

Service  
Service  
Service



# Service Manual

Horizontal Frequency  
30-86 kHz

## TABLE OF CONTENTS

Description	Page	Description	Page
<a href="#">Table Of Contents.....</a>	<a href="#">1</a>	<a href="#">7-1.Noraster,CRT relative circuit problems.....</a>	<a href="#">28</a>
<a href="#">Revision List.....</a>	<a href="#">2</a>	<a href="#">7-2. Abnormal displays.....</a>	<a href="#">30</a>
<a href="#">Important Safety Notice.....</a>	<a href="#">3</a>	<a href="#">7-3 No blanking.....</a>	<a href="#">31</a>
<a href="#">1. Specifications.....</a>	<a href="#">4</a>	<a href="#">7-4 Hor./OSC/DEF/HV circuit fault.....</a>	<a href="#">31</a>
<a href="#">2. Precaution and notices.....</a>	<a href="#">7</a>	<a href="#">7-5. Abnormal horizontal deflection.....</a>	<a href="#">32</a>
<a href="#">2-1Safety precautions.....</a>	<a href="#">7</a>	<a href="#">7-6. Abnormal vertical scanning.....</a>	<a href="#">33</a>
<a href="#">2-2 Product safety notice .....</a>	<a href="#">7</a>	<a href="#">7-7. Side-pin cushion distortion.....</a>	<a href="#">33</a>
<a href="#">2-3 Service Notices.....</a>	<a href="#">7</a>	<a href="#">7-8. Poor focus.....</a>	<a href="#">33</a>
<a href="#">2-4 High voltage warning.....</a>	<a href="#">8</a>	<a href="#">7-9. Power supply trouble shooting chart.....</a>	<a href="#">35</a>
<a href="#">3. Operating Instructions.....</a>	<a href="#">9</a>	<a href="#">8. Mechanical of cabinet front dis-assembly.....</a>	<a href="#">35</a>
<a href="#">4. Adjustment .....</a>	<a href="#">10</a>	<a href="#">9. Spare parts list.....</a>	<a href="#">36</a>
<a href="#">4 -1. Adjustment conditions and precautions .....</a>	<a href="#">10</a>	<a href="#">10. Different parts list.....</a>	<a href="#">47</a>
<a href="#">4-2. Main adjustments.....</a>	<a href="#">10</a>	<a href="#">11 Block diagram.....</a>	<a href="#">48</a>
<a href="#">4-3 Adjustment methods.....</a>	<a href="#">13</a>	<a href="#">12 IC block diagrams.....</a>	<a href="#">49</a>
<a href="#">4-4 DDC Instructions.....</a>	<a href="#">17</a>	<a href="#">13 PCB layout.....</a>	<a href="#">55</a>
<a href="#">5.Circuit description .....</a>	<a href="#">22</a>	<a href="#">13-1 Main PCB layout.....</a>	<a href="#">55</a>
<a href="#">5-1.Micro controller and deflection circuit .....</a>	<a href="#">22</a>	<a href="#">13-2. CRPC board layout.....</a>	<a href="#">56</a>
<a href="#">5-2.Transistor &amp; diode circuit.....</a>	<a href="#">24</a>	<a href="#">14. Schematic diagram.....</a>	<a href="#">57</a>
<a href="#">6.Mechanical Instructions.....</a>	<a href="#">25</a>	<a href="#">15. General Product Specification.....</a>	<a href="#">61</a>
<a href="#">7.Trouble shooting chart.....</a>	<a href="#">28</a>		

**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

GB 3138 106 10530



## Important 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 GUIDELINGS

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

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

Hereafter throughout this manual, PHILIPS Company will be referred to as PHILIPS.

### WARNING

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

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

#### FOR PRODUCTS CONTAINING LASER:

DANGER - Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.

AUTION - Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

CAUTION - The use of optical instruments with this product will increase eye hazard.

TO ENSURE THE CONTINUED RELIABILITY OF THIS PRODUCT, USE ONLY ORIGINAL MANUFACTURER'S REPLACEMENT PARTS, WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THIS SERVICE MANUAL.

## 1. Monitor Specifications

- CRT : 43.2CM(17") 90 Deflection, 29mm Neck, 0.25mm phosphor dot pitch, Pure Flat high brightness high contrast CRT, Non-Glare Screen
- Viewable image Size: 40.6CM (16") diagonal
- Display Color: Unlimited Colors
- External Controls:  
Power On/Off, OSD key, OSD Function: Contrast, Brightness, H-Center, H-Size, V-Center, V-Size, Zoom, Pincushion, Trapezoid, Pin-Balance, Parallelogram, Rotation, 6500 Color Temperature, 6500 Color Temperature, User Color, 9300 Color Temperature, Degauss, Moire Reduce, Recall, Exit, Language.
- Input Video Signal

Timing	1.	2.	3.
Resolution	640 x 480	640 x 480	720 x 400
H. Frequency	31.469 kHz	43.269 kHz	31.468 kHz
V. Frequency	59.941 Hz	85.008 Hz	70.084 Hz

Timing	4.	5.	6.
Resolution	800 x 600	800 x 600	1024 x 768
H. Frequency	46.875 kHz	53.674 kHz	60.023 kHz
V. Frequency	75.000 Hz	85.061 Hz	75.029 Hz

Timing	7.	8.	
Resolution	1024 x 768	1280 x 1024	
H. Frequency	68.677 kHz	79.976 kHz	
V. Frequency	84.997 Hz	75.024 Hz	

- Scanning Frequencies

Horizontal:	30KHz ~ 86KHz
Vertical:	50 Hz ~ 160 Hz

- Factory Preset Timings: 8  
User Timings:6

- Main dimensions/weight

	Monitor (with stand)	Packed Monitor (for China, India)	Packed Monitor(for other regions)
Width:	397 mm	460 mm	446 mm
Height:	428 mm	450 mm	420 mm
Depth:	423.5 mm	526 mm	475 mm
Weight:	13.5 kg	15.8 kg	15.4 kg

- POWER CONSUMPTION

Power on - < 75w.

DPMS off state - < 2w at 240Vac.

Power off (by switch) - < 1w at 120Vac, <2w at 240Vac.

10. Video Bandwidth: 180 MHz
11. Power Source:  
Switching Mode Power Supply  
AC 90 ~264V, 50±3/60±3Hz Universal Type
12. Operating Temperature: 0°C to 40°C Ambient
13. Humidity: 5% to 90% Relative, Non-Condensing
14. External Connection:  
15 Pin D-type Connector  
AC Power Cord
15. Regulations/Safety:

International Regulatory Specification			
COUNTRY	DOMAIN	SAFETY / EMC / ERGONOMICS / STANDARDS	DOCUMENTS
INTERNATIONAL	Sa	IEC60950-1: 2001. Group -and national differences of all countries listed in CB Bulletin No. 107A	CB Report and CB certificate
EUROPE	Sa	European Low Voltage Directives 73/23/EEC and 93/68/EEC	Declaration of Conformity
	E	European Electromagnetic Compatibility Directive 89/336/EEC amended by the directive 93/68/EEC. EN 55022:1998 Class B	Declaration of Conformity and Full EMC/CE test report
		EN 55024: 1998	
		EN 61000-3-2: 2000	
		IEC 61000-3-3: 1994/EN61000-3-3: 1995	
		CISPR 22:1997 Class B International EMC standard	
GERMANY	Sa	EN60950-1: 2001	TUV certificate
	O	ISO 9241-3-7-8 (CRT) & 13406-2 (LCD), prEN 50279:1998	TUV-ERG certificate
	O	GS-Mark / EK1-ITB 2000	TUV-GS certificate
	X	Decree ROV 08.01.87 (CRT)	PTB
SWEDEN	Sa	EN60950-1: 2001	SEMKO certificate
	O	TCO 99 (TCO03) (to TCO models)	TCO99 (TCO03) report + certificate
	O	MPR 1990: 8 / MPR 1990:10 (to MPR models)	Meet requirement
RUSSIA	Sa	GOST R 50377-1992	GOST certificate
SOUTH AFRICA	Sa	SABS IEC 60950 and IEC 60950-1	Certificate of Conformity

	E	EN55022 or Cisper 22	Certificate of Conformity
USA	Sa	UL 60950-1: 2003	UL certificate
	E	FCC Part 15 Class B	FCC ID grant or DOC
	O	Energy Star	EPA registration
	X	21CFR 1002.10 to 13 (CRT)	DHHS report
CANADA	Sa	CSA C22.2 No 60950	CSA certificate
	E	ICES-003 issue 3	Statement on label
	E	RED (CRT)	DNHW
MEXICO	Sa	NOM-019-SCFI-1994	NOM certificate
KOREA	Sa	Korean Safety Control law IEC 60950	eK certificate
	E	Regulations laws: EMI 1996-78, 80. EMS 1996-79,81	MIC certificate
SINGAPORE	Sa	IEC60950	PSB certificate
CHINA	Sa	GB4943-2001	CCC certificate
	E	GB9254-1998; 17625.1-2003	
	O	CSC/G1205-2004	CECP certificate
TAIWAN	Sa	CNS-14336 (IEC 60950-1)	BSMI certificate
	E	CNS-13438 (CISPR22) Class B	
	O	Criteria 18 (Monitor) (LCD)	Green Mark / certificate
AUSTRALIA/ NEW-ZEALAND	E	AS/NZS3548: 1995	Declaration of Conformity
ISRAEL	S	IS 1121, IEC60950/IEC60950-1	Certificate of Conformity
	E	EN or Cisper 22	Certificate of Conformity
Saudi Arabia	S	IEC standard	SASO
	E	IEC standard	SASO
Japan	Sa	EN60950-1:001 (AC adapter only)	PSE
	E	VCCI class B (CISPR 22)	VCCI Certificate
Argentina	Sa	EN60950-1: 2001	IRAM
<b>Sa = Safety</b>			
<b>E = Electromagnetic Compatibility</b>			
<b>O = Other which including recycling, energy saving, ergonomics</b>			
<b>X = X-ray</b>			
<b>For detailed regulatory items please refer to the international regulatory specification provided by Philips.</b>			

## 2. Precautions and notices

### 2-1.Safety precautions

1. Observe all caution and safety related notes located inside the display cabinet.
2. Operation of the display with the cover removed, may cause a serious shock hazard from the display power supply. Work on the display should not be attempted by anyone who is not thoroughly familiar with precautions necessary when working on high voltage equipment.
3. Do not install, remove or handle the picture tube in any manner unless shatter-proof goggles are worn. People who are not so equipped should be kept away while handling picture tube. Keep picture tube away from the body while handling.
4. The picture tube is constructed to limit X-RAY radiation to 0.5 mR/HR. For continued protection, use the designated replacement tube only, and adjust the voltages so that the designated maximum rating at the anode will not be exceeded.
5. Symbol "★" means safety relative parts. The use of substitute replacement parts which do not have the same characteristics as specified in the parts list may create shock, fire or explode etc.
6. Symbol "⚠" means X-ray relative parts. Before replacing any of these components please read the parts list in this manual carefully to avoid creating higher anode voltage or x-ray. Especially for sealed controls, such as VR902 and FBT screen VR etc, which were sealed by the manufacturer once their optimum position has been set, please don't dismantle them as your likes, otherwise you will break or damage the component. If you need replace the parts with sealed control, please adjust the relative VR to make sure the B+ voltage about 53.5.0V and well seal it with A+B glue or equivalent, which you can not move away with one screw driver
7. Before returning a serviced display to the customer, a thorough safety test must be performed to verify that the display is safe to operate without danger or shock. Always perform an AC leakage current check on the exposed metallic parts of the cabinet, such as screw heads.  
Test method for current leakage is described as follow.
  - (a) Plug the AC line cord directly into rated AC outlet (do not use a line isolation transformer during this check).
  - (b) Use an AC voltmeter having 5000 ohms per volt or with more sensitivity in the following manner: Connect a 1500 ohms 10 Watt resistor, paralleled by a 0.15UF, AC type capacitor between a known good earth ground (water pipe, conduit, etc.) and the exposed metallic parts simultaneously. Measure the AC voltage across the combination of 1500 ohms resistor and 0.15UF capacitor.
  - (c) Reverse the AC plug at the AC outlet and repeat AC voltage measurements for each exposed metallic part.
  - (d) Voltage measured must not exceed 0.5 volts RMS. This corresponds to 0.35 milliamp AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.

## 2-2 Product safety notice

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

## 2-3 Service notes

1. When replacing parts or circuit boards, clamp the lead wires around terminals before soldering.
2. When replacing a high wattage resistor (more than 1/2W of metal oxide film resistor) in circuit board, keep the resistor about 10mm (1/2 in) away from circuit board.
3. Keep wires away from high voltage or high temperature components.
4. Keep wires in their original position so as to reduce interference.

## 2-4 High voltage warning

Operation of monitor outside of cabinet or with back removed may cause a serious shock hazard. Work on this model should only be performed by those who are thoroughly familiar with precautions necessary when working on high voltage equipment.

Exercise care when servicing this chassis with power applied. Many B plus and high voltage terminals are exposed which, if carelessly contacted, can cause serious shock or result in damage to the chassis. Maintain interconnecting ground lead connections between chassis and picture tube dag when operating chassis.

Certain HV failures can increase X-ray radiation. Monitor should not be operated with HV levels exceeding the specified rating for the chassis type. The maximum operating HV specified for the chassis used in this monitor is

23.0KV  $\pm$  1KV

with a line voltage of 120/240 VAC. Higher voltage may also increase possibility of failure in HV supply.

It is important to maintain specified values of all components in the horizontal and high voltage circuits and anywhere else in the monitor that could cause a rise in high voltage or operating supply voltages. No changes should be made to the original design of the monitor. Components shown in the shaded areas on the schematic should be replaced with exact factory replacement parts. The use of unauthorized substitute parts may create a shock, fire or other hazard.

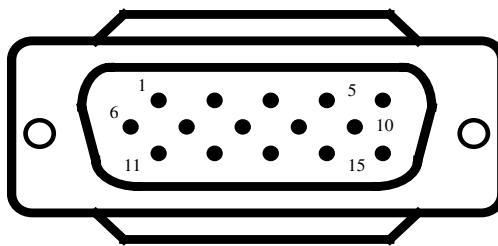
To determine the presence of high voltage, use accurate, high impedance, HV meter connected between second anode lead and CRT dag grounding device. When servicing the High Voltage System, remove static charge from it by connecting a 10K ohm resistor in series with an insulated wire (such as a test probe) between picture tube dag and 2nd anode lead.(AC line cord disconnected from AC power outlet.)

The picture tube used in this monitor employs integral implosion protection. Replace with tube of the same type number for continue safety. Do not lift picture tube by the neck. Handle the picture tube only after discharging the high voltage completely.

### 3. Operating instructions

This procedure gives you instructions for installing and using the Color display.

1. Position the display on the desired operation and plug the power cord into a convenient AC outlet. Three-wire power cord must be shielded and is provided as a safety precaution as it connects the chassis and cabinet to the electrical conduit ground. If the AC outlet in your location does not have provisions for the grounded type plug, the installer should attach the proper adapter to ensure a safe ground potential.
2. Connect the 15-pin color display shielded signal cable to your signal system device and lock both screws on the connector to ensure firm grounding. The connector information is as follow:



15 - Pin Color Display Signal Cable

Pin No.	Description	Pin No.	Description
1.	Red video	9.	+5V (Supply from PC for DDC circuit)
2.	Green video	10.	Sync GND
3.	Blue video	11.	GND
4.	GND	12.	DDC serial data
5.	Self test	13.	H-sync
6.	Red GND	14.	V-sync
7.	Green GND	15.	DDC serial clock
8.	Blue GND		

3. Apply power to the display by turning the power switch to the "ON" position and allow about thirty seconds for display tube warm-up. The Power-On indicator lights when the display is on.
4. With proper signals feed to the display, a pattern or data should appear on the screen, adjust the brightness and contrast to the most pleasing display.
5. This monitor has power saving function following the VESA DPMS. Be sure to connect the signal cable to the PC.
6. If your color display requires service, it must be returned with the power cord.

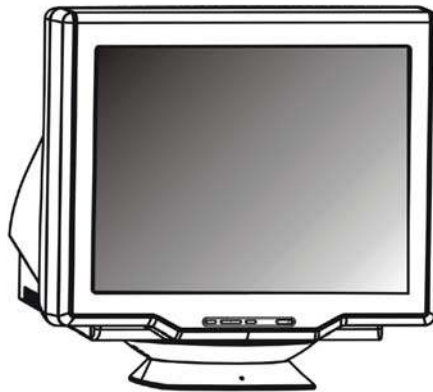
## 4. Adjustment

### 4-1 Adjustment conditions and precautions

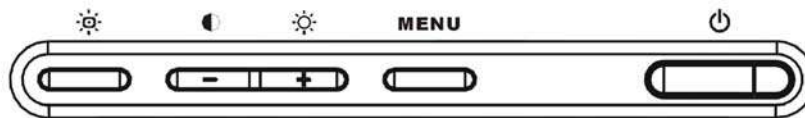
1. Approximately 30 minutes should be allowed for warm up before proceeding.
2. Adjustments should be undertaken only on those necessary elements since most of them have been carefully preset at the factory.


### 4-2 Main adjustments

#### Front View







107B7



 Power button switches your monitor on.



MENU MENU button which when pressed will take you to the OSD controls

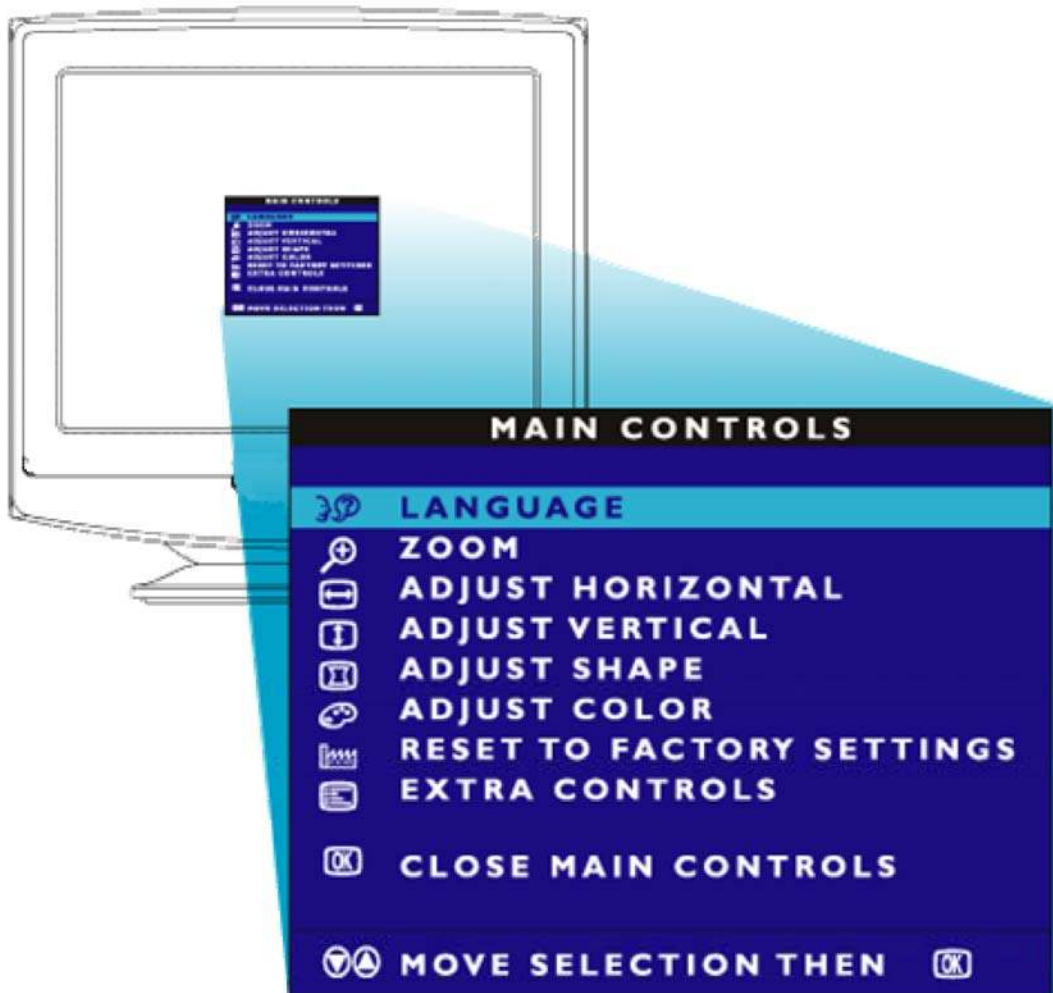
 Contrast hotkey. When the  "(-)" button is pressed, the adjustment controls for the CONTRAST will show up.

