经给音频板。



等离子的基本操作

1. 打开电源开关后，电源板传送待机电压（5V）给微处理器，微处理器等待从键板或遥控器。出的开机信号。
2. 当检测到键板或遥控接收器的开机信号时，微处理器传送的开机控制信号给电源板，电源传送电压（VS、Vxg Vw Vf Vdd Vcc ＋9V）给电路板供其工作，同时VIF板将传送信号去显示背光和PDP屏的OSD且开始搜索可用信号源，如输入音信号放大器将其放大并传送给喇叭。
3. 如检测到非正常信号时（例如：过压、过流、过温和欠压）系统会关闭电源。

视频接口系统结构图



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视频接口系统原理

AD转换器 ：*AD9888 KS*

AD9888是全位，205MSPS 单片模拟接口IC，适用于捕捉R、G、B图形信号，它具有205MSPS（每秒205兆采样率）的能力，模拟带宽达500MHZ可支持UXGA（1600X1200 75Hz)的分辨率。

TMDS接收器 ：*SIL151ACT100*

Si1153BCT100接收口IC，应用屏联接数字技术支持高分辨率显示达SXGA（25MHZ~112MHZ），Si1153BCT100接收口IC在每时钟周期单或双像素模式下支持真彩色显示屏（24bit/素、16.7M)

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视频解码器: SAA7118E

SAA7118E解码器也是AD变换器，它可以处理普通的TV信号码。SAA7118E可以输入复合视频信号、S端子、分量信号、输出数字Y、C信号，并可调节亮度对比度、色饱和度和色调。

去除隔行处理: SIL504CM208

Sil504变换隔行信号或逐行扫描信号，逐行扫描信号的优点：扫描速率提高一倍，使画面更稳定、无闪烁、另外输入信号源可以24帧/S、30帧/S或25帧/S。去隔行处理IC根据不同的帧频去处理信号，它的基本功能是将奇数场和偶数场组合成一帧，处理过程需要存储器来存储这些信号。由于它可以改善图像质量，越来越多的TV和DVD采用这种逐行扫描功能。

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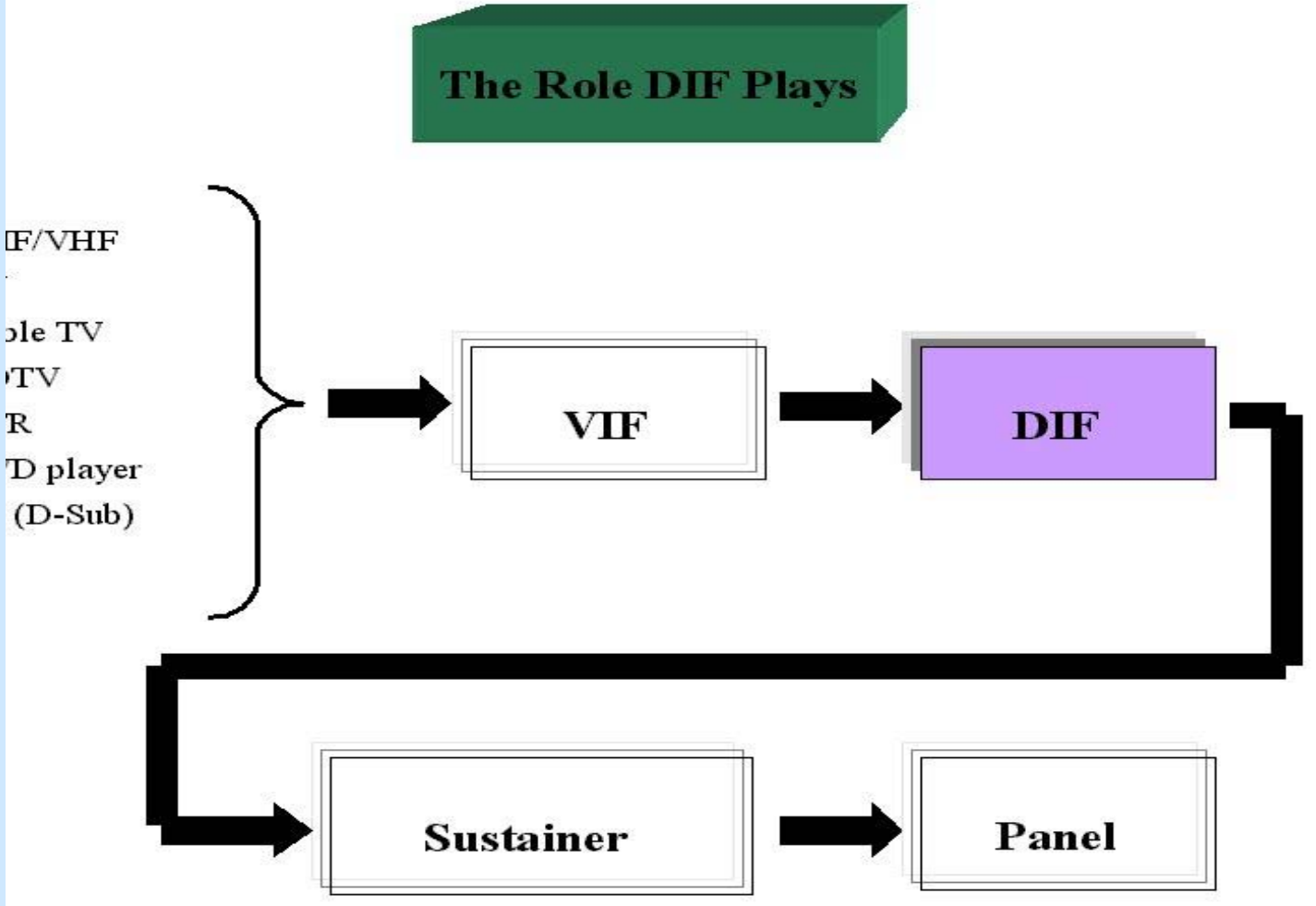
图像处理芯片: **PW171-20U**(嵌入式系统)

缩放功能：图像缩放器提供高质量的图像缩放变换处理，应用于VIF（视频接口）输入信号可以是VGA、SVGA、XGA格式，但输出固定为852X480/60HZ。例如：SVGA的格式为800X600/75HZ，首先作向F变换，水平由800变换到640。垂直由600变换到480，然后作帧频变换，由75F/S 640变换到852。完成整个缩放功能。

微处理功能：此芯片内含微处理器（片上集成80X60微机）完成可选功能和输入和输出口1组RS-232通讯口，IR（红外遥控）译码器，定时器和1个PWM（脉宽调制）发生器。

OSD功能：在屏显示（OSD）可用于屏幕启动，功能菜单显示和整合各种操作功能等。

DIF Board
DIF Structure





数字接口板的三项能

1）图像信号处理

图像信号处理是将图像信号转换成R、G、B信号并且按照一帧的特定要求去处理和调节信号。

2）波形控制:

由IC106完成这个功能并产生X、Y驱动器的控制波形信号。

3）功率控制

对于PDP来讲，APC（自动功率控制）功能是重要的。如果APC异常，将会导至电源失效，甚至PDP屏被损坏。

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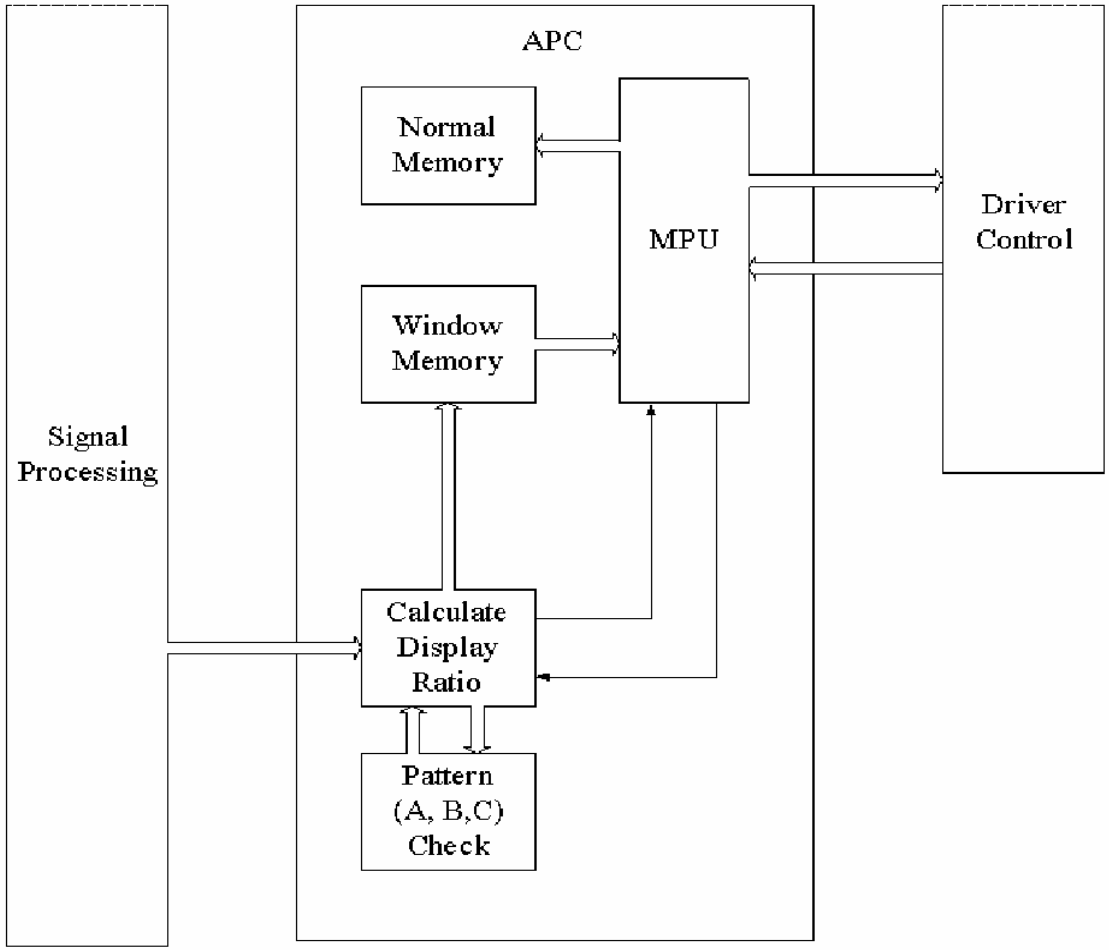
自动功率控制功能