 Brightness hotkey. When the  "(+)" button is pressed, the adjustment controls for BRIGHTNESS will show up.

 High Bright hot key delivers 4 suitable brightness instantly for text, internet, game and multimedia.

### Basic and simple instruction on the control keys

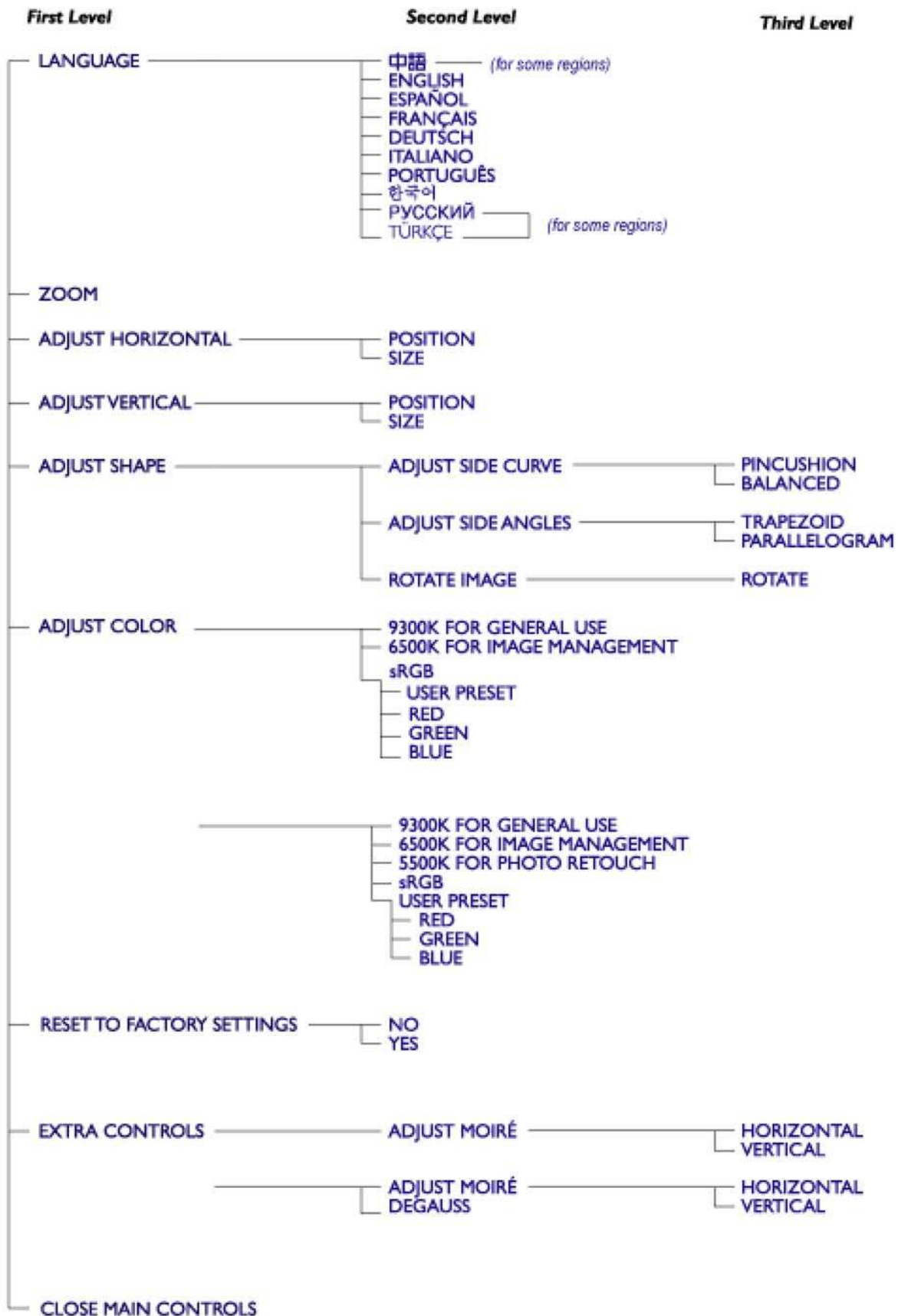
On the front controls of your monitor, once you press the MENU button, the On Screen Display (OSD) Main Controls window will pop up and you can now start making adjustments to your monitor's various features. Use the   to make your adjustments within.



### The OSD Tree


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

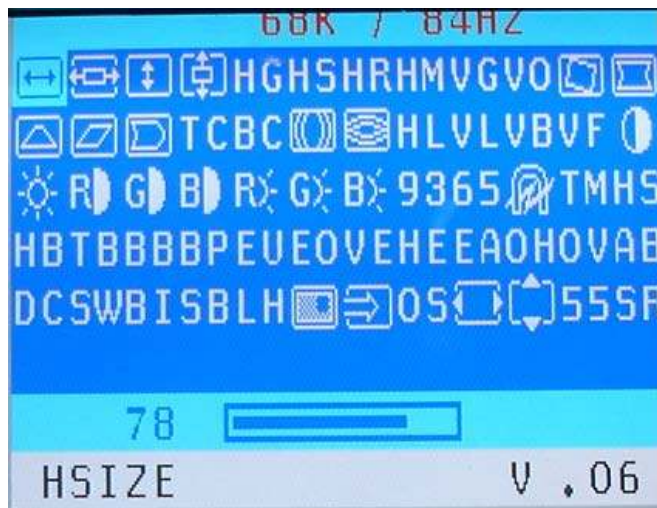
Your monitor may not include all the items in the OSD tree shown below.



\* Specifications are subject to change without prior notice.

4-3 Adjustment method


1. B + & HV voltage adjustment:
  - A.Chroma-2135 Signal generator or PC equivalent set mode 6, UVGA 1280X1024 pattern 101 .
  - B.Connect a DC Volt meter between TP902 and ground, then adjust VR902 to be 140±1 VDC for CPT and LG CRT.
  - C.Set the contrast and brightness max,and then adjust G2=600V for CPT CRT and G2=560V for LG CRT.
2. Factory preset Timings Adjustment:
  - A. Press MENU Key to show OSD menu ,and press the down Key to select the "ZOOM" function,
  - B. Then press the menu Key to enter second menu, press the down key to select zoom"  " about 10S.  
Do not release it, until the OSD menu changed to the Factory preset window.
  - C. The Factory preset window contains the following functional controls. Select one of the control. Then press the Left/Right ,Up/Down Key to adjust its value for the optimum picture.



<b>SR</b>	Save SRGB color	<b>VO</b>	V Offset
<b>55</b>	Save 5500C color	<b>VG</b>	V Gain
<b>OS</b>	User OSD size	<b>HM</b>	H size Max
<b>LH</b>	Brightness	<b>HR</b>	H Size Range
<b>SB</b>	SBQ	<b>HS</b>	HSUB Size Range
<b>BI</b>	Set Burn/in Off & On	<b>HG</b>	H Gain
<b>SW</b>	Set H/Freq Max 85~72K		HBRIOSD VC
<b>DC</b>	DCOffset ADJ		HBRIOSD HC
<b>AB</b>	ABL		User adjustment


<b>OV</b>	User OSD VC		Save and Exit
<b>OH</b>	User OSD HC		Degauss
<b>EA</b>	EHT Auto Adjustment		B-Bias
<b>HE</b>	HEHT Gain		G-Bias
<b>VE</b>	VEHT Gain		R-Bias
<b>EO</b>	EHT Offset		G-Gain
<b>EU</b>	EHT Current		B-Gain
<b>BP</b>	B Plus		R-Gain
<b>BB</b>	Bottom Balance		Brightness
<b>TB</b>	Top Balance		Contrast
<b>HB</b>	HS Wave Balance		V-Moire Reduce
<b>HS</b>	HSWAVE		H-Moire Reduce
<b>TM</b>	User Timr:00273hours		PIN-Balance
<b>65</b>	Save 6500C color		Parallelogram
<b>93</b>	Save 9300C color		Trapezoid
<b>VF</b>	V-Focus		Pincushion
<b>VB</b>	VLIN Balance		Rotation
<b>VI</b>	V Linearity		V- Center
<b>HL</b>	H Linearity		V-size
<b>BC</b>	Bottom Corner		H-Center
<b>TC</b>	TOP Corner		H -size

D. To switches the input signal to the other Timing Mode. Please follow step A ~ C to get the optimum picture.(H/V-size:312\*234mm)

E. Select the " " RETURN function and press the MENU Key, then the Factor Preset window will be returned to the original OSD window.(user's operating condition)

F. The setting data of the CONTRAST, BRIGHTNESS, ROTATION, COLOR TEMPERATURE are common mode saved in the memory. Don't needed adjust it individual at every timing Mode and save in the memory.

3. White Balance, Luminance adjustment:

A. Press MENU Key to show OSD menu ,and press the down Key to select the "zoom" function, then press the menu Key to enter second menu, press the down key to select "  "above 10S,then enter into factory setting area for modulation.

B. Brightness & contrast ratio MAX.

C. Raster Max modulation: Raster Pattern, adjust R or B bias and G2, make  $x=270\pm 10$ ,  $y=290\pm 10$ ,  $Y=2.0\pm 0.2$   $\text{cd/m}^2$

D. Raster cut off modulation: Raster Pattern, adjust brightness to make Cut off:  $0.08\pm 0.02$   $\text{cd/m}^2$ ,and then put 9300K & 6500K into it.

E.Small white screen appears, Raster cut off, set SB as 4

(1)Choose 4 for LH ,set R or G or B gain, make  $x=283\pm 15$ ,  $y=297\pm 15$ ,  $Y=350\pm 15$   $\text{cd/m}^2$ ,then save it into 9300K color temperature, set R or G or B gain, make  $x=313\pm 15$ ,  $y=329\pm 15$ ,  $Y=300\pm 15$ ,then save it into 6500K color temperature, set R or G or B gain, make  $x=332\pm 15$ ,  $y=347\pm 15$ ,  $Y=280\pm 15$ ,then save it into 5500K color temperature, then exit the factory setting area.

(2)Choose 3 for LH,set R or G or B gain, make  $x=283\pm 15$ ,  $y=297\pm 15$ ,  $Y=270\pm 15$ ,then save it into 9300K color temperature; set R or G or B gain, make  $x=313\pm 15$ ,  $y=329\pm 15$ , $Y=250\pm 15$ ,then save it into 6500K color temperature, set R or G or B gain, make  $x=332\pm 15$ ,  $y=347\pm 15$ ,  $Y=230\pm 15$ ,then save it into 5500K color temperature, then exit the factory setting area.

(3)Choose 2 for LH,set R or G or B gain, make  $x=283\pm 15$ ,  $y=297\pm 15$ ,  $Y=210\pm 15$ ,then save it into 9300K color temperature; set R or G or B gain, make  $x=313\pm 15$ ,  $y=329\pm 15$ , $Y=200\pm 15$ ,then save it into 6500K color temperature, set R or G or B gain, make  $x=332\pm 15$ ,  $y=347\pm 15$ ,  $Y=190\pm 15$ ,then save it into 5500K color temperature, then exit the factory setting area.

(4)Choose 1 for LH,set R or G or B gain, make  $x=283\pm 15$ ,  $y=297\pm 15$ ,  $Y=140\pm 15$ ,then save it into 9300K color temperature; set R or G or B gain, make  $x=313\pm 15$ ,  $y=329\pm 15$ , $Y=130\pm 15$ ,then save it into 6500K color temperature, set R or G or B gain, make  $x=332\pm 15$ ,  $y=347\pm 15$ ,  $Y=120\pm 15$ ,then save it into 5500K color temperature, then exit the factory setting area.

F. White screen appears, brightness cut off, set "SB" as 4,adjust AB value, make 9300K color temperature  $Y=98\pm 1$   $\text{cd/m}^2$ ,then save it into 9300K color temperature; set "SB" as 3,adjust AB value, make 9300K color temperature  $Y=96\pm 1$   $\text{cd/m}^2$ ,then save it into 9300K color temperature; set "SB" as 2, adjust AB value, make 9300K color temperature  $Y=94\pm 1$   $\text{cd/m}^2$ ,then save it into 9300K color temperature; set "SB" as 1, adjust AB value, make 9300K color temperature  $Y=92\pm 1$   $\text{cd/m}^2$ ,then save it into 9300K color temperature.

G. White screen appears, brightness cut off, set R or G or B gain, make  $x=313\pm 10$ ,  $y=329\pm 10$ , $Y=80\pm 5$   $\text{cd/m}^2$  . then save it into sRGB color temperature, exit the factory setting area.

H. After modulation, it's necessary to check if the white balance accords with the normal specification. If not, needs reset. then exit factory setting area.

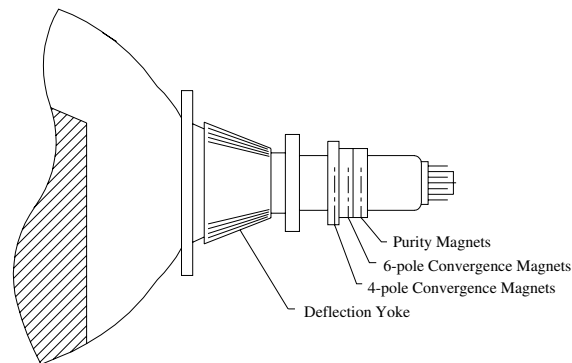
#### 4. Focus Adjustment:

A. Set mode7 1024×768@85Hz with character full page.

B. Under the RECALL state.

- C. Then adjust focus VR1 to a fine vertical line.
  - D. Adjust focus VR2 to a fine horizontal line.
  - E. Repeat step C & D, after that, set the Focus VR, G2 VR with the white lacquer.
5. Purity Adjustment
- A. Be sure that the display is not being exposed to any external magnetic fields.
  - B. Ensure that the spacing between the Purity, Convergence, Magnet, (PCM), assembly and the CRT stem is 29mm. (See below diagram)
  - C. Produce a complete, red pattern on the display. Adjust the purity magnet rings on the PCM assembly to obtain a complete field of the color red. This is done by moving the two tabs in such a manner that they advance in an opposite direction but at the same time to obtain the same angle between the two tabs, which should be approximately 180'.
  - D. Check the complete blue and complete green patterns to observe their respective color purity. Make minor adjustments if needed.

#### Relative placement of typical components



6. Convergence adjustment
- A. Produce a magenta crosshatch on the display.
  - B. Adjust the focus for the best overall focus on the display.  
Also adjust the brightness to the desired condition.
  - C. Vertical red and blue lines are converged by varying the angle between the two tabs of the 4 pole magnets on the PCM assembly. (See above diagrams)
  - D. Horizontal red and blue lines are converged by varying the two tabs together, keeping the angle between them constant.
  - E. Produce a white crosshatch pattern on the display.
  - F. Vertical green and magenta lines are converged by varying the angle between the two tabs of the 6-pole magnets.
  - G. Horizontal green and magenta lines are converged by varying the two tabs together, keeping the angle between them constant.

## 4-4 DDC Instructions

128 bytes EDID Data (Hex):

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
0	00	FF	FF	FF	FF	FF	FF	00	41	0C	1D	00	01	00	00	00
16	01	0F	01	03	68	20	18	78	2B	9E	A8	A1	54	46	99	24
32	0E	48	4C	A5	EF	00	31	59	45	59	61	59	71	4F	81	80
48	81	59	A9	40	A9	45	EA	24	00	60	41	00	28	30	30	60
64	13	00	36	E6	10	00	00	1E	00	00	00	FF	00	41	55	30
80	35	30	31	30	30	30	30	30	31	0A	00	00	00	FD	00	32
96	A0	1E	56	12	00	0A	20	20	20	20	20	20	00	00	00	FC
112	00	50	48	31	30	37	42	37	0A	20	20	20	20	20	00	2E

### Take 105G7 DDC writer for example

#### 1.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:

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.

#### 2.System and equipment requirements

1. An i486 (or above) personal computer or compatible.
2. Microsoft operation system Windows 95/98,etc.
3. Newphl.exe program
4. (105G7)S554BPHL.ddc EDID program.
5. Software DDC Alignment kits shown as fig 1.

The kit contents:

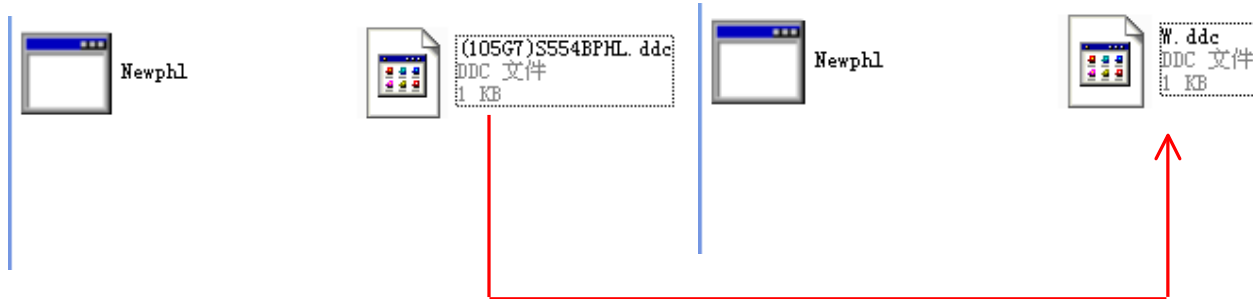
- a. DDC board x1
- b. Printer cable x1
- c. D-Sub cable x1
- d. 12V DC input

Note: The Newphl.exe is a MS-DOS -based program, which cannot be run in windows.



Fig 1

Step 1: Put the "Newphl.exe" and "(105G7) S554BPHL.ddc" to a special folder, such as 105G7. And rename the "(105G7) S554BPHL.ddc" as "W.ddc"



Step 2: Access to MS-DOS program, Input the command as shown fig 2

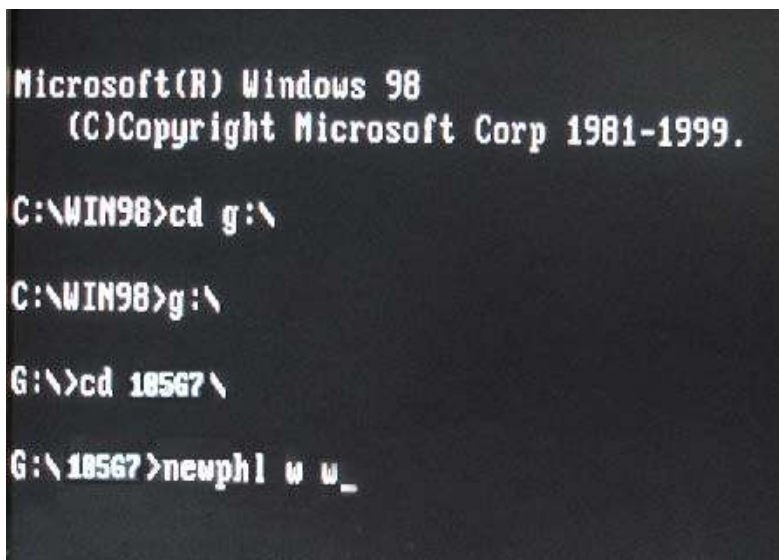


Fig 2

Note: g: is the disk position for 105G7

Step 3: Press Enter into the next screen as shown Fig 3.

a. Input 14 byte digital Serial No. such as "11111111111111" as shown Fig 3.

b. Enter and press "F3" key to input Serial No. again as shown Fig 4. Enter

The Serial No. length is "14" as shown Fig 4.

c. If you correctly input, there will appear "The Barcode length: 14 is OK" as shown Fig 5.

d. And if you incorrectly input, there will appear "The Barcode length: 9 is NG" as shown Fig 6.