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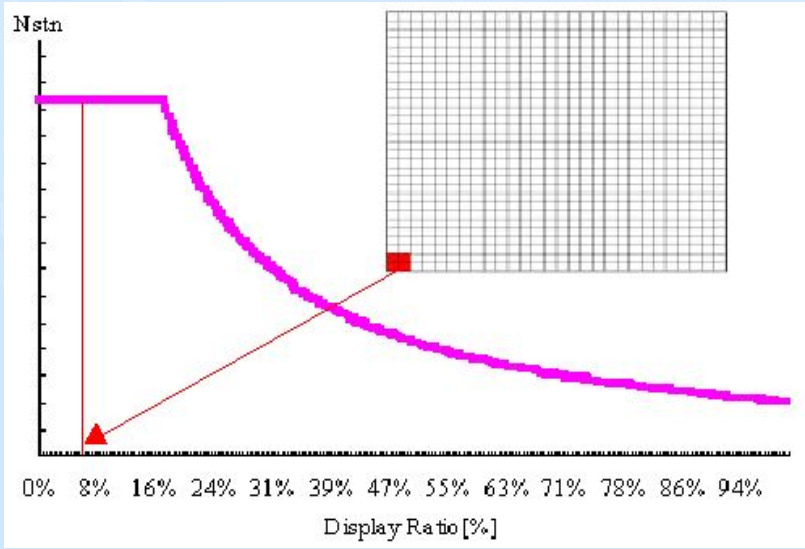
APC功能

图像数据由信号处理单元传送给APC 后，CDR单元开始计算图形比。APC进行的数学计算是通过减少驱动频率和关闭一些子场来完成的。它有作为判断的参考值，相关的参数的取得是通过实验测定的，因此如果APC参量不在优化参数值，它将会引起PDP屏损坏，扫描IC的烧坏，电源失效



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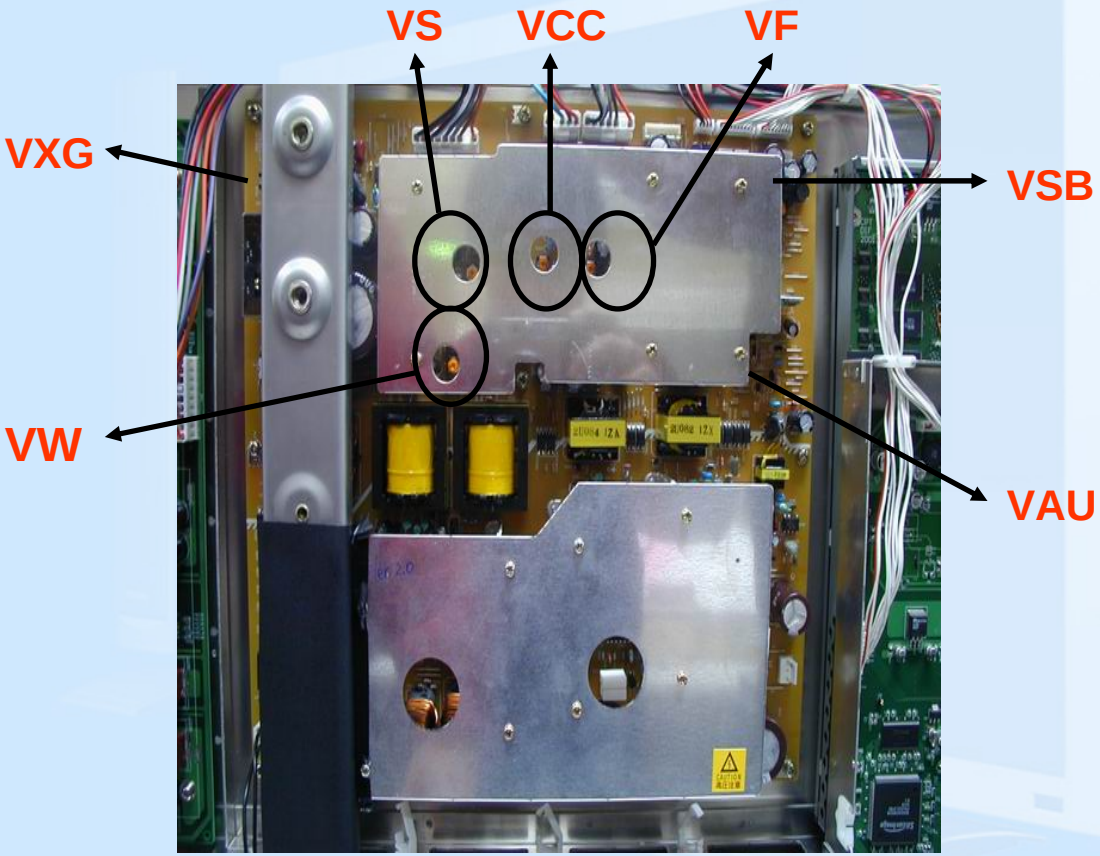
电源板布局



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电源输出规格

电压名称	输出电压	最大负载电流	负载峰值电流
Vsb	5V	1.0A	
Vdd	5V	2.0A	
Vcc	5V	3.0A	
Vau	9V	2.0A	cancelled
Vfan	12V	0.5A	
Vf	15V	0.6A	
Vs	170V	290W	50A
Vw	65V	80W	6A
Vxg	-160V	0.1A	1A
Vaux	380V	65W	

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X-驱动器外观



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X-驱动电源规格

输入项目	输入电压	输入电流	备注
Vcc	5	240	
Vf	15	70 （全白）	正常电流范围：40~150mA
Vs	170	1.2A	正常电流范围：1.0~1.5A
Vxg	-160	40	
Vw	65	40	
Vs	170	1.2A	正常电流范围：1.0~1.5A
Vxg	-160	40	
Vw	65	40	

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X-驱动器CKT说明

有两种低压系统:

1）提供5V和15V用于驱动波形。

2）65V ： X-Vxe(Vw)是65V在X右2组CKT：1个是用于+Hamari的65V，另1个是用于W-Cof 的65V，在寻址周期在Y-Vgse的65V被用来产生大容量

的35V

3）170V和160V高压供给PDP驱动电压

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Y – 驱动器布局

J302:Y - output connects to Y - FPC

J301:Y - output connects to Y - FPC



J3:To input W – signals to 20PIN

J1:Y – input power：
Vcc，Vf， Vs，Vysc，Vw

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Y-驱动器电源规格

输入项目	输入电压	输入电流	备注
Vcc	5	240	
Vf	15	70 (全白)	正常电流范围
Vs	170	1.2A	正常电流范围
Vysc	65	8	
Vw	65	40	

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电路板故障分析

1. 数字接口板：a 屏上的非正常噪音。b 无图象
2. 视频接口板: a. 缺色、色比例差。b.无彩色

   c. 无画面但有信号输入，OSD和背光。

   d. 屏上的非正常噪音
3. 电源：无图象，无电源输出。
4. X-驱动板：无图象、彩色不够丰富、屏上有闪烁点
5. Y-驱动板：信号图象较暗.
6. 音频板：无噪声（确认状态：静音/内置/外置喇叭）
7. X/Y –驱动板：板上元件的温度约为55℃如温升超出正常值也会引起故障。

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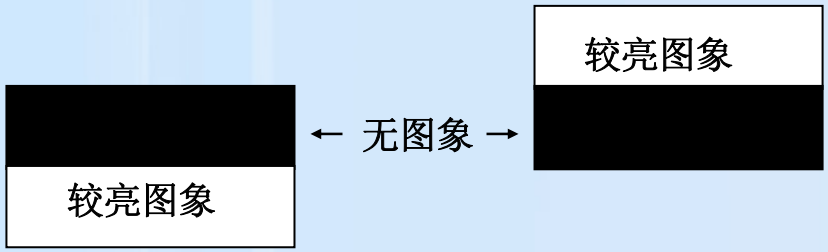
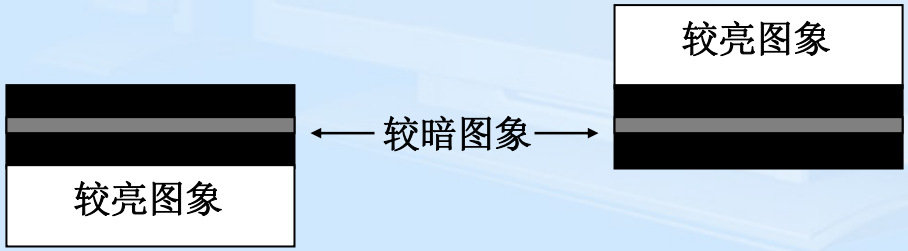
电路板故障分析

8. X-驱动板故障分析：



9. Y-驱动板故障分析：



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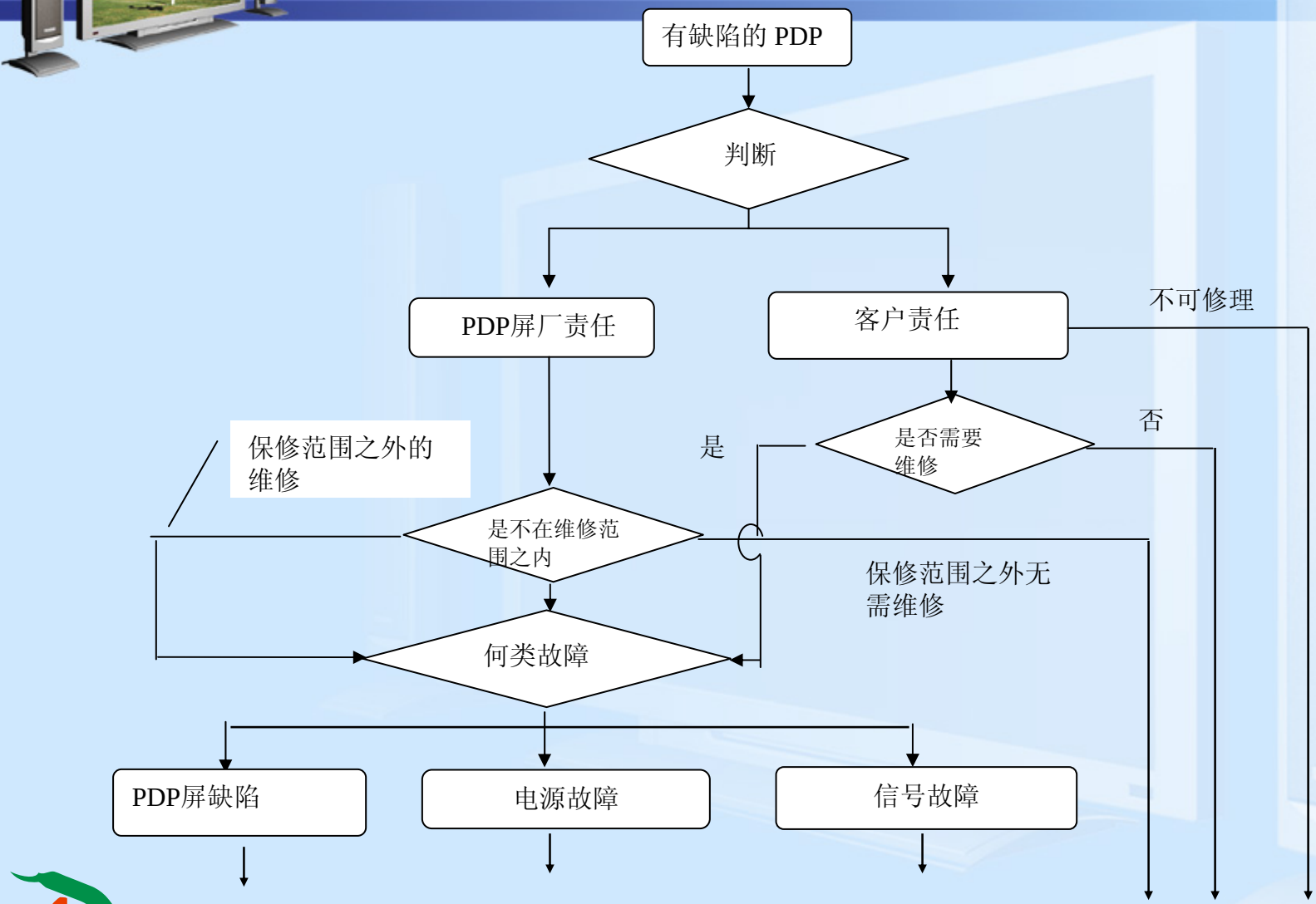
主要维修流程 （一）



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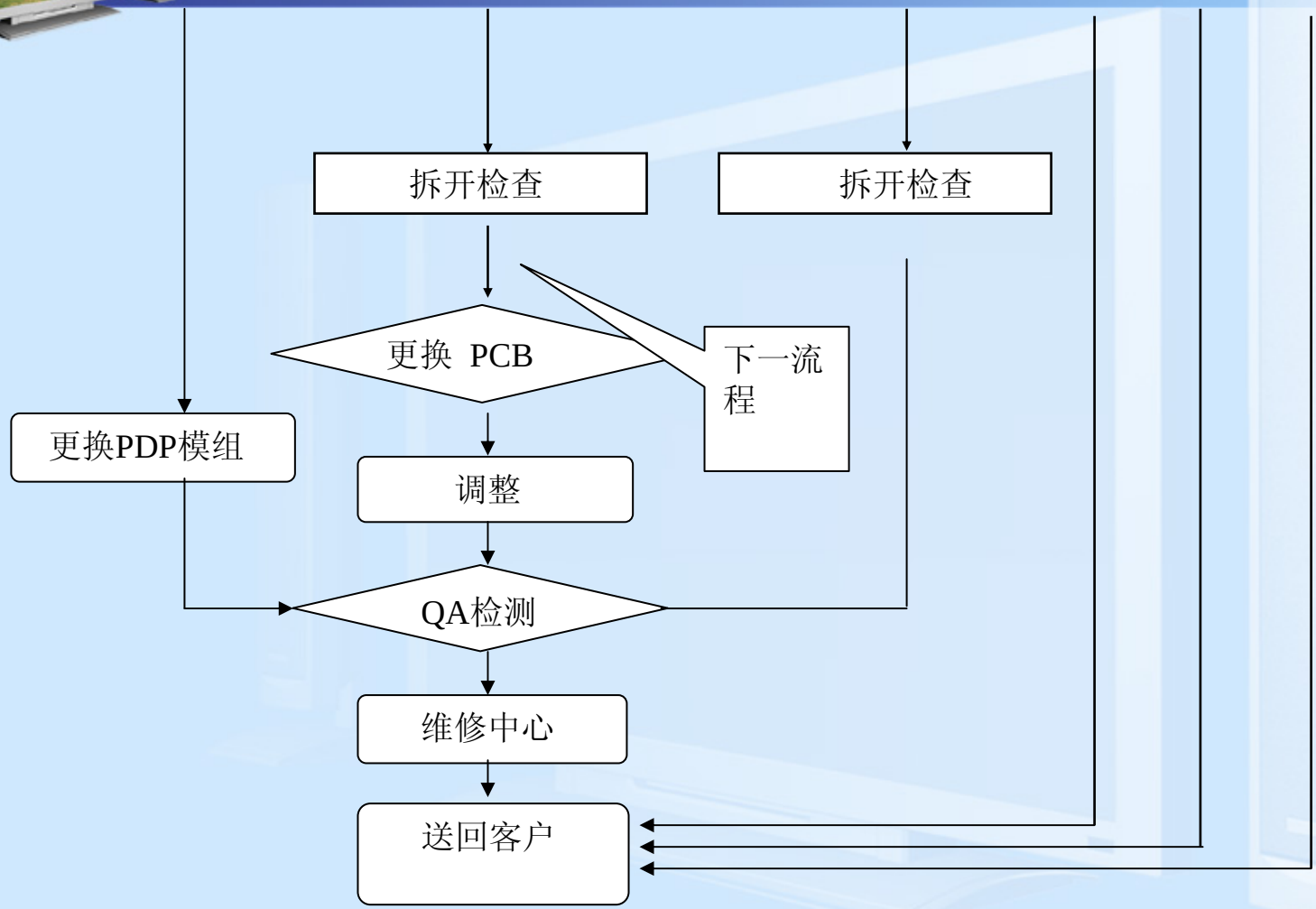
主要维修流程（2）