You have to input again.

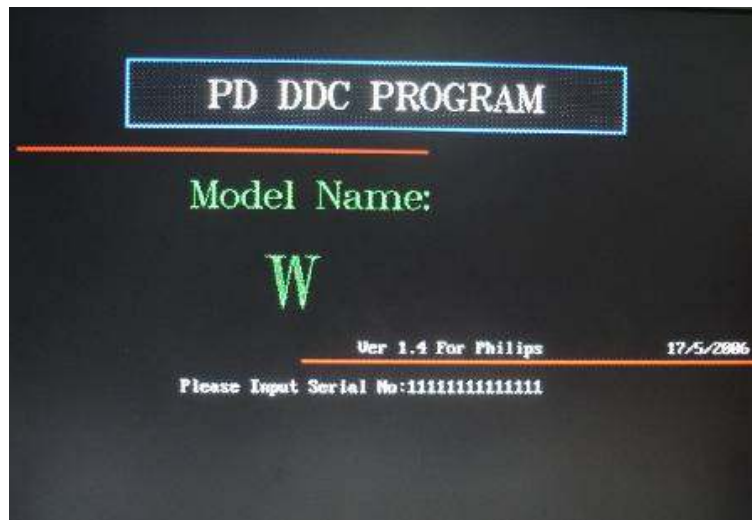


Fig 3

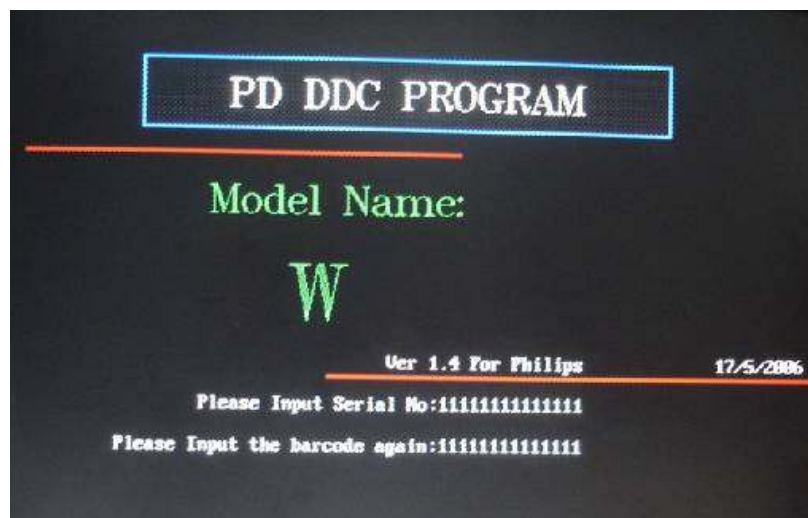


Fig 4

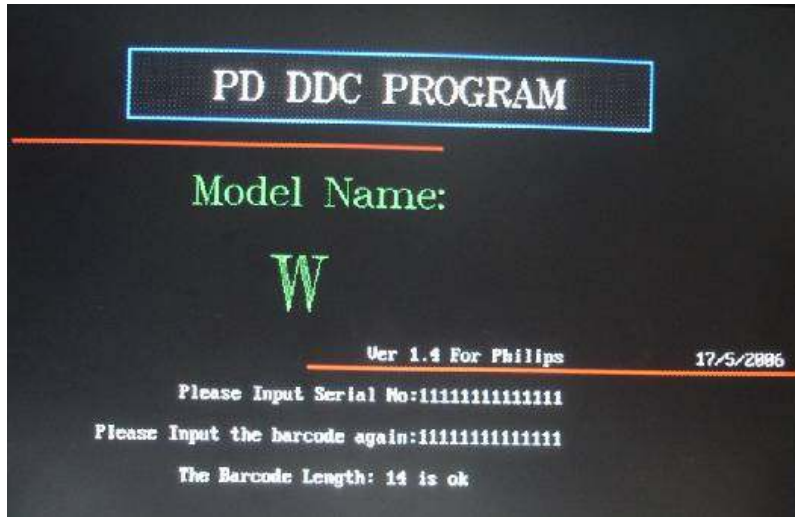


Fig 5

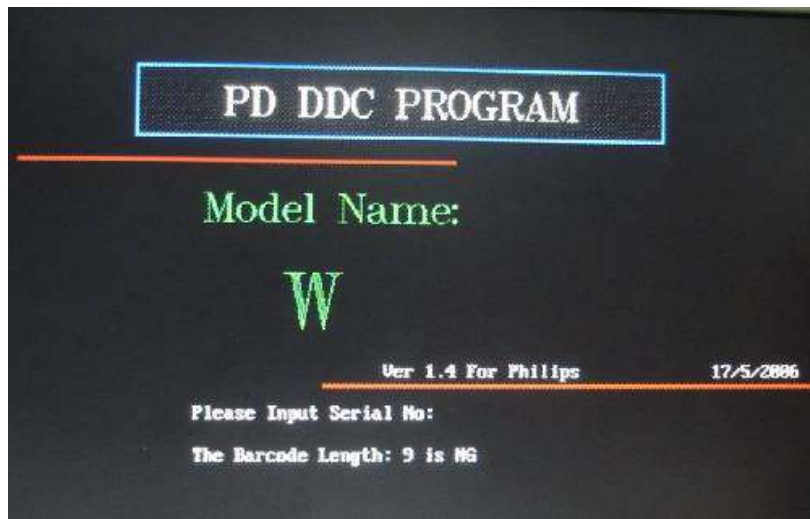


Fig 6

Step 4: Enter, go into the next screen as shown Fig 7.

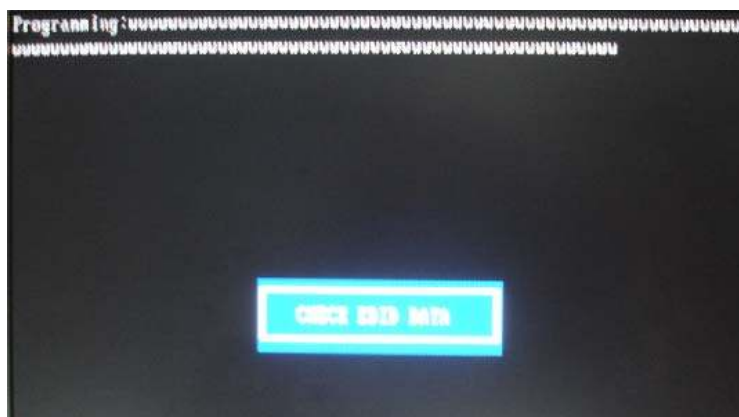


Fig 7

Step 5: Enter into Fig 8.

```
[ EDID CHECK LIST :]

[Vendor/Product Identification :]

Manufacturer Name : PHL
Vendor Assigned Code : 001B
Serial Number : 111111
Week of Manufacture : 11
Year of Manufacture : 2011
EDID version : 1.0
No. of optional EDID : 03
Checksum : FE

[ MONITOR S/N:]

111111111111
[ MONITOR RANGE LIMITS:]

Min. V. rate: 50Hz
Max. V. rate: 120Hz
Min. H. rate: 30KHz
Max. H. rate: 54KHz
Max. Pixel Clock:70MHz

[ MONITOR NAME:]

Philips 10567
```

Fig 8

Step 6: Enter into Fig 9.

```
EEPROM data table :

00 FF FF FF FF FF FF 00 41 0C 1B 00 ED C3 04 00
0C 21 01 03 60 1C 15 A0 2A 06 99 A0 57 4F 90 26
10 40 4C AD E0 00 31 59 31 60 45 59 01 01 01 01
01 01 01 01 01 01 F9 15 20 F0 30 50 1F 20 20 40
13 00 10 D2 10 00 00 1E 00 00 00 FF 00 31 32 32
33 31 32 33 31 32 33 30 31 20 00 00 00 FD 00 32
70 1E 36 07 00 0A 20 20 20 20 20 20 00 00 00 FC
00 50 60 69 6C 69 70 73 20 31 30 35 47 37 00 EE

CHECK DDC OK!
```

Fig 9

## 5. Circuit description

### 5-1 Micro controller and deflection circuit

#### Micro Controller

The micro controller(IC101) core is a 80C51 type. The micro clock frequency of 12 Mhz is derived from the Xtal oscillator, which is running at 48MHz. The DDC interface is suitable to handle DDC2 by a modified hardware I<sup>2</sup>C-bus interface. Standard high current ports, 3 ADC ports with voltage inputs and 4 static standard 8 bit DAC outputs (low interference) and one PWM output for digital control application are implemented. The central processing unit (CPU) manipulates operands in two memory spaces. These are the 1024byte internal data memory (consisting of 256 bytes standard RAM and 768 bytes AUX-RAM) and 48K-byte internal program memory. The program memory of the SAA4849 consists of 48K bytes ROM.

The SAA4849P provides sync. Processing with full auto sync. Capability, a flexible SMPS block and an extensive set of geometry control facilities. Further the IC generates the drive waveforms for DC coupled vertical boosters to the TDA4863A.

#### H/V sync signals processor

The functions of the sync processor include polarity detection, H-SYNC & V-SYNC signals counting, Programmable SYNC signals output, free running signal generator. Pin52/Pin53 are for the H-SYNC and V-SYNC input. and the polarity are setting in the positive. When no signal input, the Pin49 will output a 75Hz V-SYNC free run signal. The Pin18/20 will output a 60KHz H-SYNC free run signal. for the monitor testing use.

#### Reset Circuit(pin23)

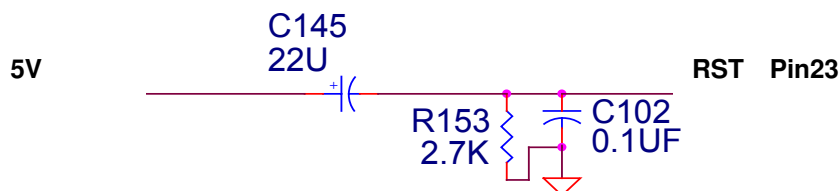
There are three ways possible to invoke a reset and initialize the SAA4849 micro controller part:

Via power-on reset circuit

Via watchdog timer overflow(only micro controller reset)

Via deflection reset after start up(only micro controller reset)

The reset pin(pin23) is connected to a Schmitt trigger for noise reduction. A reset is accomplished by holding the Reset pin HIGH.



### x-ray protection

The x-ray protection(pin22) input XRAY provides a voltage detector with a precise voltage input for X-ray protection .If the input voltage at XRAY exceeds the upper threshold for 150us to 300us,the system is forced to shut down by switching off vertical-and B-drive signals. There are two different ways to handle the system in case of XRAY occurrence:

1. If the x-ray latch enable bit UCXRAY[2] was set to "0" during startup the system will shut down without any interference of the uC.The deflection controller is set to Idle mode. Restart of the system only possible due to seitching power off/power on.
2. If register bit UCXRAY[2] was set to "1",micro controller interaction is allowed .If the micro controller doesn't interrupt the system, the system will shut down to Idle mode. For any interaction of the micro controller the XRAY occurrence has to be acknowledged by the micro controller by clearing the bit SY-STATUS[2].The micro controller take over the control of the handling via software. The actual x-ray pin status can be read through bit SY-STATUS[1].

### Quartz Oscillator(pin45,pin46)

The quartz oscillator circuit is available on pins XTAL1(input) and XTAL2(output) and works together with an external 48MHz 3<sup>rd</sup> overtone quartz. As a result the quartz oscillator is always running on 48MHz.Other quartz crystal frequencies than 48 MHz cannot be used.External capacitors on XTAL1 and XTAL2 are not allowed.

### B+ Control Function Block

The B+control block of the SAA4849 has the same behaviour as the TDA4856 with adapted threshol voltages.The circuit allows the user to choose the trigger edge of the HDRV signal and the polarity of the output stage via I<sup>2</sup>C-Bus.

The B+ control function block of the SAA4849 consists of an Operational Transconductance Amplifier(OTA), a voltage comparator,a flip-flop and a discharge circuit. This configuration allows easy application for different B+ control concepts.

### HPLL

The horizontal part contains a PLL,which works over the full frequency range from 25kHz to 140 kHz.This range can be reduced by a ower and an upper frequency limit(Write Once Registers HPMAX and HPMIN).Via I<sup>2</sup>C bus the number of 48MHz clock cycles is sent through the register. The slewing speed during mode change is also programmable in a write once register (HSLEW)

After the clocks for the HPLL are switched on, the HPLL starts with a fixed freerunning frequency of 60 kHz.The H-drive pulses are not active and the start up procedure is inhibited.The default setting of register bit HCONTROL [0] will cause the HPLL to slew ,not switch.to the freerunning frequency defined in the I<sup>2</sup>C register HPFREE( the default value is also 60 kHz).Independent on H-syncs which are possibly present.the HPLL will slew to that freerunning frequency. To achieve an always defined starting point for the startup procedure,this procedure cannot be interrupted.

## 5-2 Transistor &amp; Diode and IC Circuit

Location	Description	Function
IC101	SAA4849PS	CPU
IC601	TDA4863A	Vertical Output IC
IC801	NT6812KG-20019	Video PreAmplifier/OSD IC
IC802	LM2476	Video Output IC
IC901	STR-G5643D	PWM Combi power MOS IC
IC902	L7805CV	DC to DC IC
C907	150UF/450V	Filter capacitance
Q911	IRF634B	B+ Transistor
Q403	2SC5909	Horizontal Output Transistor
Q406	IRF630M/S.T	Horizontal Size Transistor
Q410	2SC2120-Y	Horizontal linearity Transistor
D901~D904	1N5408 PEC	Critical Safety Component
Q426/Q420/Q427	IRF630M/S.T	CS adjust Transistor
D919	F R D 3A/400V 31DF4/I.R	Rectifier DIODE
D922	RG-4S	Rectifier DIODE
D923	RG-4S	Rectifier DIODE
D925	RG-4S	Rectifier DIODE
D408	DMV1500MFD	Rectifier DIODE
C961	3300PF 250VAC/400VAC	Critical Safety Component
C962/C963/ C964	3300PF 250VAC/400VAC	Critical Safety Component

## 6. Mechanical Instructions

### 0. General

To be able to perform measurements and repairs on the "circuit boards", these unit should be placed in the service position first.

### 1. Remove the rear cover

Remove 3 screws as shown in Fig. 1 and Fig. 2

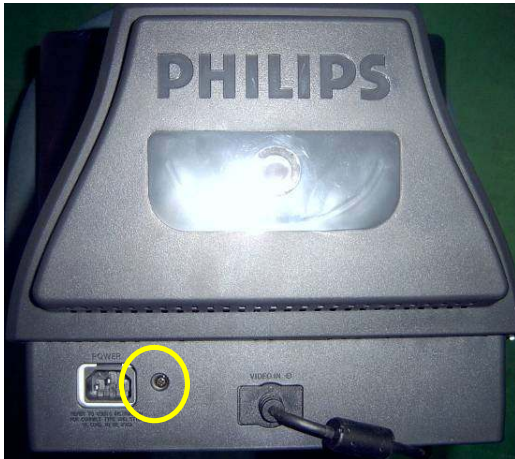


Fig. 1

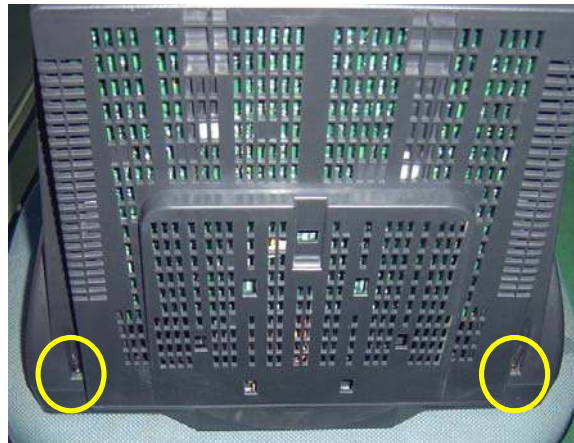


Fig. 2

### 2. Video board

Cut the tip on the front frame as show in Fig. 3

Disconnect the adhesive tape and ground pins between metal shield of Video board and main board as shown in Fig. 4 to Fig. 7

Cut the tie between the CRT neck and the video board as shown in Fig. 8

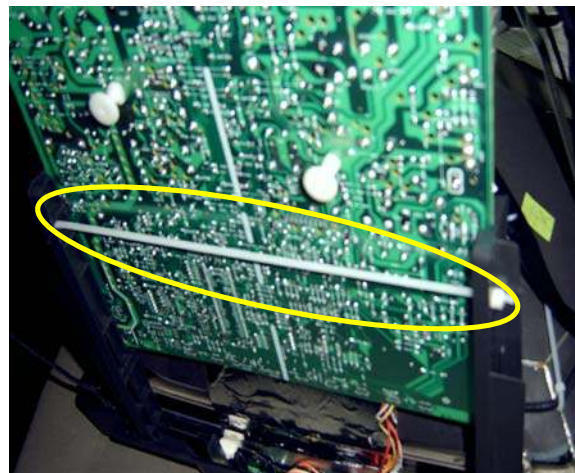


Fig. 3

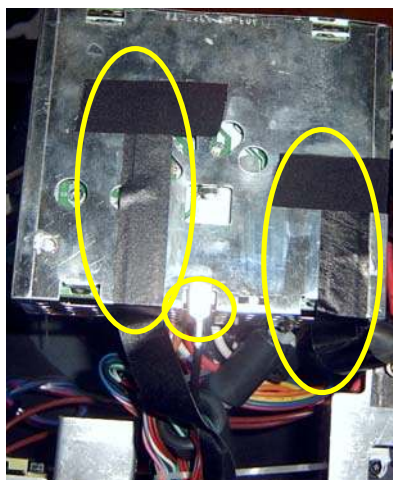


Fig. 4

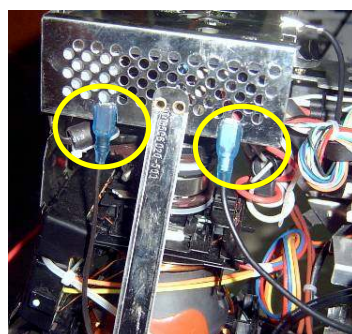


Fig. 5

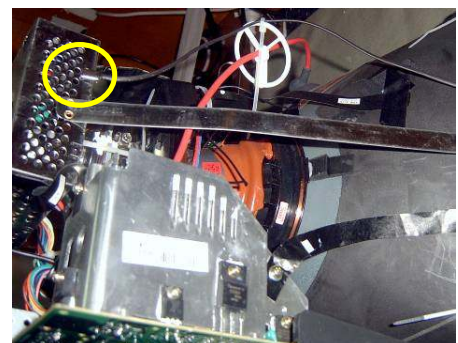


Fig. 6

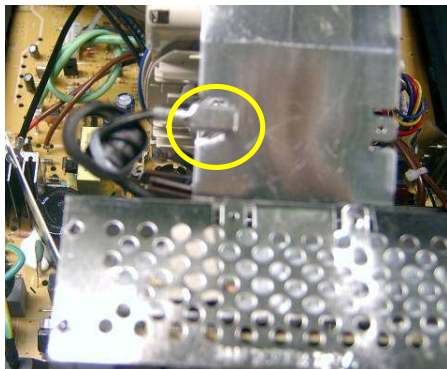


Fig. 7

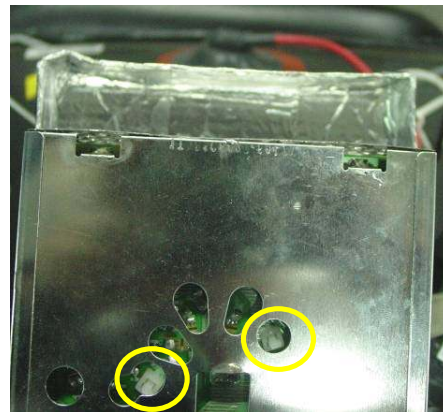


Fig. 8

**3. Main panel**

Disconnect the rotation coil from Main board as shown in Fig. 9

Disconnect the degaussing coil and ground-screw from Main board as shown in Fig. 10.