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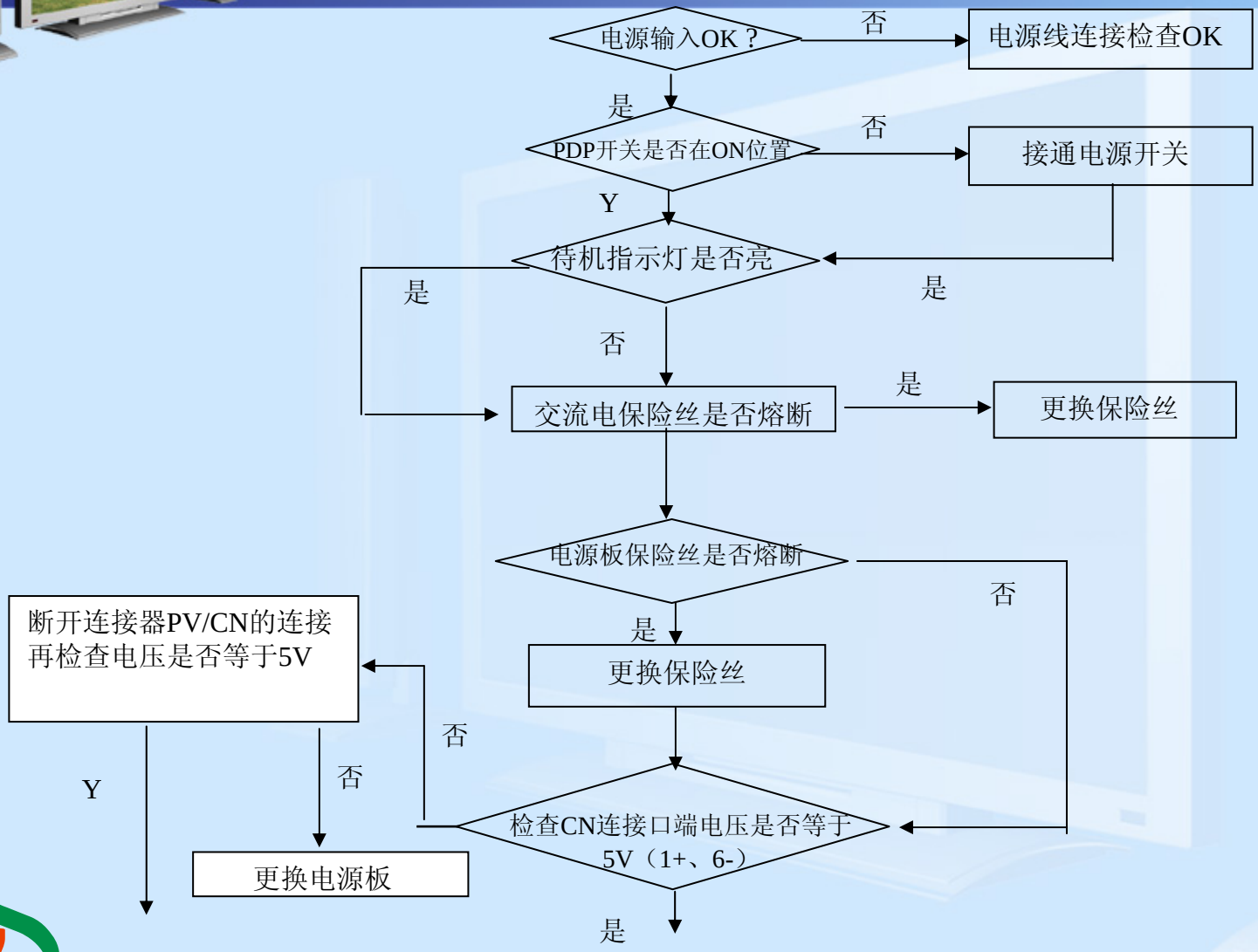
检查流程图：电源故障





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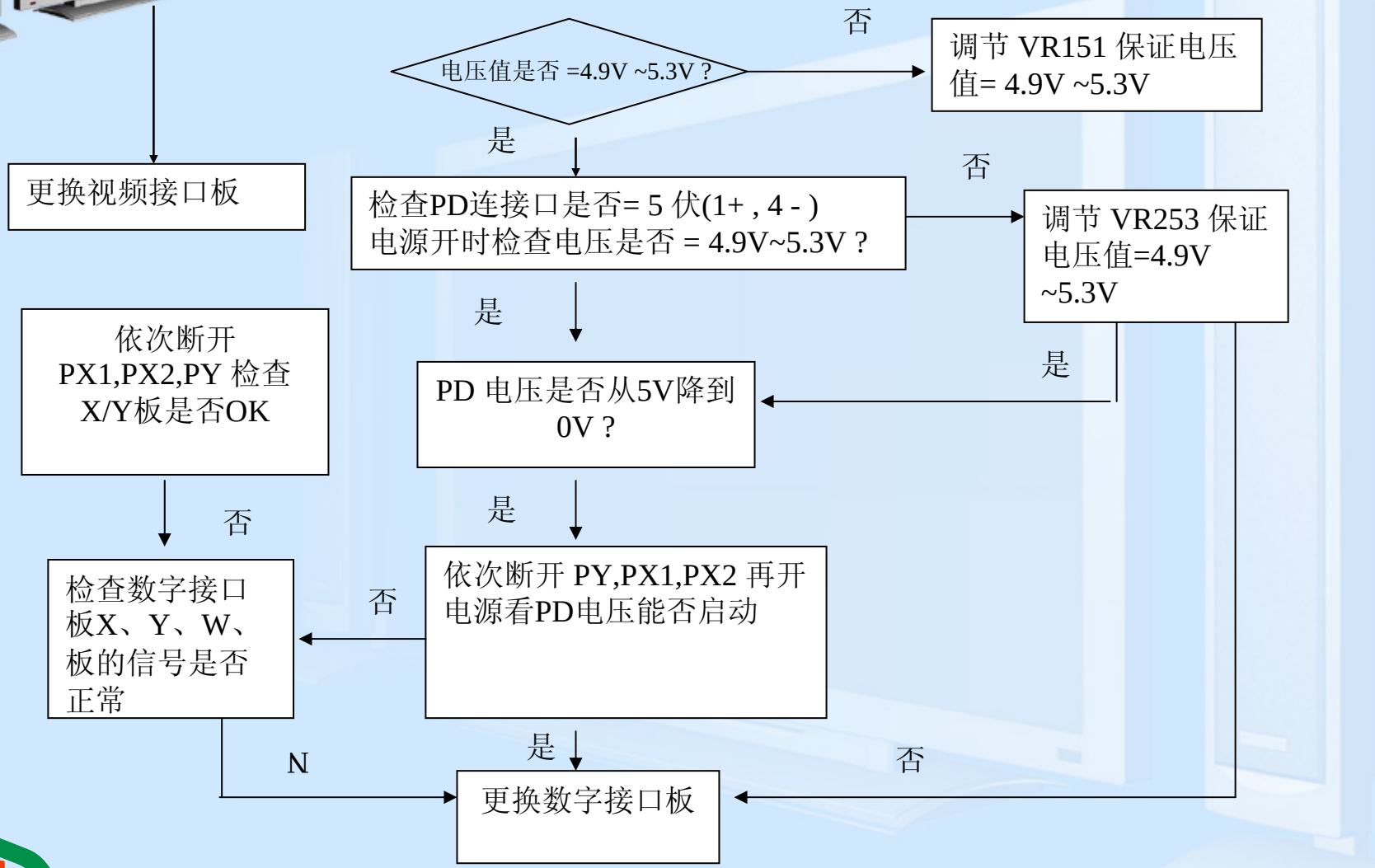
检查流程图：电源故障





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故障分析例

1. 无图像



待机指示灯（红色）不亮

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1. 检查电源是否闭合。
2. 检查保险金丝是否熔断。





2. 电源已闭合但无图像



电源启动后指示灯已工作

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1. 可能是视频接口板故障。
2. 可能是数字接口板故障。
3. 首先更换视频接口板，如果仍不能工作，再换数字接口板。
4. 上述措施采取后，仍未工作，请换X驱动板。

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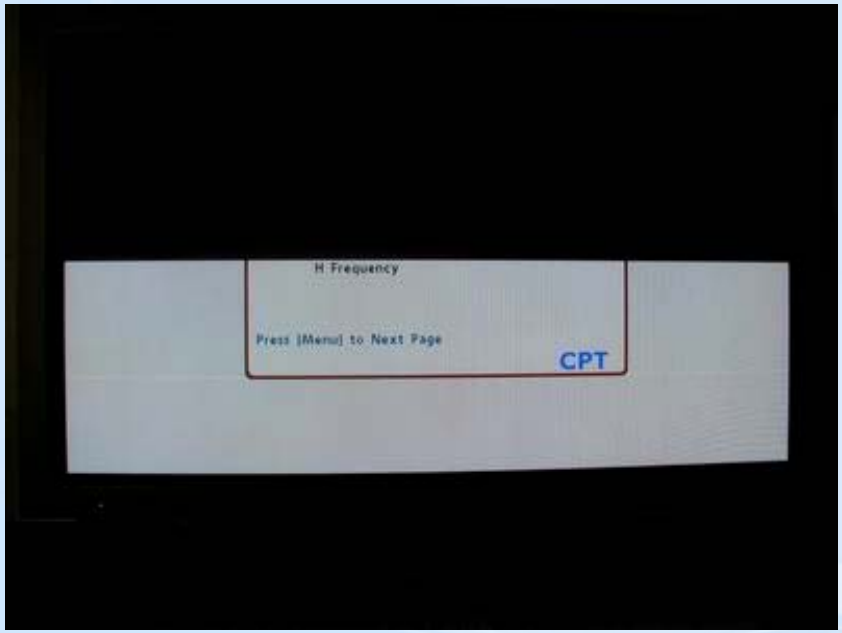
3. 图像模糊不清



更换 Y 驱动板

4. 如故障如图所示，请检查X柔性电缆连接，如果连接OK请更换X扩展板。



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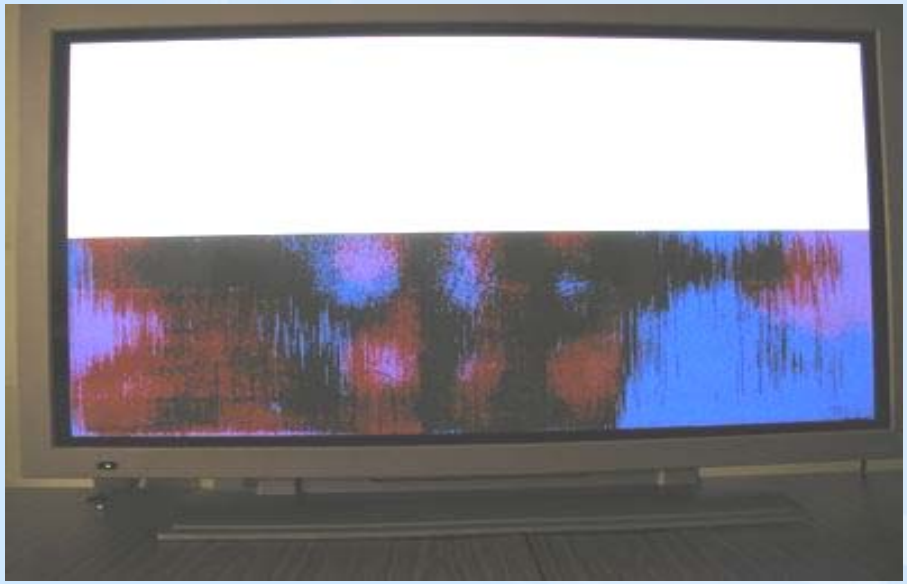
5. 故障现象如图所示，请检查Y柔性电缆连接，若连接OK。请更换Y扩展板。





6. 如果故障如图所示，请检查地址PCB与柔性电缆的连接。



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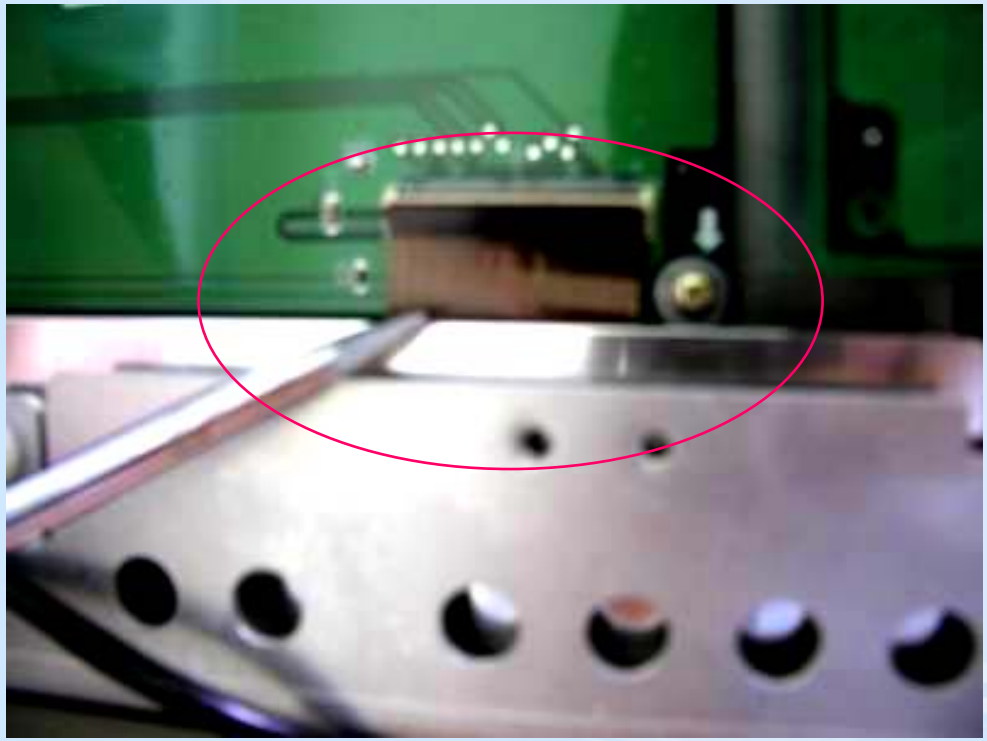
它是由COF与柔性电缆接触不良产生的故障。





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7.There is something wrong on the left side of the panel.





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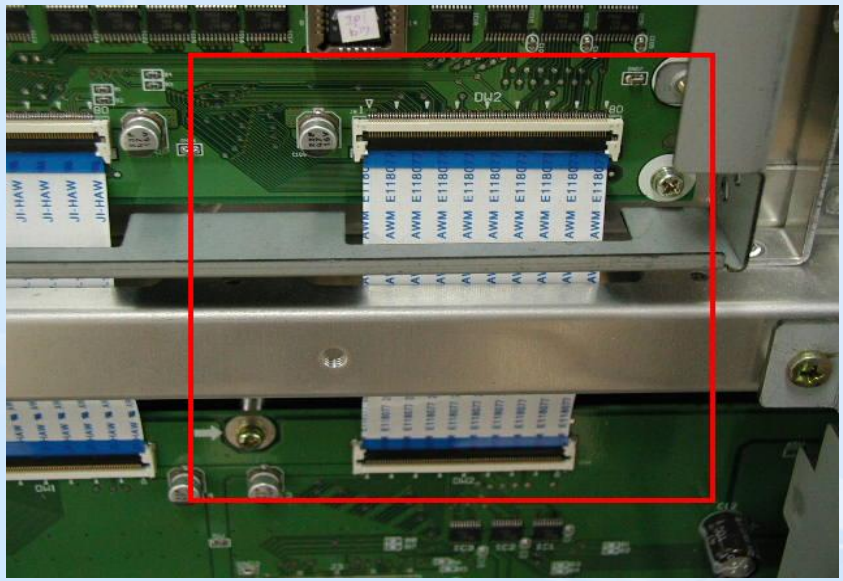
We have a bad connection.



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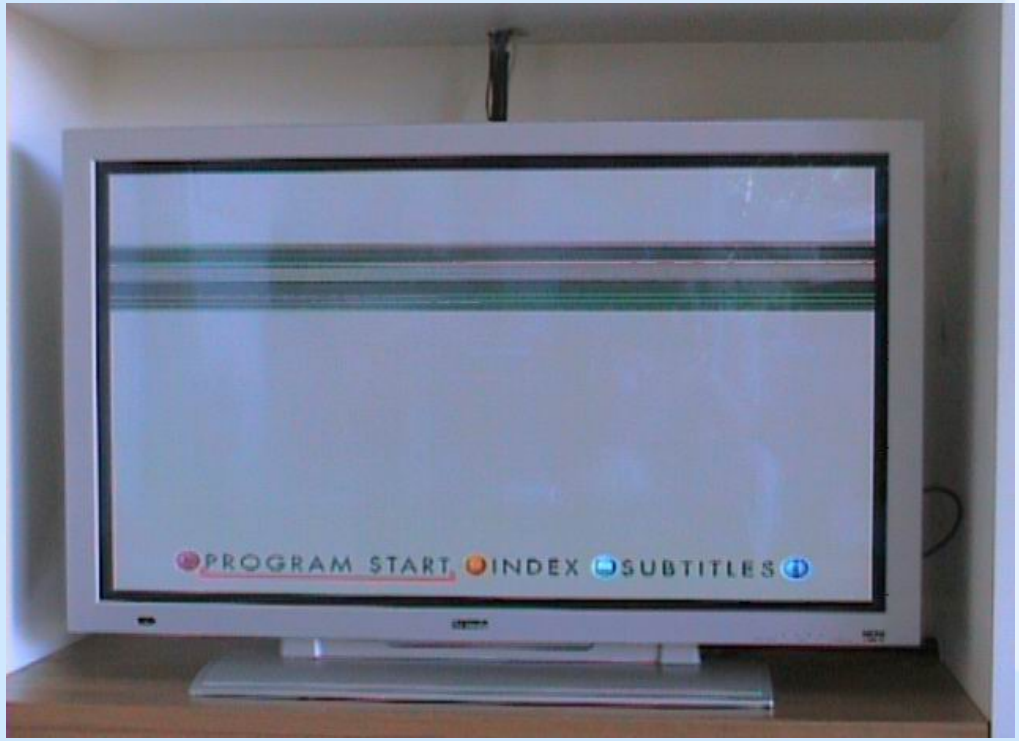
8.There is something wrong on the upper side of the panel.