Disconnect the BY coil from Main board as shown in Fig. 11.

Disconnect the key board connector P102 from Main board as shown in Fig. 12

Disconnect the ground pins from Main board as shown in Fig. 13

Disconnect the Hi-Pot cap between the CRT and Main board as shown in Fig. 14.

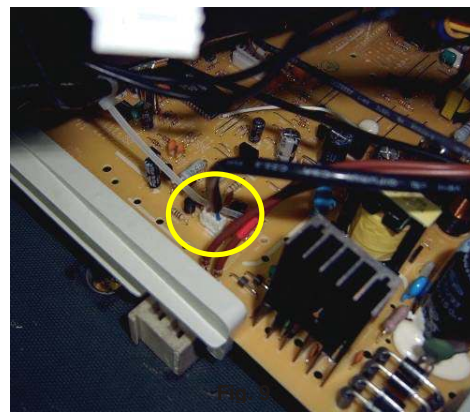


Fig. 10



Fig. 11



Fig. 12

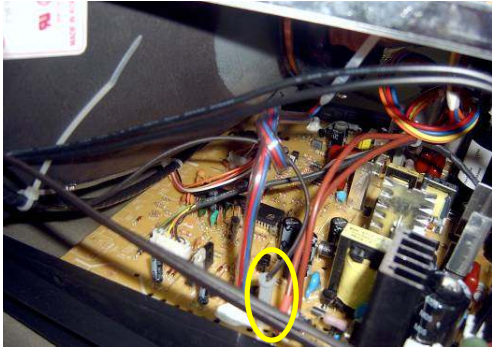


Fig. 13

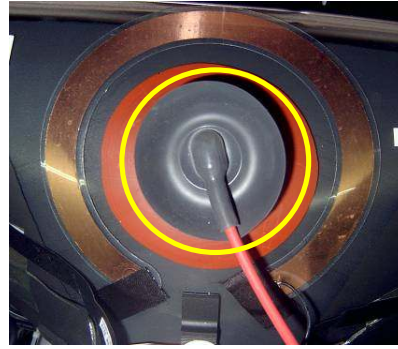


Fig. 14

**4. Remove Main board**

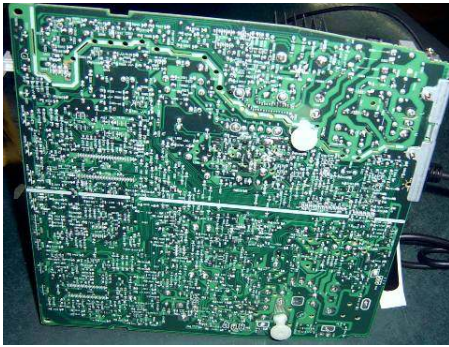


Fig. 15

**5. Remove Front frame**

Remove four screws as show in Fig. 16

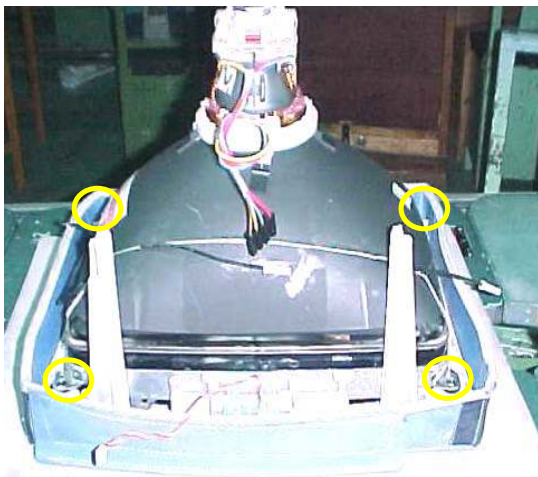


Fig. 16

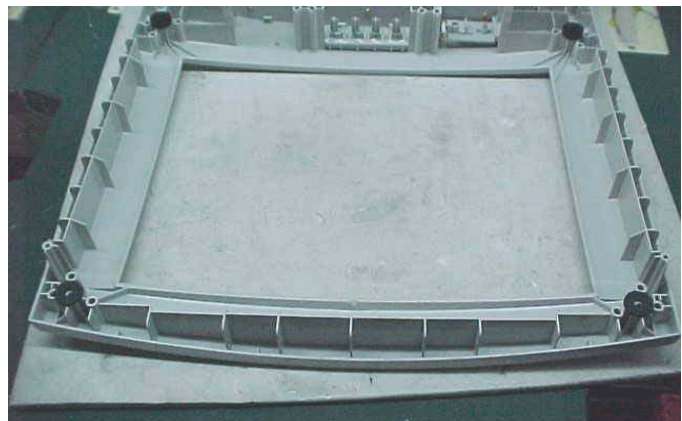
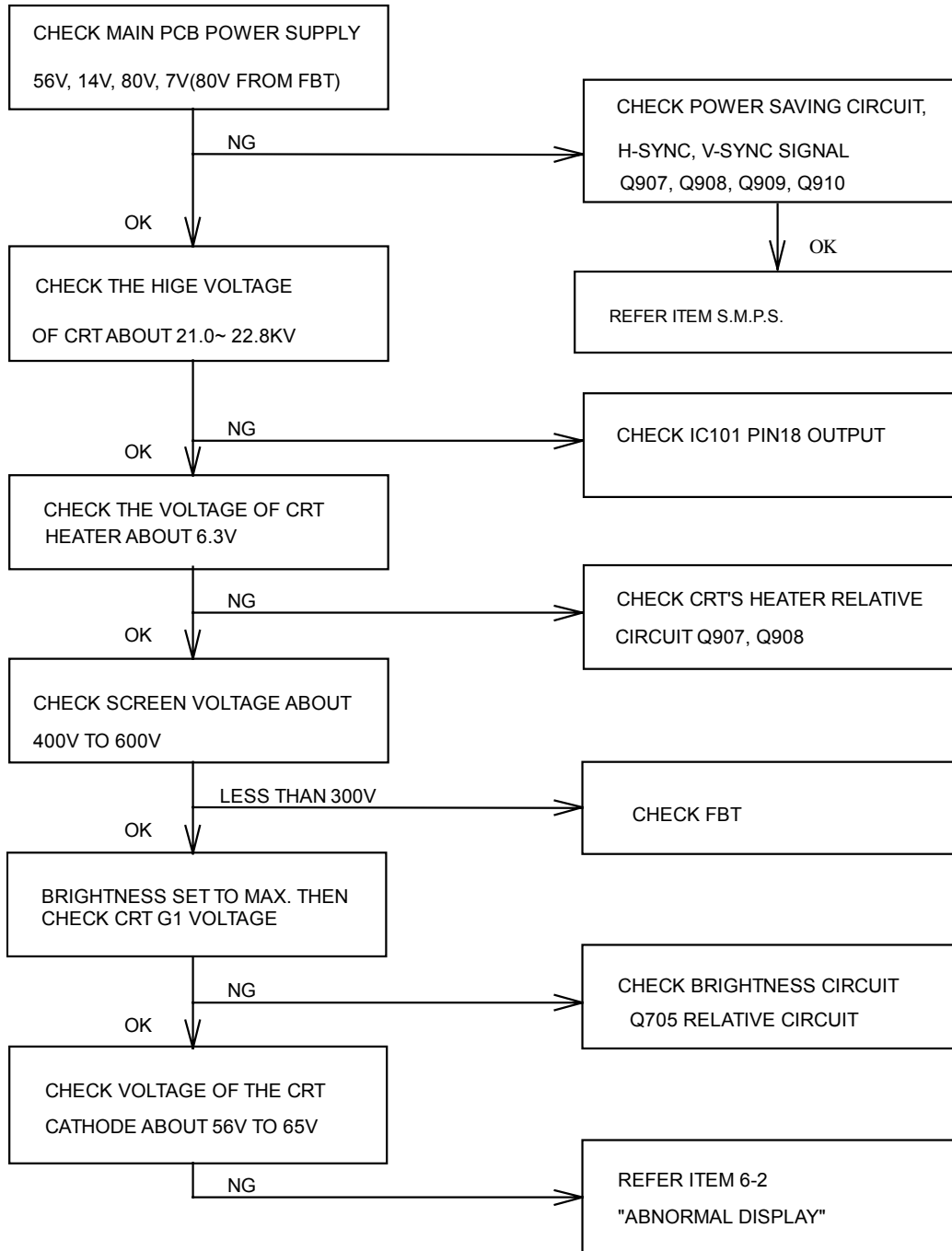


Fig. 17

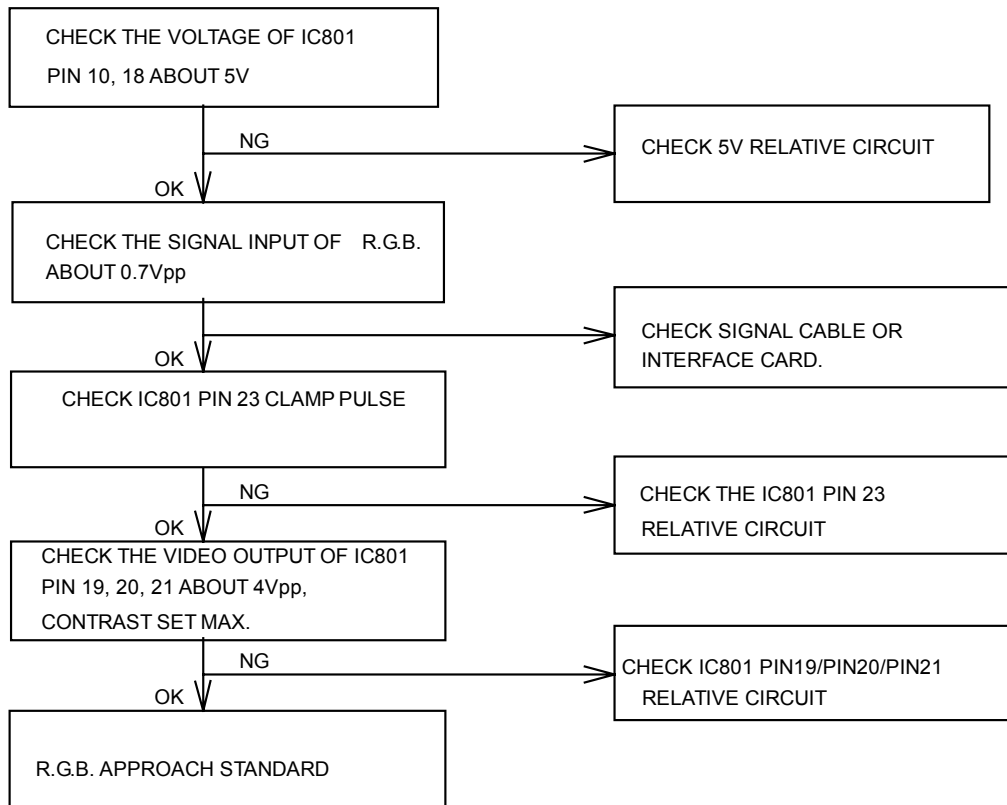
## 7. Trouble Shooting Chart

### 7-1 No Raster

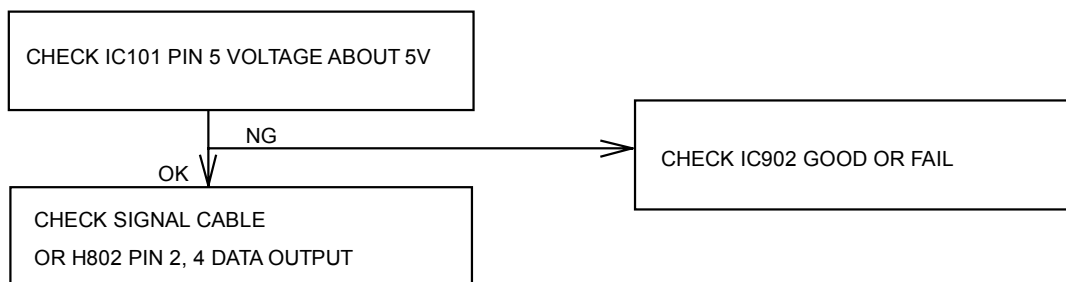
#### 1. CRT Relative Circuit Problems



2. Abnormal Video Level On Screen

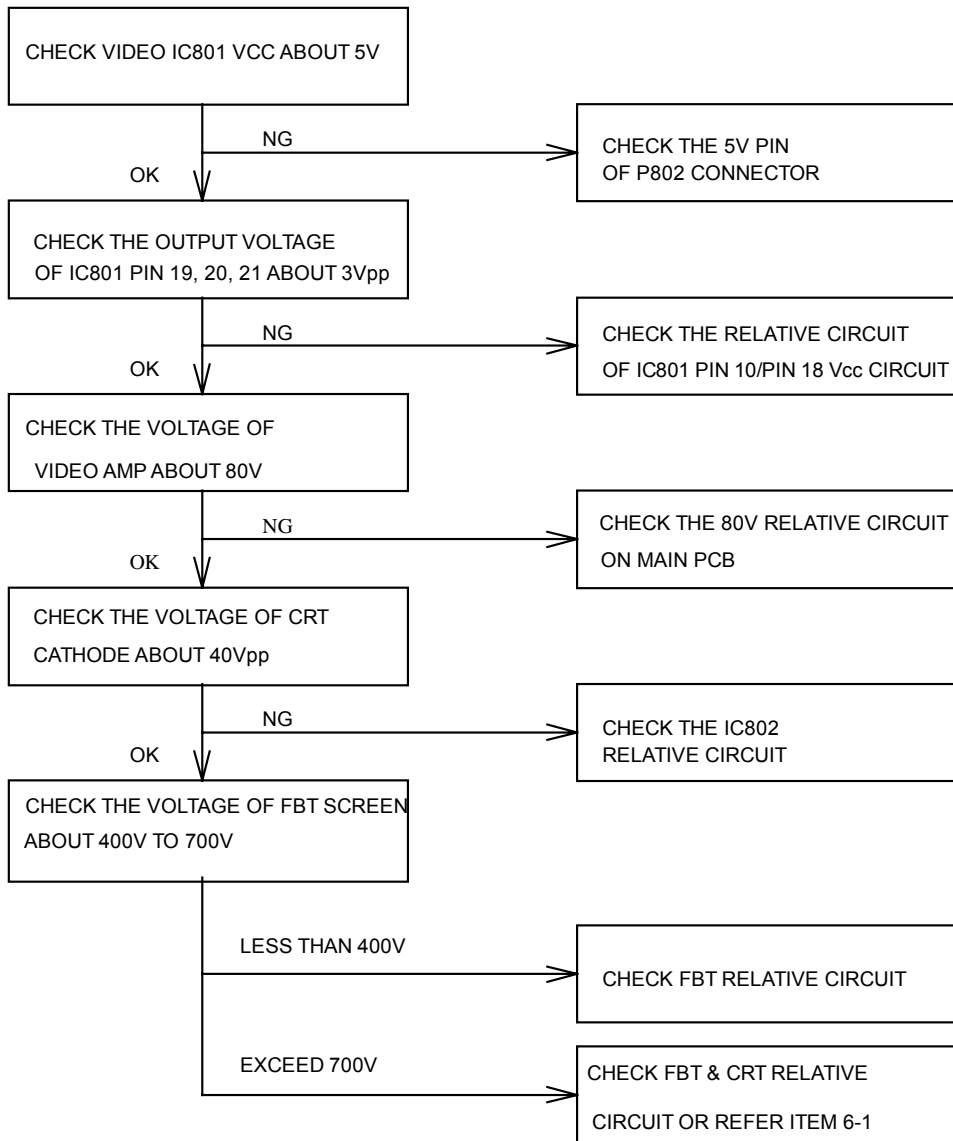


3. Abnormal DDC (Plug & Play)

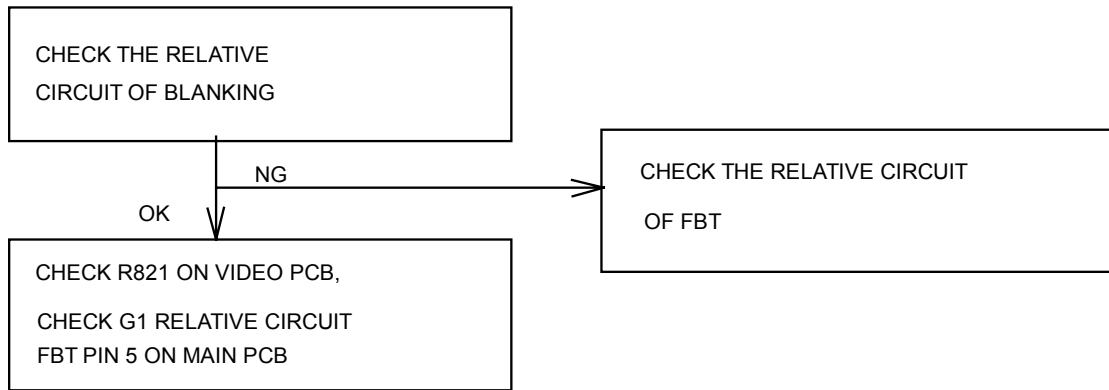


7-2. Abnormal Display

No Signal On Screen

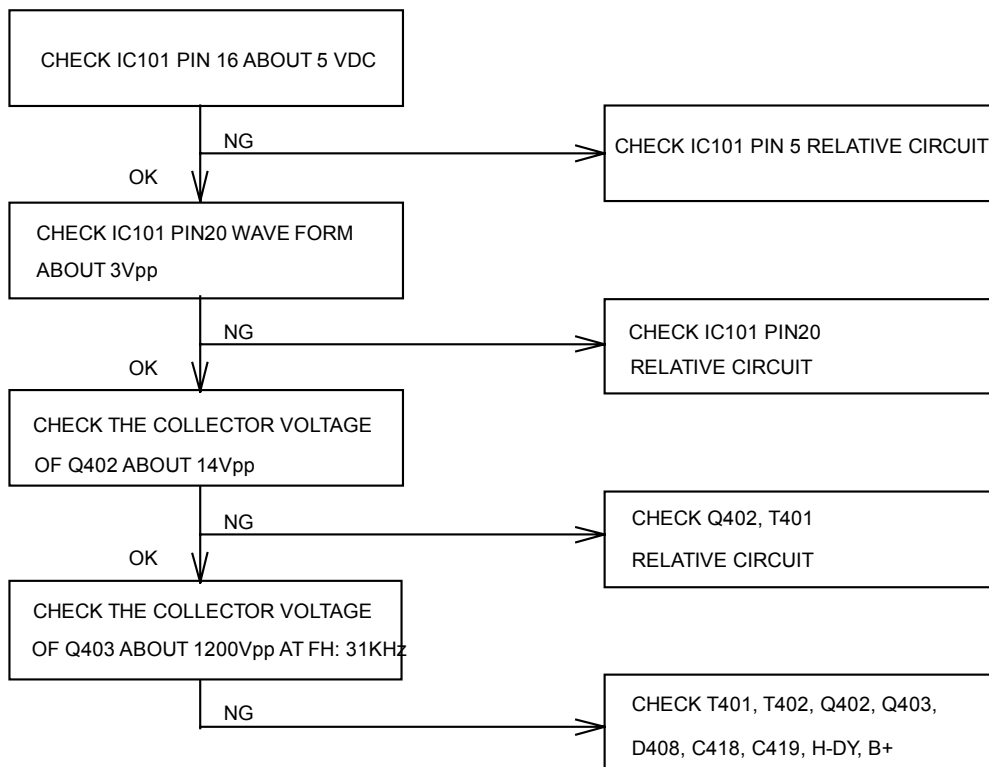


7-3. No Blanking



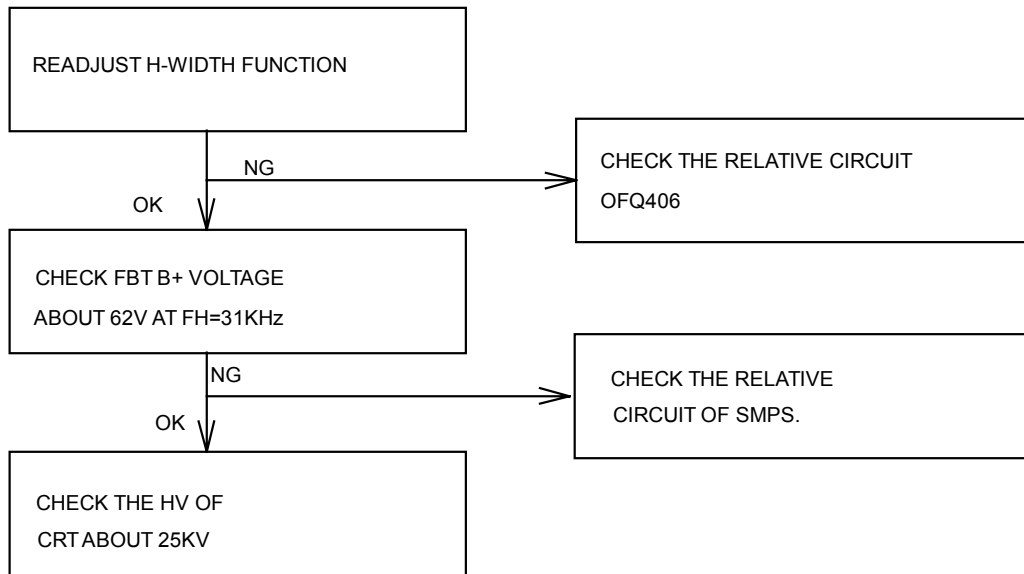
7-4. Hor./Osc/Def/Hv Circuit Fault

No Raster (Disconnect With Signal Cable)

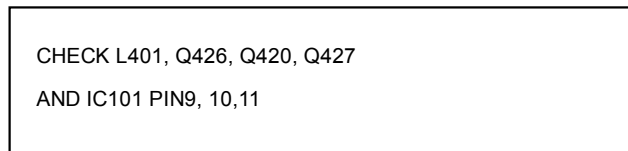


7-5. Abnormal Horizontal Deflection

1. Abnormal Horizontal Width Of Video

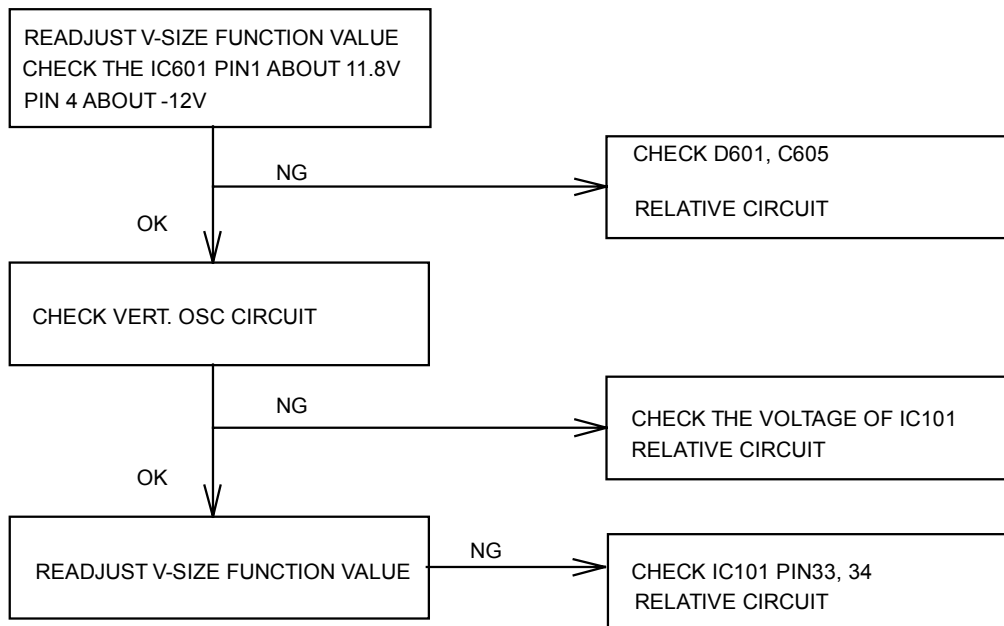


2. Abnormal Horizontal Linearity

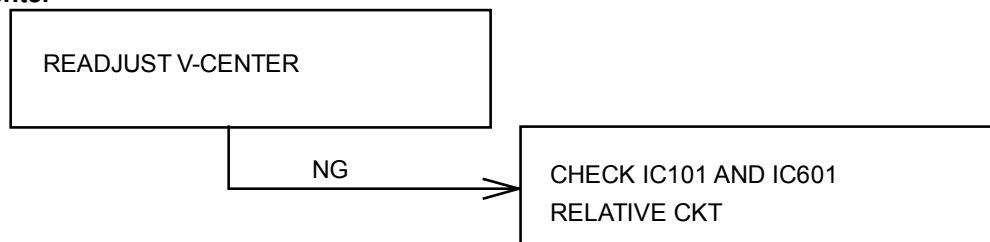


### 7-6 Abnormal Vertical Scanning

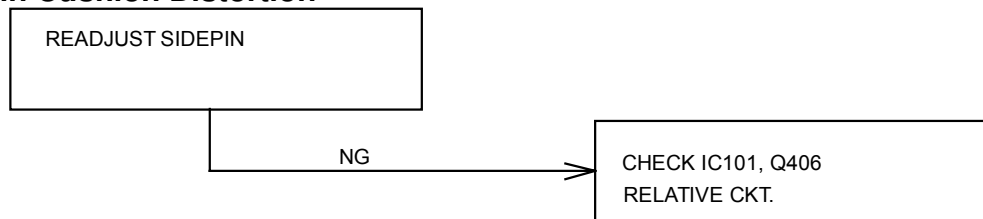
#### 1. Abnormal Vertical Size



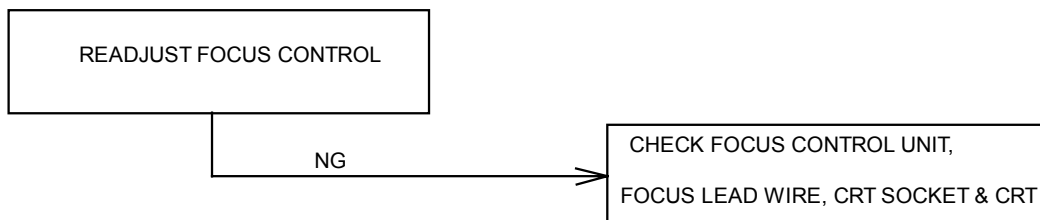
#### 2. Vertical Center



### 7-7. Side-Pin Cushion Distortion

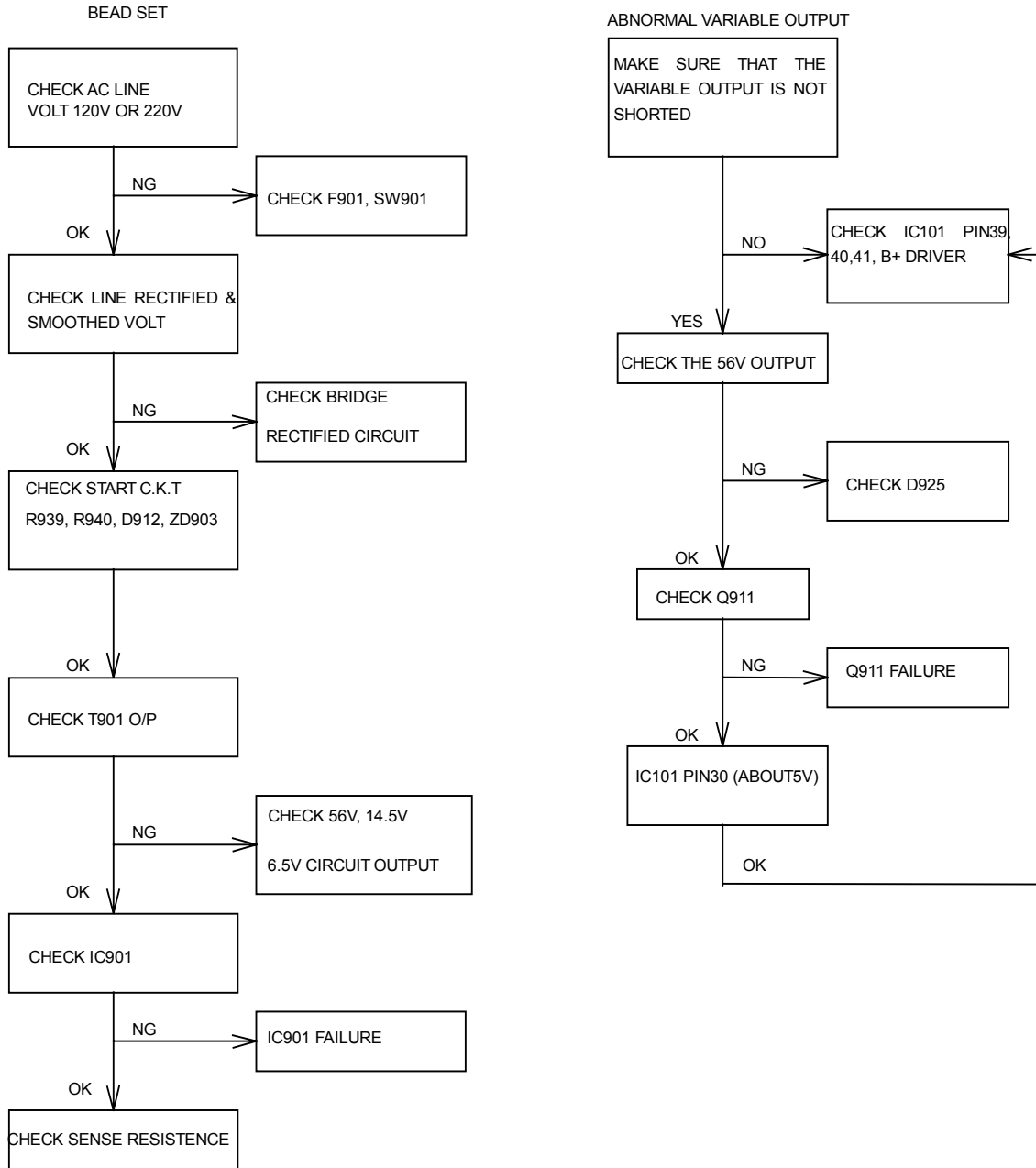


### 7-8. Poor Focus

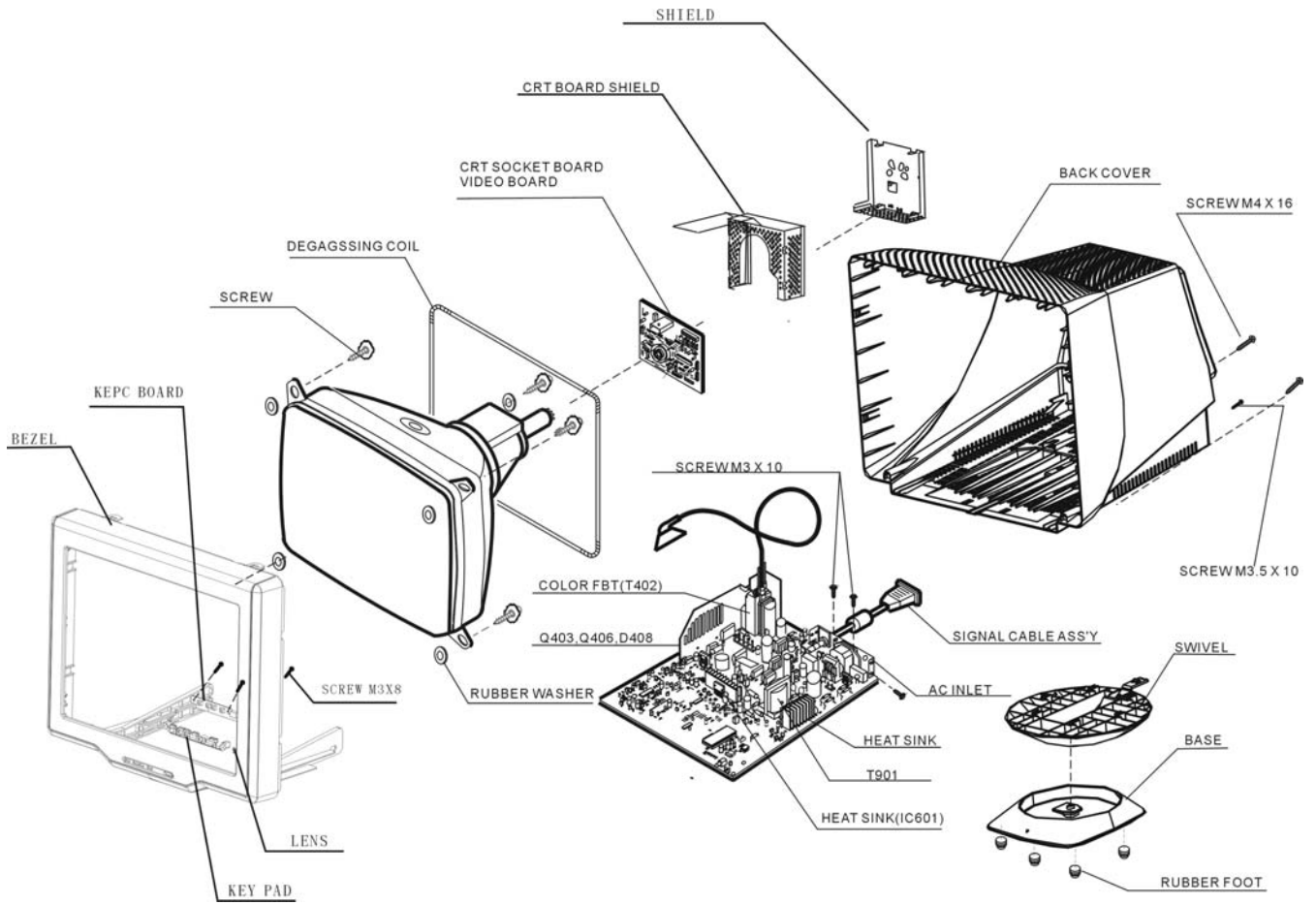


7-9. Power Supply Trouble Shooting Chart

BEFORE CHECK SW.REG. PLEASE REFER TO THE POWER SUPPLY BLOCK DIAGRAM  
 POWER SUPPLY OUTPUT: (A) VARIABLE OUTPUT : 60V – 154.5V  
 (DEPENDING EPENDING UPON H.SYNC FREQUENCY)  
 (B) CONSTANT OUTPUT : 6.3V, 14V,80V



### 8. Mechanical of cabinet front dis-assembly



## 9. Spare parts List

107B70/00

### PCB

Part No. for TPV	Description	Philips P/N (12NC)
CMB784B1T9EP1P	CHASSIS FOR P784B3-1 PHILIPS POH	9965 000 35708
CKB784B1TP1P	KEPC FOR B784B3-1 PHILIPS	9965 000 35711
CRB784B1T9P1P	CRT BOARD P784B3-1 PHILIPS ROHS	9965 000 35739

### Panel

Part No. for TPV	Description	Philips P/N (12NC)
750C5X301AV	CPT 17" RF 0.13 ES CRT	9965 000 35707

### Accessory and Mechanical

Part No. for TPV	Description	Philips P/N (12NC)
033C6411VET	KEY PAD	9965 000 35698
033C64121	LENS	9965 000 35395
034C6376BVCT	FRONT PANEL	9965 000 35699
034C6377VCT	BACK COVER	9965 000 35700
034C6378VCB	SWIVEL	9965 000 35701
034C6379VCB	BASE	9965 000 35702
040C58162435A	MANUAL P/N LABEL	9965 000 35400
040C5818131A	CARTON LABEL	9965 000 35401
044C60027165A	PAPER PLATE	9965 000 35705
044C60028347A	PAPER BOARD	9965 000 35706
044C67F71	EPS CUSHZON	9965 000 35402
044C67F72	EPS CUSHZON	9965 000 35403
045C7628RN	PE BAG FOR MANUAL	9965 000 35404
045C887RN	MONITOR PE BAG	9965 000 35406
095C2070516	WIRE HARNESS	9965 000 35410
095C2070532	WIRE HARNESS	9965 000 35411
750A1697504JAG	DEGAUSSING COIL	9965 000 35412
CKB784B1TP1P	KEPC FOR B784B3-1 PHILIPS	9965 000 35711
CMB784B1T9EP1P	CHASSIS FOR P784B3-1 PHILIPS POH	9965 000 35708
Q40C70B8132B	RATING LABEL	9965 000 35709
Q41C6881312A	QSG	9965 000 35712
Q44C67F78132B	CARTON	9965 000 35710
Q70CD7988131B	CD MANUAL	9965 000 35418
089C71F5TYHG3	SIGNAL CABLE D-SUB HONGLIN	9965 000 35432
040C5816242B	CHASSIS LABEL	9965 000 35459
071C1002S	CORE 8*16*12	9965 000 35724
071C1008	FERRITE CORE 12*25*15	9965 000 28173
071C1009	FERRIRE CORE 28.5*17.5*9.5	9965 000 35725
087C5016	AC SOCKET	9965 000 35733

005C711	TRANSISTOR HOUSING	9965 000 35735
084C3310	FUSE CLIP	9965 000 35535
040C45762412B	LABEL	9965 000 35538
087C3504ZW	CRT SOCKET(QQ FOCUS)	9965 000 35877

## Main Board

Location	Part No. for TPV	Description	Philips P/N (12NC)
	CMB784B1T9EP1P	CHASSIS FOR P784B3-1 PHILIPS POH	9965 000 35708
H803	033C32787D	WAFER*PLUG	9965 000 35713
CN903	033C38033	WAFER EH-E	9965 000 35714
P901	033C80093X	2 PIN	9965 000 35715
	040C5816242B	CHASSIS LABEL	9965 000 35459
IC902	056C1335ST	L7805CV	9965 000 35460
IC101	056C1125575X	SAA4849PS	9965 000 35461
IC102	056C11332PH	M24C16-WBN6/P	9965 000 35462
Q909	057C20151A	2SB772-P	9965 000 35464
Q907	057C20151A	2SB772-P	9965 000 35464
PR901	061C52274J	PTCR	9965 000 35465
R607	061C20810964	MOFR 1 OHM -5% 1W	9965 000 35466
R927	061C20833364	MOFR 33K OHM -5% 1W	9965 000 35468
R907	061C20868164	MOFR 680 OHM -5% 1W	9965 000 35469
R724	061C152M10064	MOFR 10 OHM -5% 2W	9965 000 35471
R446	061C152M10064	MOFR 10 OHM -5% 2W	9965 000 35471
R911	061C152M10164	MOFR 100OHM -5% 2W	9965 000 35472
R929	061C152M20864	0.20 OHM 2W	9965 000 35473
R407	061C152M22064	22 OHM -5% 2W	9965 000 35474
R963	061C152M22864	MOFR 0.22 OHM -5% 2W	9965 000 35475
R912	061C152M82964	MOFR 8.2 OHM -5% 2W	9965 000 35476
R916	061C153M13259	1.3KOHM 3W	9965 000 35477
R456	061C153M27159	MOFR 270 OHM -5% 3W	9965 000 35716
C901	063C107K104U	100NF, 275VAC,X2, K	9965 000 35717
C427	063C210J1242CC	0.12UF 250V	9965 000 35718
C425	063C210J2443CU	0.24UF 400V	9965 000 35719
C419	063C210J3027CC	3000PF 1600V	9965 000 35720
C418	063C210J4727FC	4700PF 1.6KV	9965 000 35721
C482	063C210J6842CU	0.68UF 250V	9965 000 35484
C426	063C210J7542CC	0.75UF 250V	9965 000 35722
C422	064C100J22559	2.2UF -5% 100V	9965 000 35485
C919	065C2M1033B692	0.01UF 2KV 20% Z5U	9965 000 35487
C924	065C2M1033FB69	10000PF -20%~ 18% 2KV	9965 000 35488
C925	065C2M1033FB69	10000PF -20%~ 18% 2KV	9965 000 35488
C961	065C305M3322B2	3.3NF,400VAC, Y2, M	9965 000 35489
C963	065C305M3322B2	3.3NF,400VAC, Y2, M	9965 000 35489
C962	065C305M3322B2	3.3NF,400VAC, Y2, M	9965 000 35489
C964	065C305M3322B2	3.3NF,400VAC, Y2, M	9965 000 35489
C401	067C2151024	1000UF -20% 25V	9965 000 35490
C931	067C2152219J	220UF -20% 100V JAMICON	9965 000 35491
C605	067C3051023	1000 UF -20% 16V	9965 000 35492