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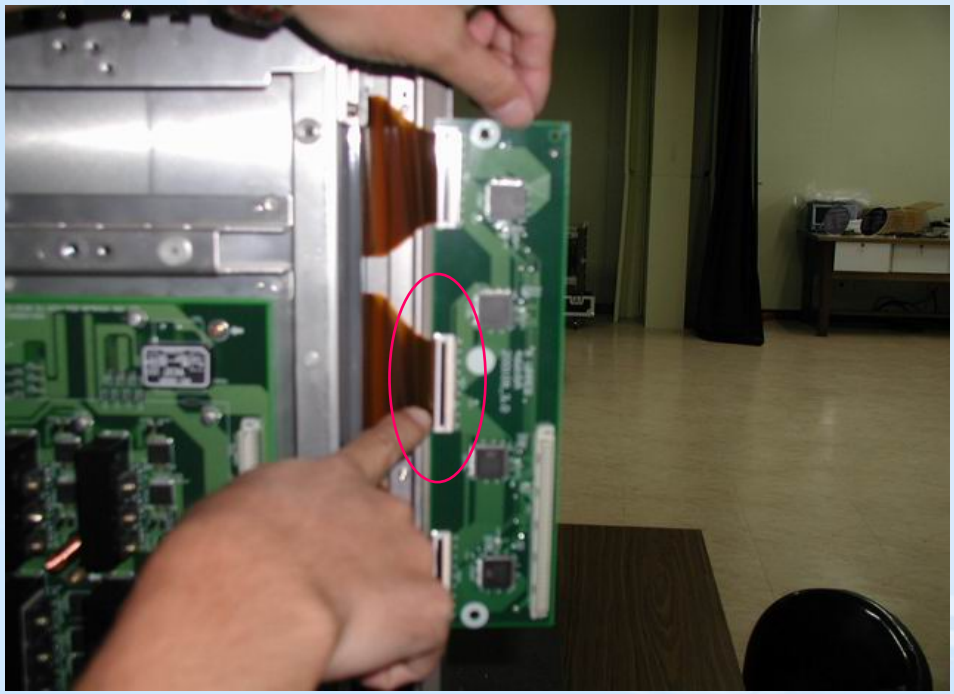
We have a bad connection.



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9.There is something wrong with image.



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1. Maybe VIF failed.
2. Maybe DIF failed.
3. Replace the VIF first. If it doesn’t work, then replace DIF.
4. But after action as above, it still doesn’t work. Replace X sustainer boards.



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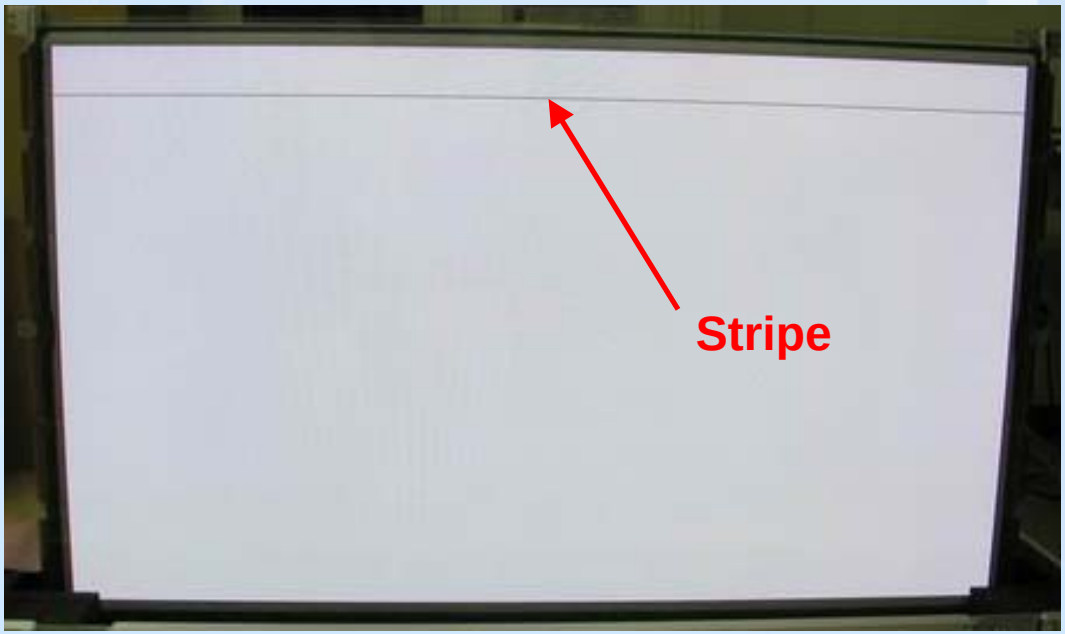
10. There is a stripe on the screen. Replace X extension board.

(But if it still does not wok , then it was caused by the bus electrode problem -> panel's problem.)



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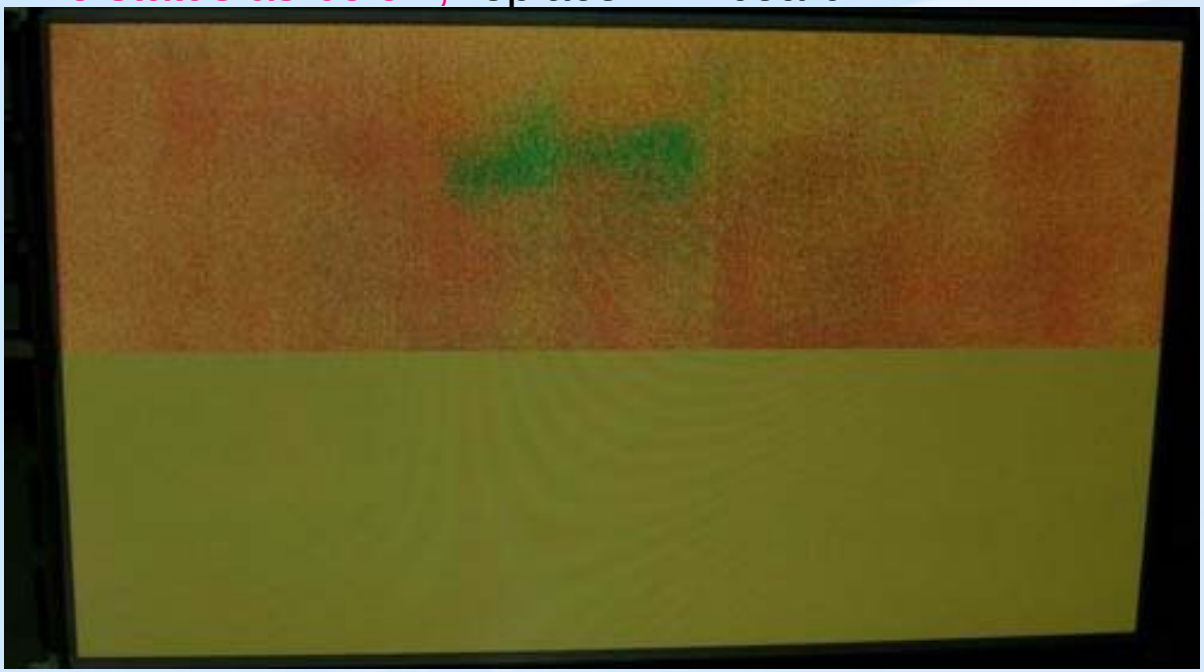
11.The status as below, replace DIF board.



First, we thought there is something wrong in Y – FPC. But not. Why ?????

1.As general display abnormal isn't caused by failed extension board.

2.As figure above shown, we knew something wrong in upper display and high brightness. So the extension board didn't fail.

3.So we found……



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12.The status as below, replace video board.



Still in Searching.

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13.This is called I.W. Adjust the Vs voltage by DVM.