C939	067C3051023	1000 UF -20% 16V	9965 000 35492
C936	067C3051024	1000UF -20% 25V	9965 000 35493
C937	067C3051024	1000UF -20% 25V	9965 000 35493
C603	067C3091023	1000UF -20% 16V	9965 000 35496
C402	067C30947010	47UF 160V -20%	9965 000 35723
C907	067C40D15115P	150UF -20% 450V	9965 000 35497
CF962	071C552A	FERRITE BEAD 3*5*1.5	9965 000 35499
CF963	071C552A	FERRITE BEAD 3*5*1.5	9965 000 35499
FB404	071C5529	FERRITE BEAD	9965 000 35500
FB902	071C55503	FERRITE BEAD	9965 000 35501
	071C1002S	CORE 8*16*12	9965 000 35724
	071C1008	FERRITE CORE 12*25*15	9965 000 28173
	071C1009	FERRIRE CORE 28.5*17.5*9.5	9965 000 35725
L901	073A1747G6906	LINE CHOKE	9965 000 35502
L401	073C147527TB	LINEARITY COIL	9965 000 35726
L902	073C174502HC	LINE FILTER	9965 000 35728
L405	073C253103HP	CHOKE COIL	9965 000 35727
L906	073C253103HP	CHOKE COIL	9965 000 35727
VR902	075A334201	CFVR 200 OHM -20%	9965 000 35506
RY901	077C26054	RELAY	9965 000 35507
T402	079A793504CDG	BAILI FBT	9965 000 35729
T403	079C167124H	DRIVER TRANSFORMER	9965 000 35509
T401	079C167125T	DRIVE TRANSFORMER	9965 000 35730
T901	080AS7742N4G	TRANSFORMER YUVA	9965 000 35731
D910	093C6026W52T	FR107	9965 000 35512
D925	093C30408AT	RG-4S	9965 000 35513
D923	093C30408AT	RG-4S	9965 000 35513
D922	093C30408AT	RG-4S	9965 000 35513
SS1	095C205T3005A	WIRE	9965 000 35514
H802	095C801314632	WIRE HARNESS	9965 000 35515
IC901	056C379504	STR-G5643D	9965 000 35516
NR901	061C588TL	NTCR 15OHM -15%2.5A THINKING	9965 000 35732
	087C5016	AC SOCKET	9965 000 35733
CN901	095C80022G	WIRE&CORE	9965 000 35734
Q426	057C60021	IRF630M/S.T	9965 000 35518
Q427	057C60021	IRF630M/S.T	9965 000 35518
Q420	057C60021	IRF630M/S.T	9965 000 35518
	005C711	TRANSISTOR HOUSING	9965 000 35735
IC601	056C5841A	TDA4863A/PHILIPS	9965 000 35520
Q406	057C60021	IRF630M/S.T	9965 000 35518
Q403	057C706504	2SC5909	9965 000 35736
D408	093C220512	DMV1500MFD	9965 000 35522
D919	093C6073A	F R D 3A/400V 31DF4/I.R	9965 000 35523
X101	093C2248H	48MHZ	9965 000 35527
Q911	057C60027	IRF634B	9965 000 35524
E750A	750C5X30784MPH	17" CPT CRT MPRII ASS'Y	9965 000 35737
	AMB784B1TP1P	MAIN BOARD B784B3-1 PHILIPS	9965 000 35738
	CRB784B1T9P1P	CRT BOARD P784B3-1 PHILIPS ROHS	9965 000 35739
	084C3310	FUSE CLIP	9965 000 35535

F901	084C7H400SL	FUSE 4A 250V LF-618 004	9965 000 35536
	750C5X301AV	CPT 17" RF 0.13 ES CRT	9965 000 35707
R426	061C153M36059	36 OHM 3W	9965 000 35881
R428	061C153M75859	MOFR 0.75 OHM -5% 3W	9965 000 35470
C423	063C210J3342CU	0.33UF 250V	9965 000 35882
C480	065C1K4705T605	47P/1KV	9965 000 35883
C488	065C2K1215A692	120PF 2KV	9965 000 35884
C489	065C2K1815T	180PF 2KV	9965 000 35885
R429	061A212Y10052T	10 OHM 1/2W	9965 000 35744
R969	061A212Y20352T	20K OHM -5% 1/2W	9965 000 35745
R725	061A212Y27452T	MGFR 270K OHM -5% 1/2W	9965 000 35747
R939	061A212Y39452T	390KOHM 1/2W	9965 000 35748
R940	061A212Y47452T	MGFR 470KOHM -5% 1/2W	9965 000 35749
R702	061A212Y62152T	620 OHM 1/2W	9965 000 35750
R420	061A214Y24452T	MGFR 240K OHM -5% 1/4W	9965 000 35751
NR601	061C58450UT	NTCR 45OHM -15%3100K UPPERMOST	9965 000 35752
R421	061C17210052T	CFR 10OHM -5% 1/4W	9965 000 35753
R422	061C17210052T	CFR 10OHM -5% 1/4W	9965 000 35753
R425	061C17210152T	CFR 100OHM -5% 1/4W	9965 000 35754
R909	061C17210152T	CFR 100OHM -5% 1/4W	9965 000 35754
R980	061C17210252T	CFR 1KOHM -5% 1/4W	9965 000 35755
R970	061C17210252T	CFR 1KOHM -5% 1/4W	9965 000 35755
R958	061C17210252T	CFR 1KOHM -5% 1/4W	9965 000 35755
R418	061C17210352T	CFR 10KOHM -5% 1/4W	9965 000 35756
R915	061C17210452T	CFR100K OHM -5% 1/4W	9965 000 35757
R447	061C17212252T	CFR 1.2K OHM -5% 1/4W	9965 000 35758
R161	061C17212452T	CFR 120K OHM -5% 1/4W	9965 000 35759
R416	061C17212452T	CFR 120K OHM -5% 1/4W	9965 000 35759
R705	061C17215152T	CFR 150 OHM -5% 1/4W	9965 000 35544
R716	061C17216452T	CFR 160KOHM -5% 1/4W	9965 000 35760
R405	061C17218252T	CFR 1.8K OHM -5% 1/4W	9965 000 35761
R463	061C17220552T	CFR 2MOHM -5% 1/4W	9965 000 35762
R918	061C17222152T	CFR 220OHM -5% 1/4W	9965 000 35746
R960	061C17222352T	CFR 22KOHM -5% 1/4W	9965 000 35763
R417	061C17230352T	CFR 30KOHM -5% 1/4W	9965 000 35764
R444	061C17233252T	CFR 3.3KOHM -5% 1/4W	9965 000 35765
R448	061C17233252T	CFR 3.3KOHM -5% 1/4W	9965 000 35765
R487	061C17233252T	CFR 3.3KOHM -5% 1/4W	9965 000 35765
R903	061C17243052T	CFR 43 OHM -5% 1/4W	9965 000 35766
R962	061C17247052T	CFR 47 OHM -5% 1/4W	9965 000 35767
R906	061C17247052T	CFR 47 OHM -5% 1/4W	9965 000 35767
R951	061C17247152T	CFR 470OHM -5% 1/4W	9965 000 35768
R603	061C17247152T	CFR 470OHM -5% 1/4W	9965 000 35768
R601	061C17247152T	CFR 470OHM -5% 1/4W	9965 000 35768
R721	061C17247252T	CFR 4.7K OHM -5% 1/4W	9965 000 35769
R486	061C17247252T	CFR 4.7K OHM -5% 1/4W	9965 000 35769
R461	061C17247252T	CFR 4.7K OHM -5% 1/4W	9965 000 35769
R460	061C17247252T	CFR 4.7K OHM -5% 1/4W	9965 000 35769
R412	061C17247352T	CFR 47K OHM -5% 1/4W	9965 000 35770

R133	061C17247452T	CFR 470K OHM -5% 1/4W	9965 000 35771
R965	061C17247952T	CFR 4.7 OHM -5% 1/4W	9965 000 35772
R707	061C17256252T	CFR 5.6K OHM -5% 1/4W	9965 000 35773
R715	061C17256352T	CFR 56K OHM -5% 1/4W	9965 000 35774
R150	061C17256352T	CFR 56K OHM -5% 1/4W	9965 000 35774
R449	061C17262252T	CFR 6.2K OHM -5% 1/4W	9965 000 35775
R147	061C17262352T	CFR 62K OHM -5% 1/4W	9965 000 35776
R930	061C17268152T	CFR 680 OHM -5% 1/4W	9965 000 35777
R403	061C17268352T	CFR 68K OHM -5% 1/4W	9965 000 35778
R749	061C17268352T	CFR 68K OHM -5% 1/4W	9965 000 35778
R941	061C17275152T	750OHM 1/4W	9965 000 35779
R137	061C17275352T	CFR 75K OHM -5% 1/4W	9965 000 35780
R138	061C17275352T	CFR 75K OHM -5% 1/4W	9965 000 35780
R110	061C60210052T	CFR 10 OHM -5% 1/6W	9965 000 35781
R111	061C60210052T	CFR 10 OHM -5% 1/6W	9965 000 35781
R103	061C60210152T	CFR 100 OHM -5% 1/6W	9965 000 35549
R120	061C60210152T	CFR 100 OHM -5% 1/6W	9965 000 35549
R118	061C60210152T	CFR 100 OHM -5% 1/6W	9965 000 35549
R117	061C60210152T	CFR 100 OHM -5% 1/6W	9965 000 35549
R105	061C60210152T	CFR 100 OHM -5% 1/6W	9965 000 35549
R104	061C60210152T	CFR 100 OHM -5% 1/6W	9965 000 35549
R149	061C60210152T	CFR 100 OHM -5% 1/6W	9965 000 35549
R152	061C60210152T	CFR 100 OHM -5% 1/6W	9965 000 35549
R172	061C60210152T	CFR 100 OHM -5% 1/6W	9965 000 35549
R167	061C60210152T	CFR 100 OHM -5% 1/6W	9965 000 35549
R165	061C60210152T	CFR 100 OHM -5% 1/6W	9965 000 35549
R159	061C60210152T	CFR 100 OHM -5% 1/6W	9965 000 35549
R132	061C60210152T	CFR 100 OHM -5% 1/6W	9965 000 35549
R143	061C60210152T	CFR 100 OHM -5% 1/6W	9965 000 35549
R145	061C60210152T	CFR 100 OHM -5% 1/6W	9965 000 35549
R148	061C60210152T	CFR 100 OHM -5% 1/6W	9965 000 35549
R122	061C60210152T	CFR 100 OHM -5% 1/6W	9965 000 35549
R102	061C60210152T	CFR 100 OHM -5% 1/6W	9965 000 35549
R101	061C60210152T	CFR 100 OHM -5% 1/6W	9965 000 35549
R124	061C60210252T	CFR 1K OHM -5% 1/6W	9965 000 35550
R139	061C60210252T	CFR 1K OHM -5% 1/6W	9965 000 35550
R415	061C60210252T	CFR 1K OHM -5% 1/6W	9965 000 35550
R126	061C60210352T	CFR 10K OHM -5% 1/6W	9965 000 35551
R130	061C60210352T	CFR 10K OHM -5% 1/6W	9965 000 35551
R144	061C60210352T	CFR 10K OHM -5% 1/6W	9965 000 35551
R902	061C60210352T	CFR 10K OHM -5% 1/6W	9965 000 35551
R921	061C60210352T	CFR 10K OHM -5% 1/6W	9965 000 35551
R933	061C60210352T	CFR 10K OHM -5% 1/6W	9965 000 35551
R952	061C60210352T	CFR 10K OHM -5% 1/6W	9965 000 35551
R953	061C60210352T	CFR 10K OHM -5% 1/6W	9965 000 35551
R959	061C60210352T	CFR 10K OHM -5% 1/6W	9965 000 35551
R982	061C60210352T	CFR 10K OHM -5% 1/6W	9965 000 35551
R983	061C60210352T	CFR 10K OHM -5% 1/6W	9965 000 35551
R140	061C60212152T	CFR 120 OHM -5% 1/6W	9965 000 35782

R610	061C60213152T	CFR 130 OHM -5% 1/6W	9965 000 35783
R106	061C60215352T	CFR 15K OHM -5% 1/6W	9965 000 35784
R751	061C60218252T	CFR 1.8K OHM -5% 1/6W	9965 000 35785
R602	061C60218252T	CFR 1.8K OHM -5% 1/6W	9965 000 35785
R114	061C60218252T	CFR 1.8K OHM -5% 1/6W	9965 000 35785
R113	061C60218252T	CFR 1.8K OHM -5% 1/6W	9965 000 35785
R484	061C60220352T	CFR 20K OHM -5% 1/6W	9965 000 35786
R445	061C60220352T	CFR 20K OHM -5% 1/6W	9965 000 35786
R443	061C60220352T	CFR 20K OHM -5% 1/6W	9965 000 35786
R158	061C60220352T	CFR 20K OHM -5% 1/6W	9965 000 35786
R720	061C60222252T	CFR 2.2K OHM -5% 1/6W	9965 000 35787
R157	061C60222252T	CFR 2.2K OHM -5% 1/6W	9965 000 35787
R156	061C60222252T	CFR 2.2K OHM -5% 1/6W	9965 000 35787
R131	061C60222252T	CFR 2.2K OHM -5% 1/6W	9965 000 35787
R109	061C60222252T	CFR 2.2K OHM -5% 1/6W	9965 000 35787
R108	061C60222252T	CFR 2.2K OHM -5% 1/6W	9965 000 35787
J066	061C60224252T	CFR 2.4K OHM -5% 1/6W	9965 000 35742
R984	061C60227252T	CFR 2.7K OHM -5% 1/6W	9965 000 35788
R153	061C60227252T	CFR 2.7K OHM -5% 1/6W	9965 000 35788
R713	061C60233252T	CFR 3.3K OHM -5% 1/6W	9965 000 35553
R116	061C60239252T	CFR 3.9K OHM -5% 1/6W	9965 000 35789
R134	061C60239252T	CFR 3.9K OHM -5% 1/6W	9965 000 35789
R119	061C60247052T	CFR 47 OHM -5% 1/6W	9965 000 35790
R112	061C60247052T	CFR 47 OHM -5% 1/6W	9965 000 35790
R115	061C60247152T	CFR 470 OHM -5% 1/6W	9965 000 35791
R125	061C60247152T	CFR 470 OHM -5% 1/6W	9965 000 35791
R433	061C60247152T	CFR 470 OHM -5% 1/6W	9965 000 35791
R154	061C60247152T	CFR 470 OHM -5% 1/6W	9965 000 35791
R151	061C60247152T	CFR 470 OHM -5% 1/6W	9965 000 35791
R129	061C60247152T	CFR 470 OHM -5% 1/6W	9965 000 35791
R135	061C60247152T	CFR 470 OHM -5% 1/6W	9965 000 35791
R107	061C60247252T	CFR 4.7K OHM -5% 1/6W	9965 000 35554
R123	061C60247252T	CFR 4.7K OHM -5% 1/6W	9965 000 35554
R957	061C60247352T	CFR 47K OHM -5% 1/6W	9965 000 35792
R905	061C60262252T	CFR 6.2K OHM -5% 1/6W	9965 000 35793
R748	061C60268252T	CFR 6.8K OHM -5% 1/6W	9965 000 35794
R142	061C60282252T	CFR 8.2K OHM -5% 1/6W	9965 000 35795
R961	061C60282252T	CFR 8.2K OHM -5% 1/6W	9965 000 35795
R146	061C60282252T	CFR 8.2K OHM -5% 1/6W	9965 000 35795
R910	061C60291352T	CFR 91K OHM -5% 1/6W	9965 000 35796
R413	061C172S10052T	RES CF 5% 1/4W 100HM AX	9965 000 35797
R472	061C172S10452T	CFR 100 KOHM -5% 1/4WS	9965 000 35798
R471	061C172S10452T	CFR 100 KOHM -5% 1/4WS	9965 000 35798
R419	061C172S10452T	CFR 100 KOHM -5% 1/4WS	9965 000 35798
R478	061C172S22452T	220K 1/4W	9965 000 35799
R477	061C172S22452T	220K 1/4W	9965 000 35799
R476	061C172S22452T	220K 1/4W	9965 000 35799
R410	061C175L10052T	CFR 10 OHM -5% 1/2W	9965 000 35800
R981	061C175L10152T	CFR 100 OHM -5% 1/2W	9965 000 35559

R723	061C175L10252T	CFR 1K OHM -5% 1/2W	9965 000 35801
R901	061C175L10552T	CFR 1M OHM -5% 1/2W	9965 000 35802
R606	061C175L12152T	CFR 120 OHM -5% 1/2W	9965 000 35803
R605	061C175L15952T	CFR 1.5 OHM -5% 1/2W	9965 000 35804
R741	061C175L43452T	CFR 430K OHM -5% 1/2W	9965 000 35805
R750	061C175L51952T	MOFR 5.1 OHM -5% 1/2W	9965 000 35806
R740	061C175L56352T	CFR 56K OHM -5% 1/2W	9965 000 35807
R908	061C175L75952T	CFR 7.5 OHM -5% 1/2W	9965 000 35808
R604	061C175S18252T	CFR 1.8K OHM -5% 1/2W	9965 000 35809
R608	061C175S27152T	270 OPHM 1/2W	9965 000 35810
C920	064C45G4711AT	470PF -20% 100V	9965 000 35811
FB403	071C559T	CORE RF BEAD RH 3.5X6X0.76TP	9965 000 35562
FB907	071C559T	CORE RF BEAD RH 3.5X6X0.76TP	9965 000 35562
FB402	071C559T	CORE RF BEAD RH 3.5X6X0.76TP	9965 000 35562
FB901	071C5519T	FERRITE BEAD 9X3.5X0.8	9965 000 35812
ZD903	093C395852T	HZ24-2-E	9965 000 35813
ZD109	093C397352T	HZ6B1-E	9965 000 35815
ZD902	093C397352T	HZ6B1-E	9965 000 35815
ZD703	093C3950252T	HZ18-1-E	9965 000 35816
ZD105	093C3952152T	TZX18B	9965 000 35817
ZD108	093C3953052T	TZX5V6D	9965 000 35814
D901	093C529T52T	2A 600V 2A05	9965 000 35818
D902	093C529T52T	2A 600V 2A05	9965 000 35818
D903	093C529T52T	2A 600V 2A05	9965 000 35818
D904	093C529T52T	2A 600V 2A05	9965 000 35818
D601	093C5247T52T	1N4004	9965 000 35819
D407	093C6021P52T	PS156R	9965 000 35566
D406	093C6021P52T	PS156R	9965 000 35566
D464	093C6026T52T	RECTIFIER DIODE FR107	9965 000 35820
D463	093C6026W52T	FR107	9965 000 35512
D474	093C6026W52T	FR107	9965 000 35512
D706	093C6044T52T	RECTIFIER DIODE FR157S	9965 000 35821
D104	093C641152T	1N4148	4822 130 30621
D939	093C641152T	1N4148	4822 130 30621
D708	093C641152T	1N4148	4822 130 30621
D916	093C641152T	1N4148	4822 130 30621
D450	093C641152T	1N4148	4822 130 30621
D912	093C6431P52T	BAV20	9965 000 35822
D101	093C10021W52T	1N5817	9965 000 35823
D405	093C10021W52T	1N5817	9965 000 35823
D740	093C1040252T	UF4004	9965 000 35824
D404	093C1040252T	UF4004	9965 000 35824
D929	093C1040252T	UF4004	9965 000 35824
D911	093C106050652T	DIODE	9965 000 35825
D403	093C2020552T	ER202	9965 000 35826
Q401	057C417503T	2N3904	9965 000 35827
Q901	057C417503T	2N3904	9965 000 35827
Q412	057C419PPT	2PC945	9965 000 35828
Q913	057C419503T	2SC945P	9965 000 35829