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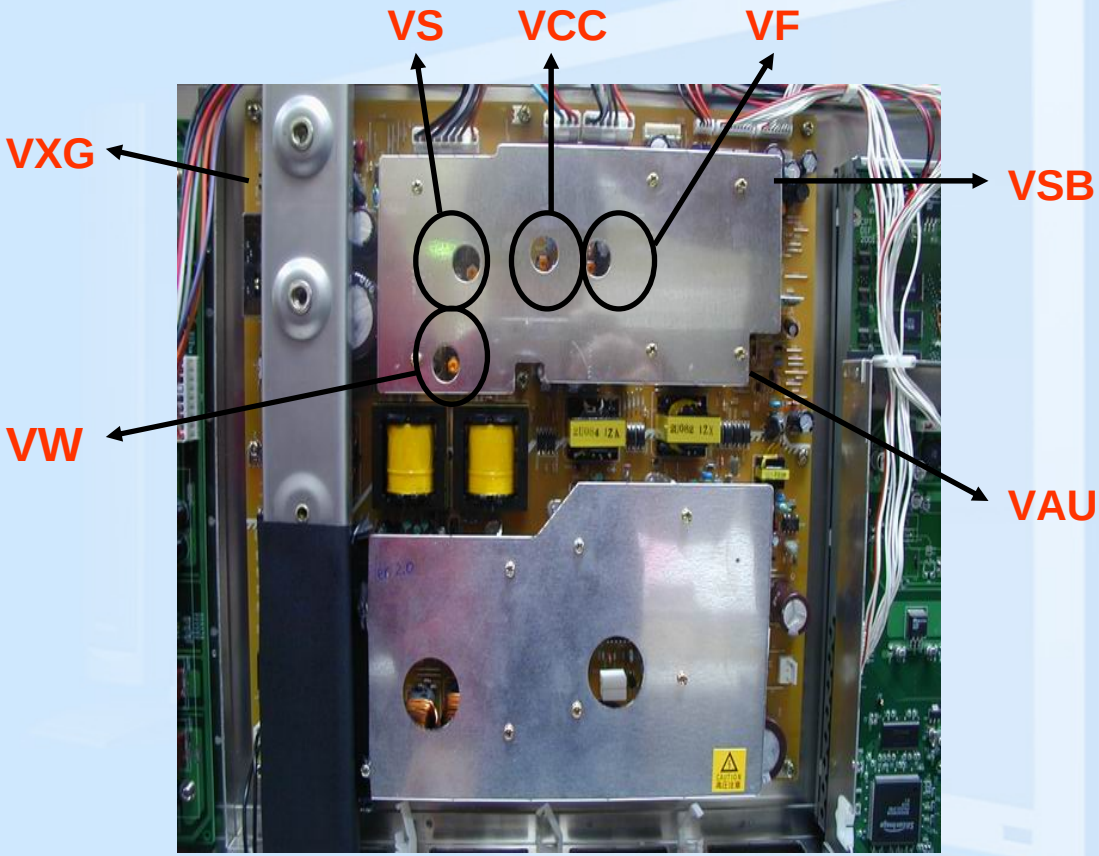

Volts settings position

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Power board output spec.

Name	Output	Max Load	Peak load
Vsb	5V	1.0A	
Vdd	5V	2.0A	
Vcc	5V	3.0A	
Vau	9V	2.0A	
Vfan	12V	0.5A	
Vf	15V	0.6A	
Vs	170V	290W	50A
Vw	65V	80W	6A
Vxg	-160V	0.1A	1A
Vaux	380V	65W	

***Vs & Vxg check the barcode label of Module**



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14.Vertical noise line on whole screen ?



No. This caused by Pixel Works IC on VIF. The only way is to replace VIF.

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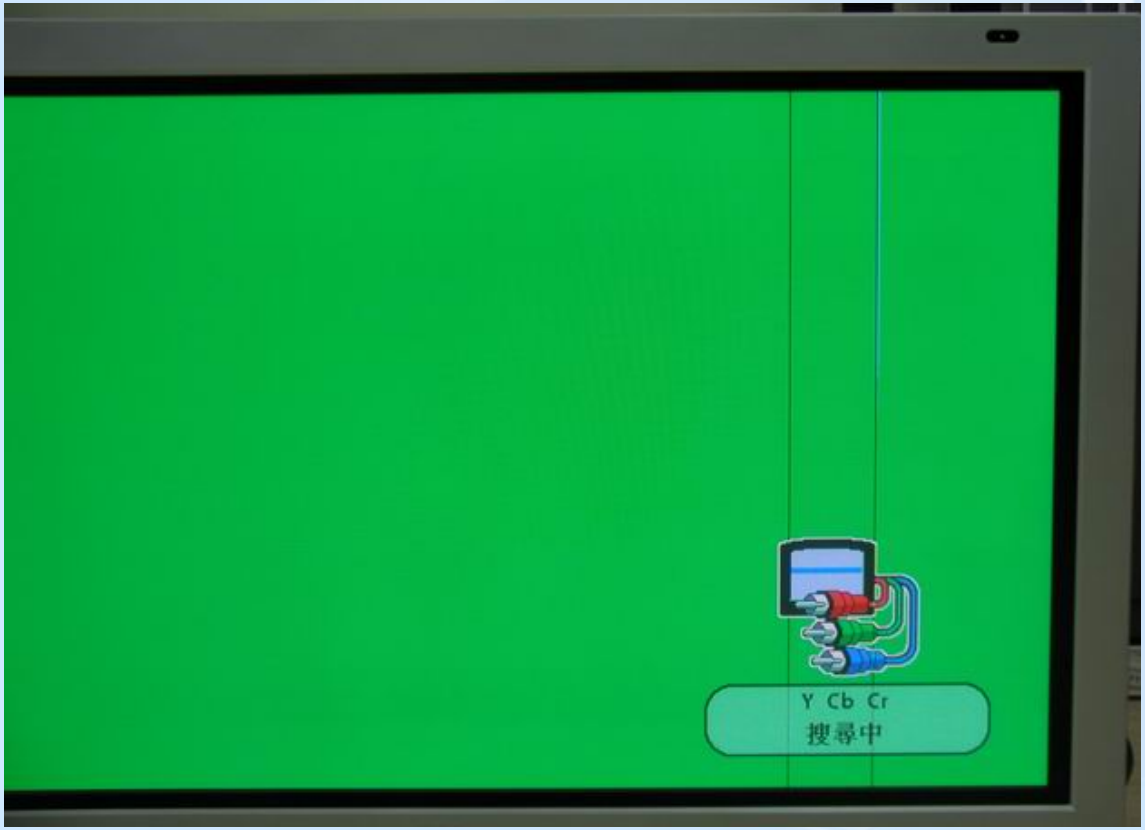
Panel failure





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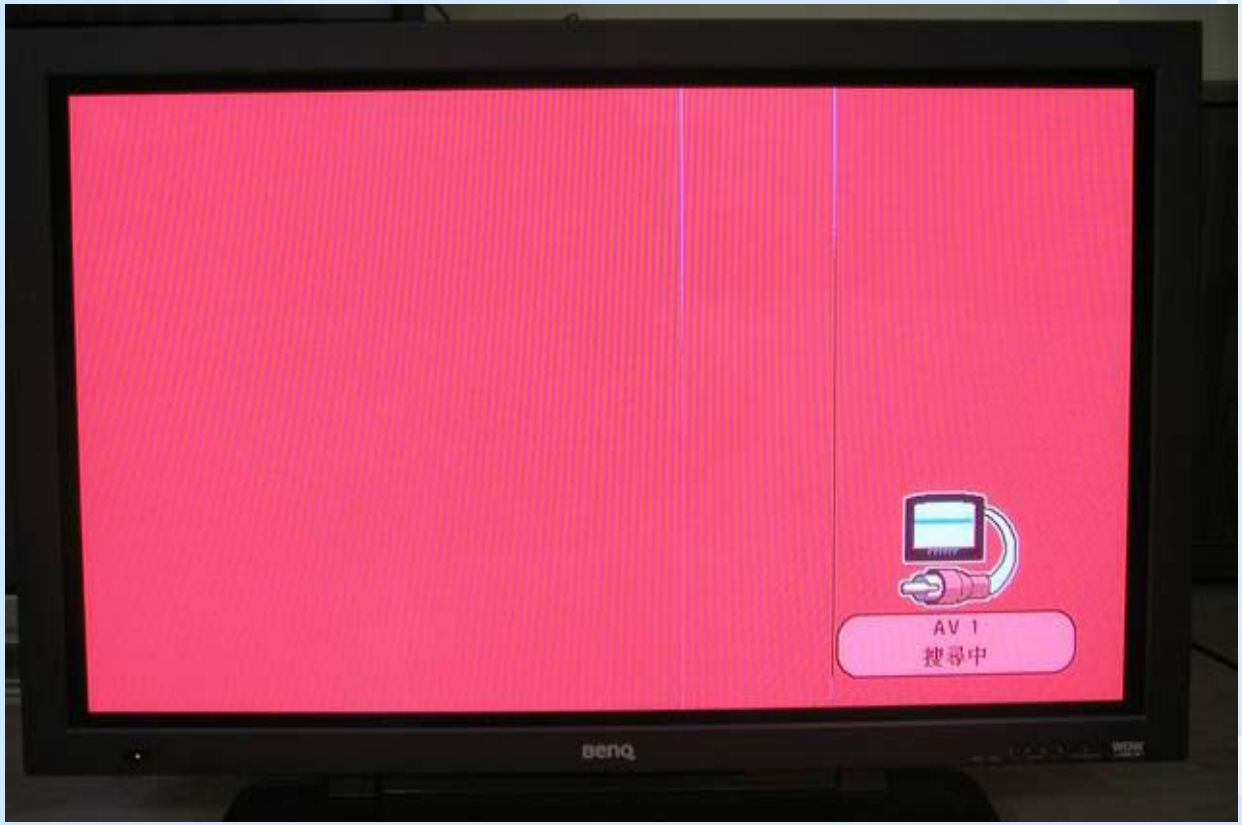
Panel W electrode line off.