Q910	057C419503T	2SC945P	9965 000 35829
Q908	057C419503T	2SC945P	9965 000 35829
Q906	057C419503T	2SC945P	9965 000 35829
Q903	057C419503T	2SC945P	9965 000 35829
Q423	057C419503T	2SC945P	9965 000 35829
Q411	057C419503T	2SC945P	9965 000 35829
Q905	057C420502T	2SA733P	9965 000 35830
Q912	057C420502T	2SA733P	9965 000 35830
Q743	057C446500T	2SC1213C	9965 000 35831
Q410	057C446501T	2SC2120-Y	9965 000 35832
Q902	057C446501T	2SC2120-Y	9965 000 35832
Q742	057C49312T	BF420	9965 000 35833
Q705	057C4983T	HBF423	9965 000 35834
Q402	057C530503T	2SD1207T	9965 000 35835
C415	064C44J4721AT	4700PF 100V PEI	9965 000 35836
C116	064C45G2221AT	.0022UF -2% 100V	9965 000 35837
C433	064C176J1041T	0.1UF 5% 100V	9965 000 35838
C710	064C176J1231T	12NF 100V MPE	9965 000 35839
C414	064C176J4740T	.47UF -5% 50/63V	9965 000 35840
C601	064C178J1020T	1000PF -5% 63V	9965 000 35841
C117	064C178J1031T	CL21X 0.01UF 100V -5%	9965 000 35842
C413	064C178J1040T	CL21X0.1UF 63V -5%	9965 000 35568
C921	064C178J1041T	C121X 0.1UF 100V -5%	9965 000 35843
C608	064C178J1041T	C121X 0.1UF 100V -5%	9965 000 35843
C417	064C178J2240T	0.22UF 63V. -5%	9965 000 35844
C720	065C1K4715T692	470PF -10% 1KV Y5P	9965 000 35845
C916	065C1K4715T692	470PF -10% 1KV Y5P	9965 000 35845
C922	065C2K1015T692	100PF/2KV	9965 000 35571
C412	065C2K2215T692	220PF 2000V	9965 000 35846
C107	065C44210113T	100PF -5% NPO 50V	9965 000 35573
C110	065C44210113T	100PF -5% NPO 50V	9965 000 35573
C121	065C44210113T	100PF -5% NPO 50V	9965 000 35573
C122	065C44210113T	100PF -5% NPO 50V	9965 000 35573
C131	065C44233013T	33PF -5% NPO 50V	9965 000 35847
C105	065C4441025T	1000 PF 10% 50V Y5P	9965 000 35848
C106	065C4441025T	1000 PF 10% 50V Y5P	9965 000 35848
C130	065C4441025T	1000 PF 10% 50V Y5P	9965 000 35848
C128	065C4441025T	1000 PF 10% 50V Y5P	9965 000 35848
C109	065C4442225T	2200PF 10% Y5P 50V	9965 000 35849
C124	065C4442225T	2200PF 10% Y5P 50V	9965 000 35849
C705	065C4443325T	3300PF 10% 50V Y5P	9965 000 35850
C127	065C44447213T	4700PF -10% Z5P 50V	9965 000 35851
C114	065C4448215T	820PF 10% Y5P 50V	9965 000 35852
C123	065C4501037T	10000PF/50V Y5V 80% -20%	9965 000 35853
C956	065C4501043T	0.1UF 50V Y5V	9965 000 35854
C908	065C4501043T	0.1UF 50V Y5V	9965 000 35854
C410	065C4501043T	0.1UF 50V Y5V	9965 000 35854
C120	065C4501043T	0.1UF 50V Y5V	9965 000 35854
C103	065C4501043T	0.1UF 50V Y5V	9965 000 35854

C102	065C4501043T	0.1UF 50V Y5V	9965 000 35854
C101	065C4501043T	0.1UF 50V Y5V	9965 000 35854
C112	065C4501047T	0.1UF 80-20% 50V Y5V	9965 000 35578
C111	065C4501047T	0.1UF 80-20% 50V Y5V	9965 000 35578
C431	065C4501047T	0.1UF 80-20% 50V Y5V	9965 000 35578
C429	065C4501047T	0.1UF 80-20% 50V Y5V	9965 000 35578
C411	065C4501047T	0.1UF 80-20% 50V Y5V	9965 000 35578
C432	065C517K1022T6	1000PF 10% Z5P 500V	9965 000 35855
C430	065C517K1525T6	1.5NF/500V Y5P -10%	9965 000 35856
C740	065C517M1033T6	10NF 500V	9965 000 35857
C910	067C3052207T	22UF -20% 50V	9965 000 35858
C912	067C3052297T	2.2UF -20% 50V	9965 000 35859
C713	067C30522912T	2.2UF -20% 250V	9965 000 35860
C100	067C3054703T	47UF -20% 16V	9965 000 35854
C609	067C3054707T	47UF -20% 50V	9965 000 35861
C115	067C3054787T	0.47UF -20% 50V	9965 000 35862
C940	067C3054797T	4.7UF -20% 50V	9965 000 35863
C742	067C3091003T	10UF -20% 16V	9965 000 35864
C119	067C3091003T	10UF -20% 16V	9965 000 35864
C434	067C3091007T	10UF -20% 50V	9965 000 35865
C113	067C3091013T	100UF -20% 16V	9965 000 35866
C104	067C3091013T	100UF -20% 16V	9965 000 35866
C118	067C3091097T	1.0UF -20% 50V	9965 000 35867
C145	067C3092204T	22UF -20% 25V	9965 000 35868
C483	067C3094793T	4.7UF -20% 16V	9965 000 35869
ZD106	093C397352T	HZ6B1-E	9965 000 35815
ZD103	093C3955452T	BZX79-B6V2	9965 000 35870
ZD104	093C3955452T	BZX79-B6V2	9965 000 35870
ZD101	093C3955452T	BZX79-B6V2	9965 000 35870
ZD102	093C3955452T	BZX79-B6V2	9965 000 35870
ZD901	093C3955652T	BZX79-B5V1	9965 000 35871
ZD701	093C3955652T	BZX79-B5V1	9965 000 35871
ZD711	093C3955652T	BZX79-B5V1	9965 000 35871
ZD702	093C3955952T	BZX79-C3VO	9965 000 35872

## Key Board

Location	Part No for TPV	Description	Philips 12NC
	CKB784B1TP1P	KEPC FOR B784B3-1 PHILIPS	9965 000 35711
SW102	077C6001GCJ	TACT SWITCH TSPB-2-NP	9965 000 35740
SW106	077C6001GCJ	TACT SWITCH TSPB-2-NP	9965 000 35740
SW104	077C6001GCJ	TACT SWITCH TSPB-2-NP	9965 000 35740
SW105	077C6001GCJ	TACT SWITCH TSPB-2-NP	9965 000 35740
SW103	077C6001GCJ	TACT SWITCH TSPB-2-NP	9965 000 35740
LED1	081C232P	LED	9965 000 35741
R191	061C60224252T	CFR 2.4K OHM -5% 1/6W	9965 000 35742
R194	061C60224252T	CFR 2.4K OHM -5% 1/6W	9965 000 35742
R192	061C60256252T	CFR 5.6KOHM -5% 1/6W	9965 000 35555
R193	061C60256252T	CFR 5.6KOHM -5% 1/6W	9965 000 35555

## CRT Board

Location	Part No for TPV	Description	Philips 12NC
	CRB784B1T9P1P	CRT BOARD P784B3-1 PHILIPS ROHS	9965 000 35739
G2	009C2038	BRASS PIN	9965 000 35873
P801	033C32786D	WAFER	9965 000 35874
P802	033C327814D	WAFER& PLUG	9965 000 35875
	040C45762412B	LABEL	9965 000 35538
IC801	056C366522	NT6812KG-20028	9965 000 35876
C852	065C2M1033B692	0.01UF 2KV 20% Z5U	9965 000 35487
C806	065C2M1033FB69	10000PF -20%~ 18% 2KV	9965 000 35488
C844	065C44222013T	22PF -5% NPO 50V	9965 000 35574
C848	067C3051099T	1UF -20% 100V	9965 000 35540
C811	067C3054709	47UF -20% 100V	9965 000 35541
C805	067C3054709	47UF -20% 100V	9965 000 35541
FB809	071C5521	FERRITE BEAD 10*6.0*0.8	9965 000 35542
	087C3504ZW	CRT SOCKET(QQ FOCUS)	9965 000 35877
IC802	056C551525	LM2476	9965 000 35543
	ARB784B1TP1P	CRT BOARD B784B3-1 PHILIPS	9965 000 35878
R815	061C17220152T	CFR 200OHM -5% 1/4W	9965 000 35879
R840	061C17233052T	CFR 33OHM -5% 1/4W	9965 000 35545
R829	061C17233052T	CFR 33OHM -5% 1/4W	9965 000 35545
R828	061C17233052T	CFR 33OHM -5% 1/4W	9965 000 35545
R844	061C17233452T	CFR 330K OHM -5% 1/4W	9965 000 35546
R837	061C17233452T	CFR 330K OHM -5% 1/4W	9965 000 35546
R819	061C17233452T	CFR 330K OHM -5% 1/4W	9965 000 35546
R806	061C21019252T	MFR 1.9KOHM - 1% 1/6W	9965 000 35547
R810	061C21033352T	MFR 33K OHM - 1% 1/6W	9965 000 35548
R802	061C60210152T	CFR 100 OHM -5% 1/6W	9965 000 35549
R805	061C60210152T	CFR 100 OHM -5% 1/6W	9965 000 35549
R812	061C60210252T	CFR 1K OHM -5% 1/6W	9965 000 35550
R813	061C60210252T	CFR 1K OHM -5% 1/6W	9965 000 35550
R816	061C60210252T	CFR 1K OHM -5% 1/6W	9965 000 35550
R814	061C60210352T	CFR 10K OHM -5% 1/6W	9965 000 35551
R825	061C60210352T	CFR 10K OHM -5% 1/6W	9965 000 35551
R845	061C60210352T	CFR 10K OHM -5% 1/6W	9965 000 35551
R820	061C60215152T	CFR 150 OHM -5% 1/6W	9965 000 35880
R832	061C60215152T	CFR 150 OHM -5% 1/6W	9965 000 35880
R835	061C60215152T	CFR 150 OHM -5% 1/6W	9965 000 35880
R836	061C60233052T	CFR 33 OHM -5% 1/6W	9965 000 35552
R821	061C60233052T	CFR 33 OHM -5% 1/6W	9965 000 35552
R818	061C60233052T	CFR 33 OHM -5% 1/6W	9965 000 35552
R822	061C60247252T	CFR 4.7K OHM -5% 1/6W	9965 000 35554
R811	061C60256252T	CFR 5.6KOHM -5% 1/6W	9965 000 35555
R824	061C60275052T	CFR 75 OHM -5% 1/6W	9965 000 35556
R826	061C60275052T	CFR 75 OHM -5% 1/6W	9965 000 35556
R834	061C60275052T	CFR 75 OHM -5% 1/6W	9965 000 35556
L809	061C172S10152T	RES CF 5% 1/4W 1000HM A	9965 000 35557

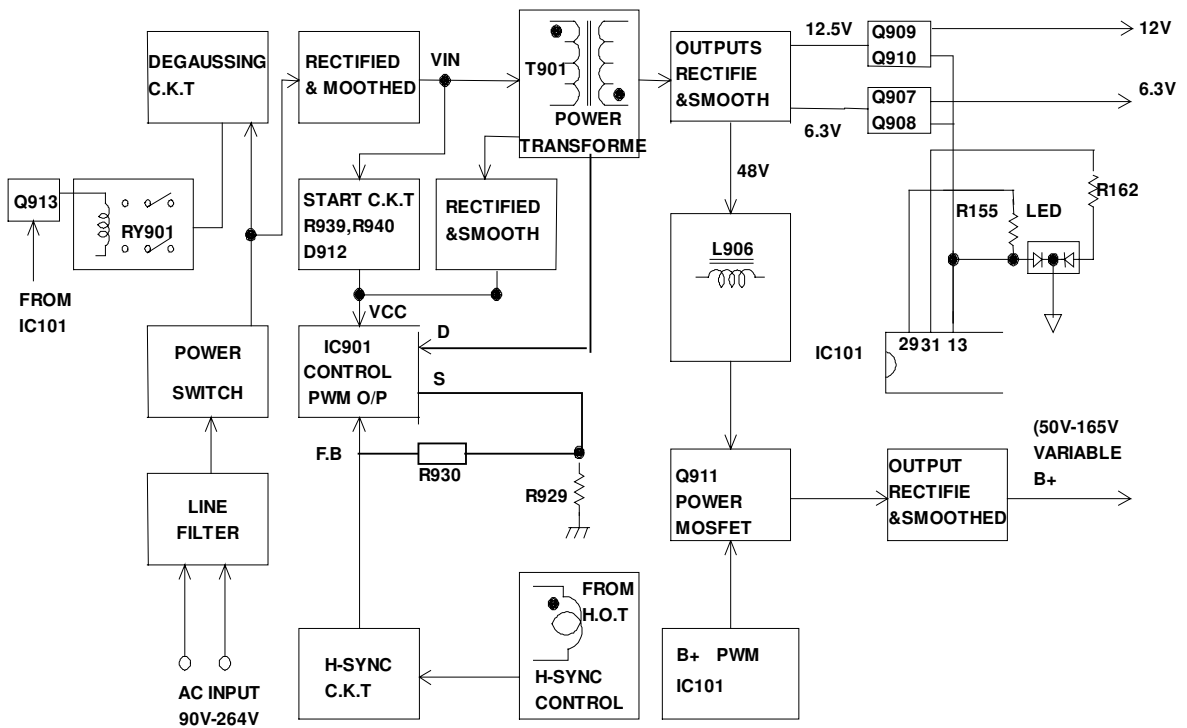
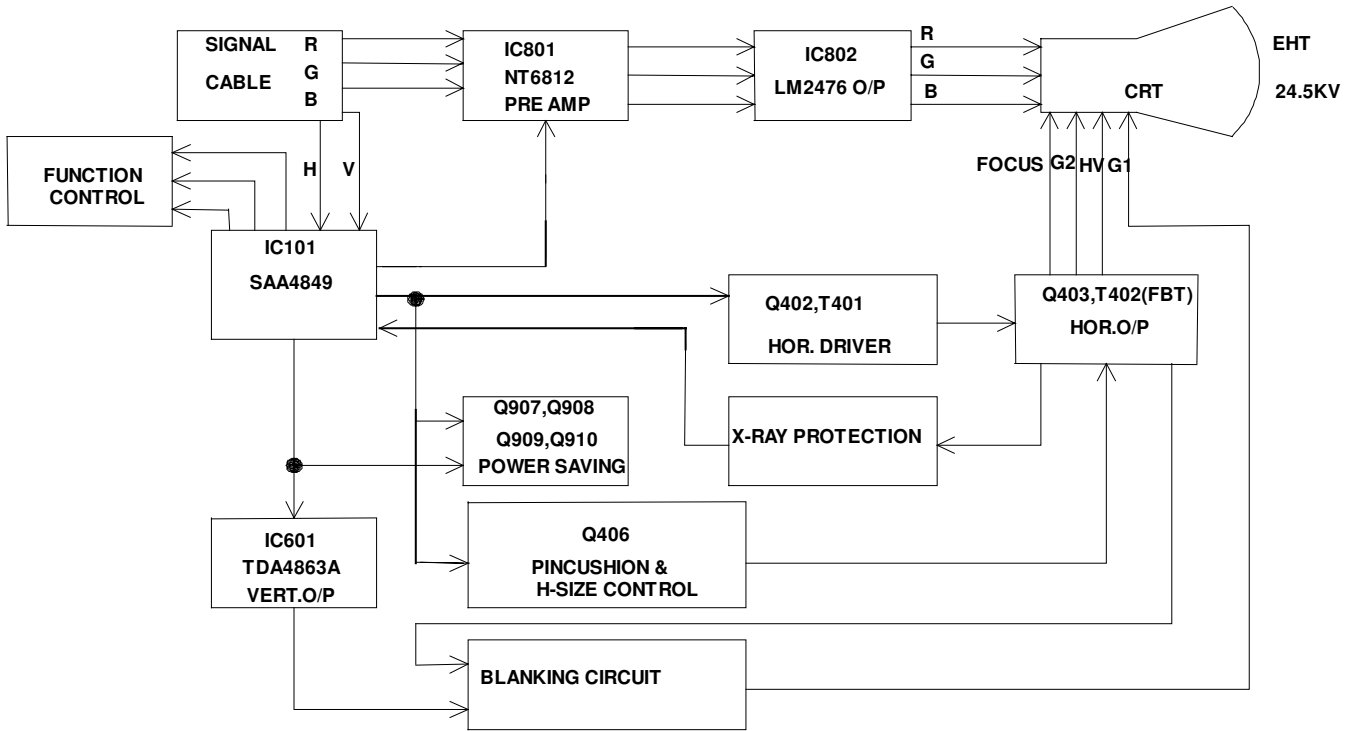
L808	061C172S10152T	RES CF 5% 1/4W 1000HM A	9965 000 35557
L807	061C172S10152T	RES CF 5% 1/4W 1000HM A	9965 000 35557
R830	061C172S47052T	RES CF 5% 1/4W 47OHM AX	9965 000 35558
R817	061C172S47052T	RES CF 5% 1/4W 47OHM AX	9965 000 35558
R809	061C172S47052T	RES CF 5% 1/4W 47OHM AX	9965 000 35558
R804	061C175L10152T	CFR 100 OHM -5% 1/2W	9965 000 35559
FB804	061C175L56452T	CFR 560K OHM -5% 1/2W	9965 000 35561
R846	061C175L82852T	0.82 OHM -5% 1/2W	9965 000 35560
C842	065C44222013T	22PF -5% NPO 50V	9965 000 35574
C826	067C3054713T	470UF -20% 16V	9965 000 35585
J816	071C559T	CORE RF BEAD RH 3.5X6X0.76TP	9965 000 35562
FB805	071C5523	FERRITE BEAD 7.5*3.5*0.8	9965 000 35563
FB806	071C5523	FERRITE BEAD 7.5*3.5*0.8	9965 000 35563
J808	071C5523	FERRITE BEAD 7.5*3.5*0.8	9965 000 35563
L804	071C5523	FERRITE BEAD 7.5*3.5*0.8	9965 000 35563
L805	071C5523	FERRITE BEAD 7.5*3.5*0.8	9965 000 35563
R841	073C5468810T	0.68UH -10%	9965 000 35564
R842	073C5468810T	0.68UH -10%	9965 000 35564
R843	073C5468810T	0.68UH -10%	9965 000 35564
D809	093C6021P52T	PS156R	9965 000 35566
D803	093C641152T	1N4148	4822 130 30621
D812	093C641152T	1N4148	4822 130 30621
D813	093C641152T	1N4148	4822 130 30621
D814	093C641152T	1N4148	4822 130 30621
D811	093C641152T	1N4148	4822 130 30621
D805	093C641152T	1N4148	4822 130 30621
D810	093C6450152T	BAV21	4822 130 30842
D808	093C6450152T	BAV21	4822 130 30842
D807	093C6450152T	BAV21	4822 130 30842
D806	093C6450152T	BAV21	4822 130 30842
D804	093C6450152T	BAV21	4822 130 30842
D802	093C6450152T	BAV21	4822 130 30842
C815	064C178J1040T	CL21X0.1UF 63V -5%	9965 000 35568
C823	064C178J1040T	CL21X0.1UF 63V -5%	9965 000 35568
C824	064C178J1040T	CL21X0.1UF 63V -5%	9965 000 35568
C830	064C700J3330AT	0.033UF 63V -5%	9965 000 35569
C841	065C1K2215T605	220PF/1KV Y5P -10%	9965 000 35570
C835	065C2K1015T692	100PF/2KV	9965 000 35571
C836	065C2K1015T692	100PF/2KV	9965 000 35571
C839	065C44210013T	10PF -5% NPO 50V	9965 000 35572
C802	065C44210113T	100PF -5% NPO 50V	9965 000 35573
C803	065C44210113T	100PF -5% NPO 50V	9965 000 35573
C809	065C44210113T	100PF -5% NPO 50V	9965 000 35573
C812	065C44210113T	100PF -5% NPO 50V	9965 000 35573
C843	065C44222013T	22PF -5% NPO 50V	9965 000 35574
C818	065C4441015T	100 PF 10% 50V Y5P	9965 000 35575
C817	065C4441015T	100 PF 10% 50V Y5P	9965 000 35575
C816	065C4441015T	100 PF 10% 50V Y5P	9965 000 35575
C833	065C4441525T	1500PF 10% Y5P 50V	9965 000 35576