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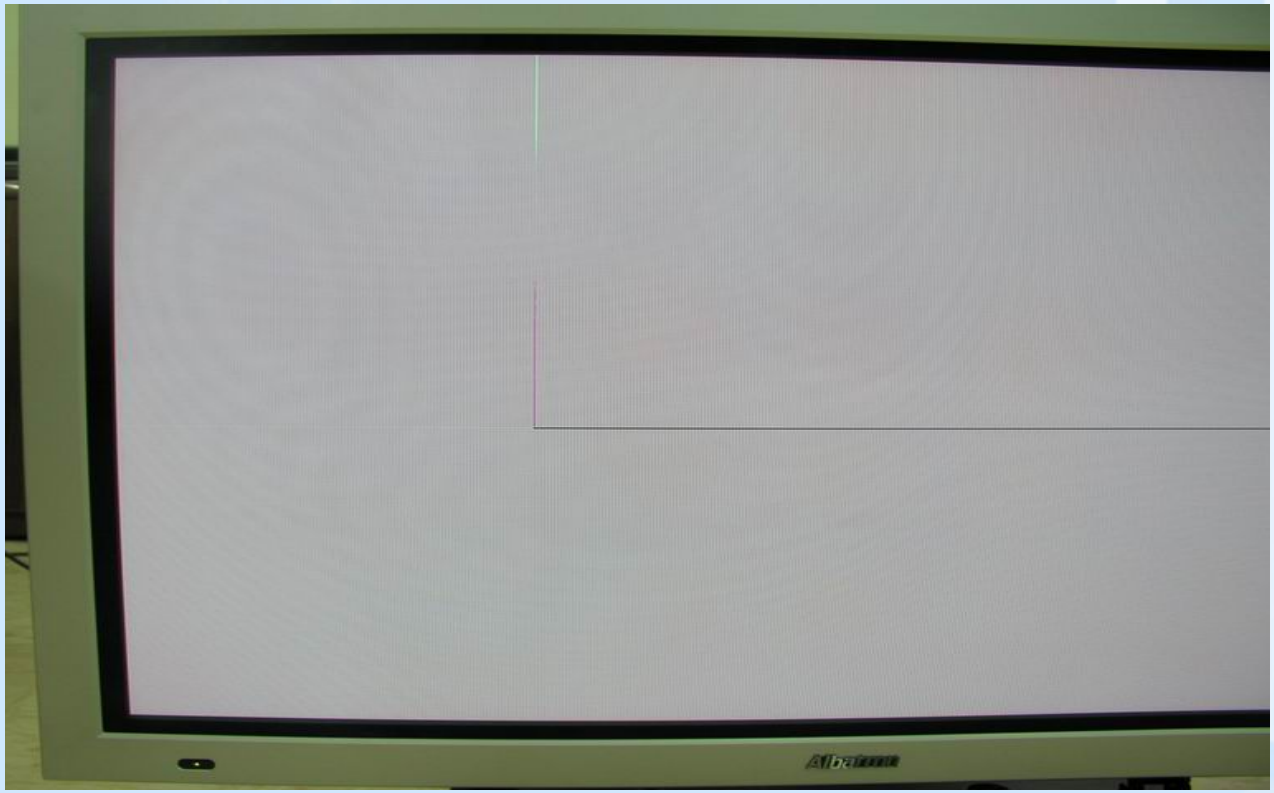
X and W electrodes line off.



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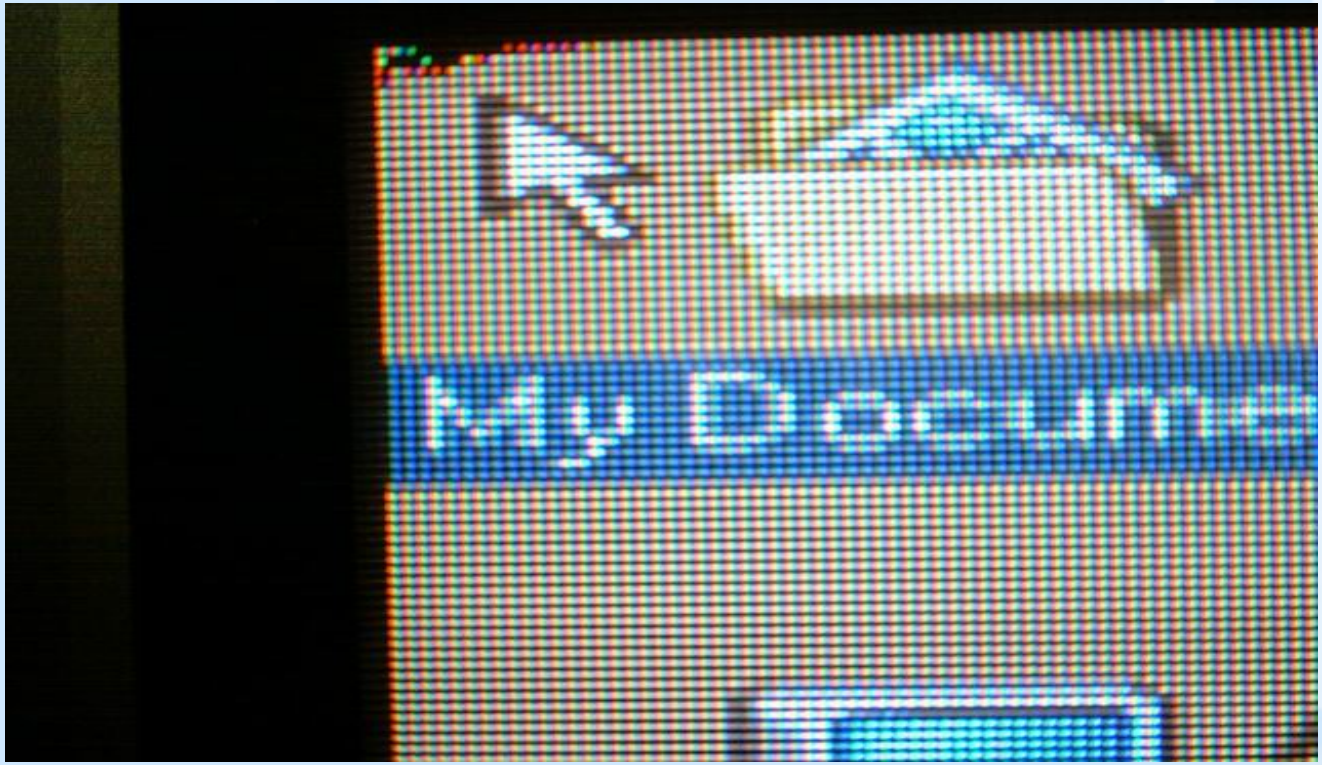
Easy maintenance of Plasma Display

Panel lost gas.



Displaying your vision!



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In principle that Panel failure can’t be repaired. So what could we do? Inform the retailer fax RMA to manufacture for replacement.



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FAQ (Frequently Asked Questions)

1. **Power on the PDP set yet without any picture on the screen**

a. First check both ends of the power cable are plugged into the socket appropriately then make sure power switch being turned on, survey the red standby light is lamped, if the red standby light is not lamped it means maybe input power has some problem or the safety fuse of AC line filter is burned.

b. If the red standby light is lamped it means input power is OK, press key to power on the PDP set if standby light turn to green successfully it means maybe there is something wrong with VIF , DIF or X,Y sustainer.

2.**At cable TV mode only find few television channels**

In OSD manu select TV function and press enter into sub-manu, then at source mode choose CATV and execute TV Program thus all CATV channels would be found.

3. **How to do with image sticking?**

When static image is being displayed on the screen for a long period of time may cause image



sticking on the screen.

When image sticking occurred, the only way to clear up the image sticking is press ”Full White” key, using full white image to burn in the screen till image sticking disappear.

4. **The signal from PC can‘t output to the screen**

Maybe PC input signal resolution out of PDP set accepted range, please reduce the resolution to1024×768 or lower. If still have problem, check whether the signal line is connected properly or not.

5. **The sound of external speaker is not loud enough**

Check whether the speaker cables are connected appropriately or not

Whether the impedance of external speaker match that of audio board output or not, PDP audio output power is 10W × 2, the impedance of audio board output is about 8Ω, if the impedance of external speaker is 16Ω or higher may cause audio output power decrease 50% or more .



6. **There are some noise being found on the higher CATV channels**

Maybe the signal quality from cable station is too weak or no good, please inform the cable station to improve the signal quality.

7. **The signal from DVD player can‘t output to the screen?**

Check the signal cables from DVD output to PDP input are connected appropriately and check the type of terminal (CVBS, S-Video or the component) then check whether PDP signal input select is correct or not.

If all connection and setting are OK then maybe the problem is DVD output having some trouble or PDP set VIF board breakdown.

8 **How to clean the screen?**

Use a soft cotton cloth to clean the screen gently, if also unclean may wet the soft cotton cloth by alcohol and try again. (Other solutions may cause surface filter damage)



How to take apart / assembly Plasma Display

Please see a movie as shown later.



Others

If any questions, you could discuss with us for solution.