C837	065C44447113T	470PF -10% Z5P 50V	9965 000 35577
C814	065C4501047T	0.1UF 80-20% 50V Y5V	9965 000 35578
C804	065C4501047T	0.1UF 80-20% 50V Y5V	9965 000 35578
C832	065C251K1042T	0.1UF 250V	9965 000 35579
C831	065C251K1042T	0.1UF 250V	9965 000 35579
C829	065C251K1042T	0.1UF 250V	9965 000 35579
C827	065C251K1042T	0.1UF 250V	9965 000 35579
C813	065C251K1042T	0.1UF 250V	9965 000 35579
C834	065C517K1025T6	1000PF 500V -10% Y5P	9965 000 35580
C846	065C517K1025T6	1000PF 500V -10% Y5P	9965 000 35580
C847	065C517K1025T6	1000PF 500V -10% Y5P	9965 000 35580
C849	065C517K1025T6	1000PF 500V -10% Y5P	9965 000 35580
C801	065C517K5612T6	560PF 500V Z5P -10%	9965 000 35581
C820	067C701099T	1UF -20% 100V	9965 000 35582
C821	067C701099T	1UF -20% 100V	9965 000 35582
C822	067C701099T	1UF -20% 100V	9965 000 35582
C810	067C3052203T	22UF -20% 16V	9965 000 35583
C819	067C3054703T	47UF -20% 16V	9965 000 35584
C807	067C3054703T	47UF -20% 16V	9965 000 35584
C808	067C3054793T	4U7 16V	9965 000 35586
ZD804	093C3951952T	TZX8V2B	9965 000 35588

## 10. Different parts list

Diversity of 107B75/27 compared with 107B70/00			
Location	Part No. for TPV	Description	Philips P/N (12NC)
	034C6376BVBT	FRONT PANEL	9965 000 36568
	034C6377VBT	BACK COVER	9965 000 36569
	034C6378VBB	SWIVEL	9965 000 36570
	034C6379VBB	BASE	9965 000 36571
	040C58162410A	H/V LABEL	9965 000 36572
	089C402A15NIS	POWER CORD	9965 000 36575
	Q40C58162462A	CRT WARNING LABEL	9965 000 36573
	Q40C70B8137A	RATING LABEL	9965 000 36574
	089C71B5TYHG3	SIGNAL CABLE	9965 000 35436

11. Block diagram



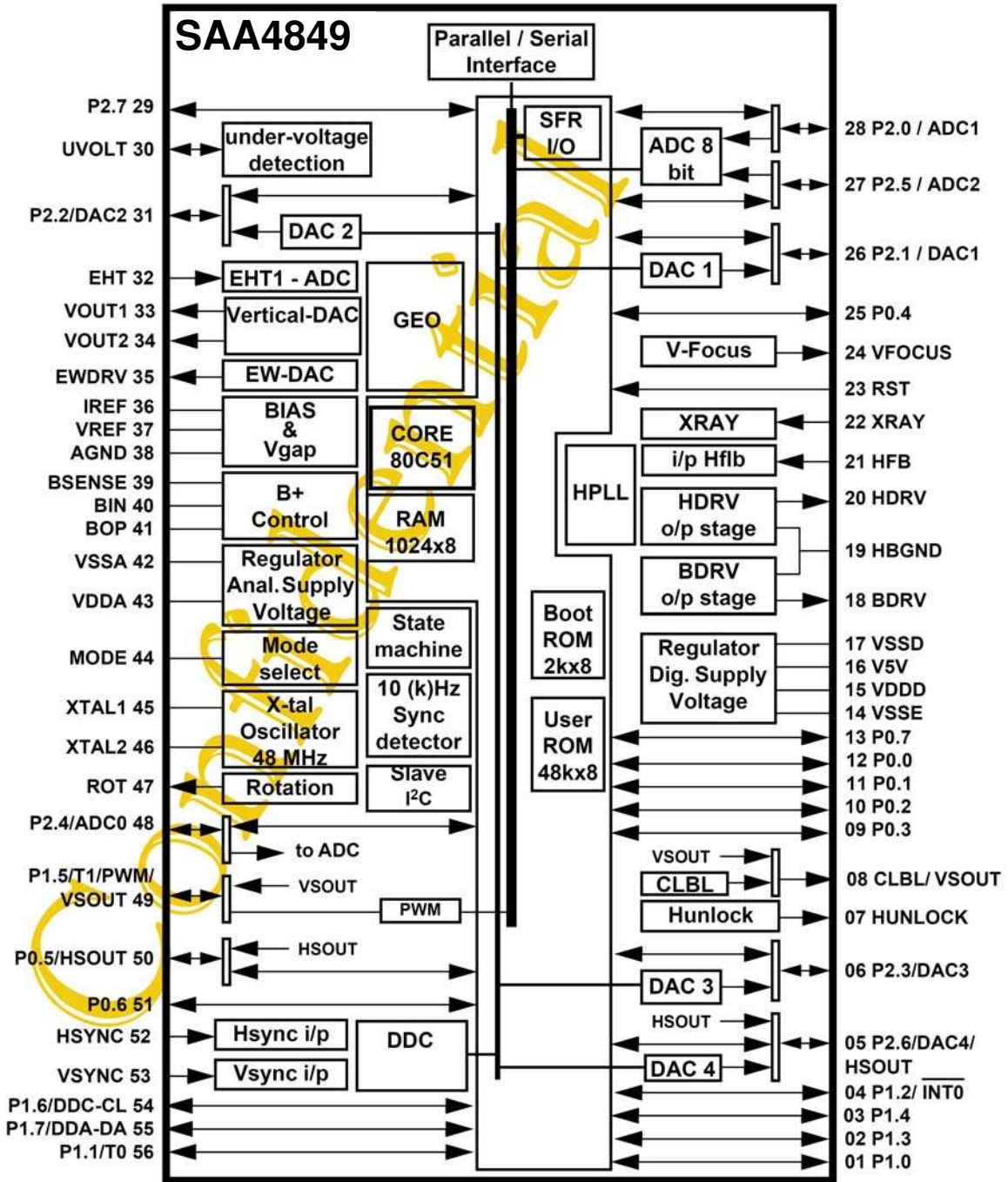
## 12.IC Block diagram

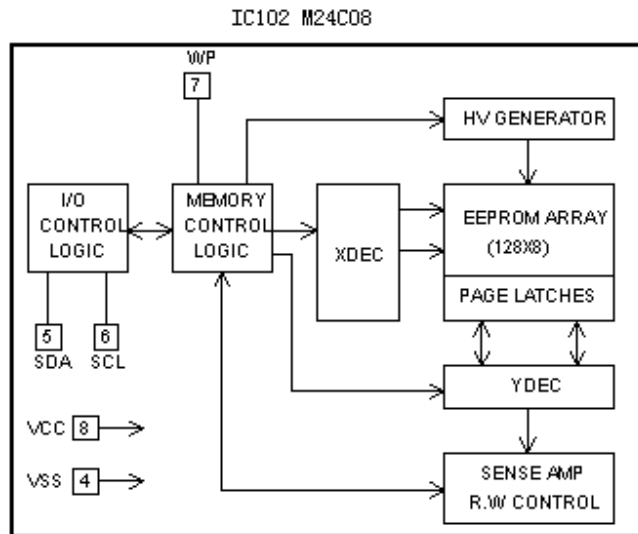
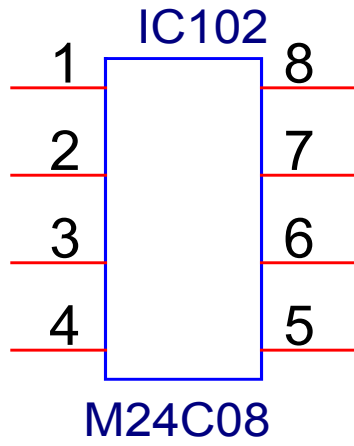
IC101

1	SwiChoice	NC	56
2	ISCL	DSDA	55
3	ISDA	DSCL	54
4	Mute G1	Vs	53
5	ROTA	Hs	52
6	H-LIN	EEP W/R	51
7	Unlock	Pro	50
8	CLAMP	VsOUT	49
9	CS1	REM	48
10	CS2	NC	47
11	CS3	XTAL2	46
12	standby	XTAL1	45
13	OFF	MODE	44
14	VSSE	VDDA	43
15	VDDD	Vssa	42
16	V5V	BOP	41
17	VSSD	Bin	40
18	BDRV	Bsens	39
19	HBGND	AGND	38
20	HDRV	Vref	37
21	HFB	Iref	36
22	XRAY	EWdrv	35
23	RST	VOUT2	34
24	Vfocus	VUOT1	33
25	Deguss	EHT	32
26	ABLadj	DouColor	31
27	KEY2	Uvolt	30
28	KEY1	SinColor	29

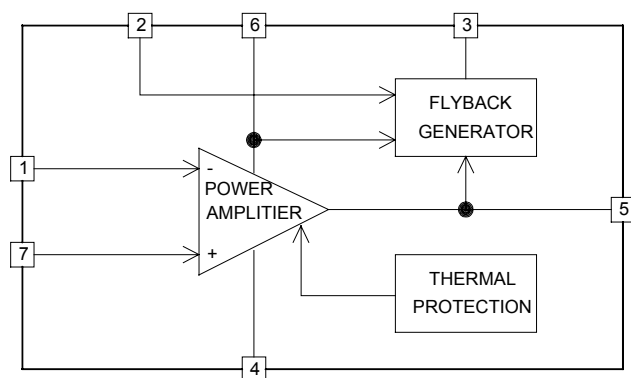
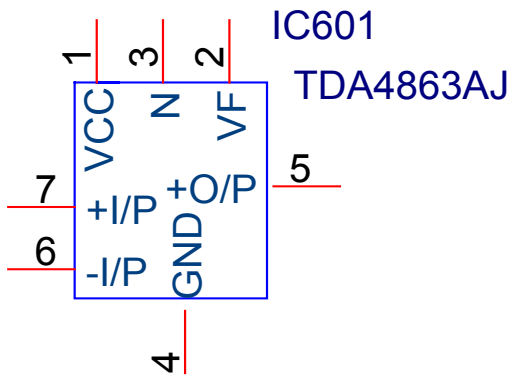
IC101 SAA4849

BLOCK DIAGRAM

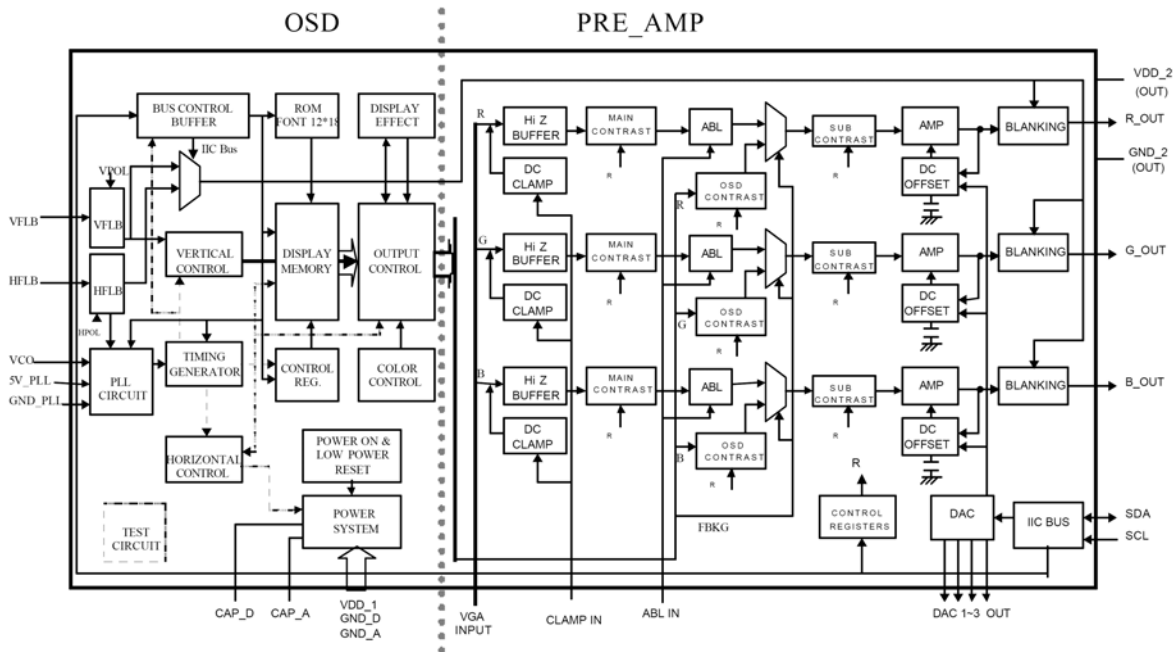
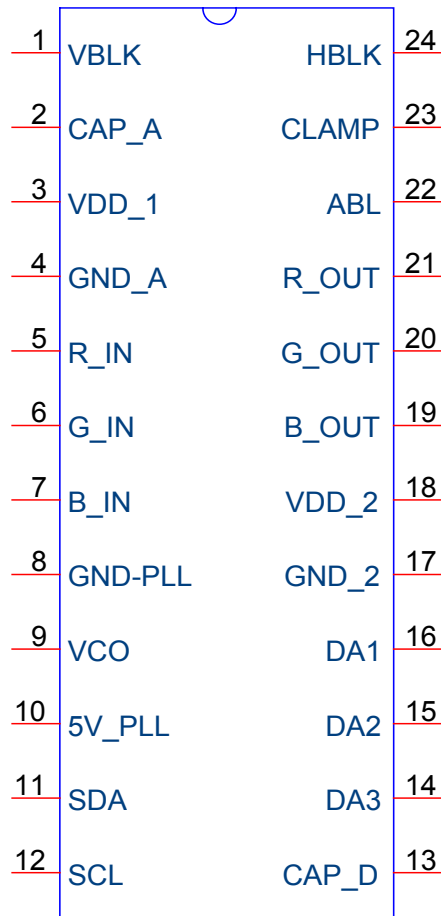




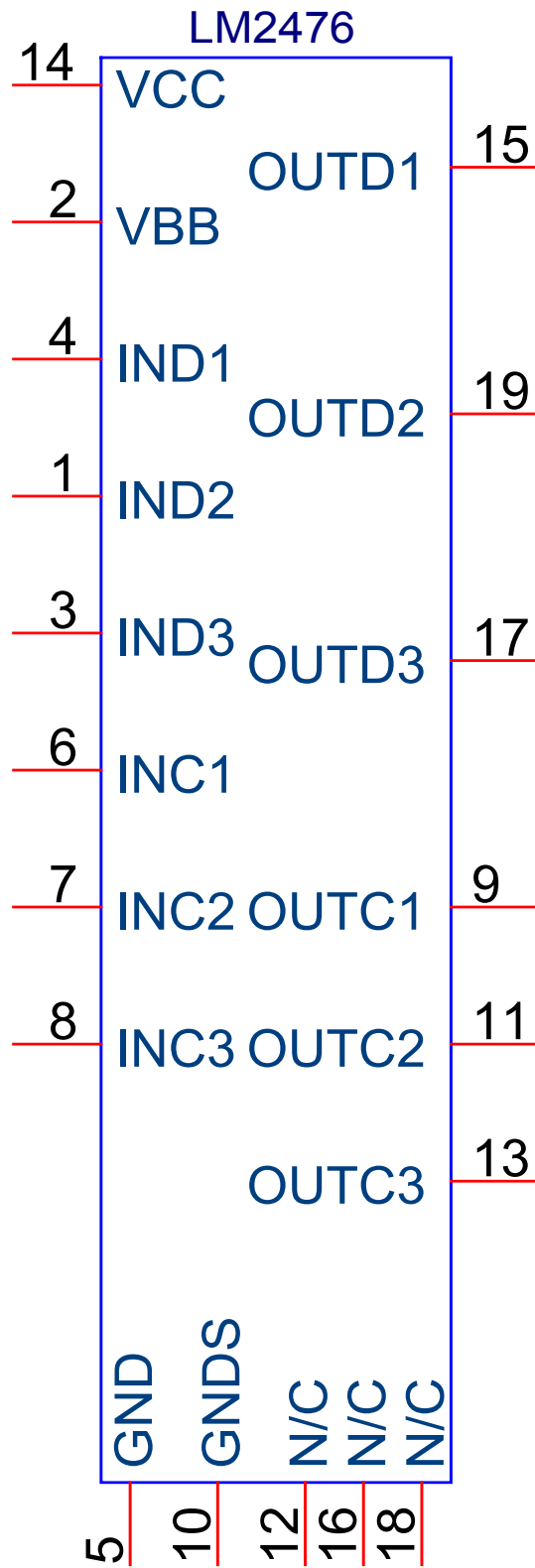
IC102 M24C08



IC801  
NT6812



IC802



### Connection Diagram and Pin Descriptions

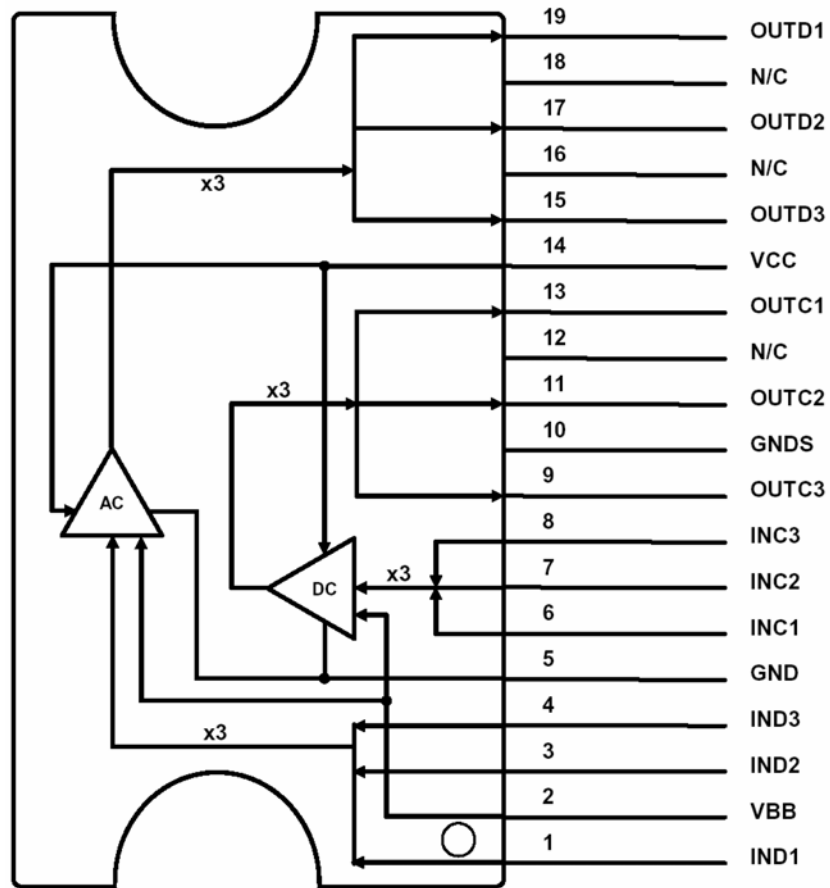
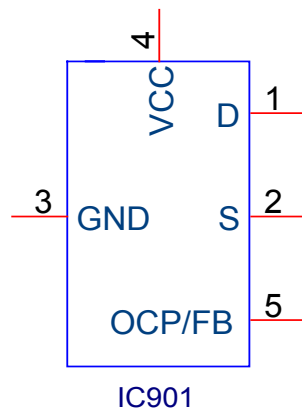


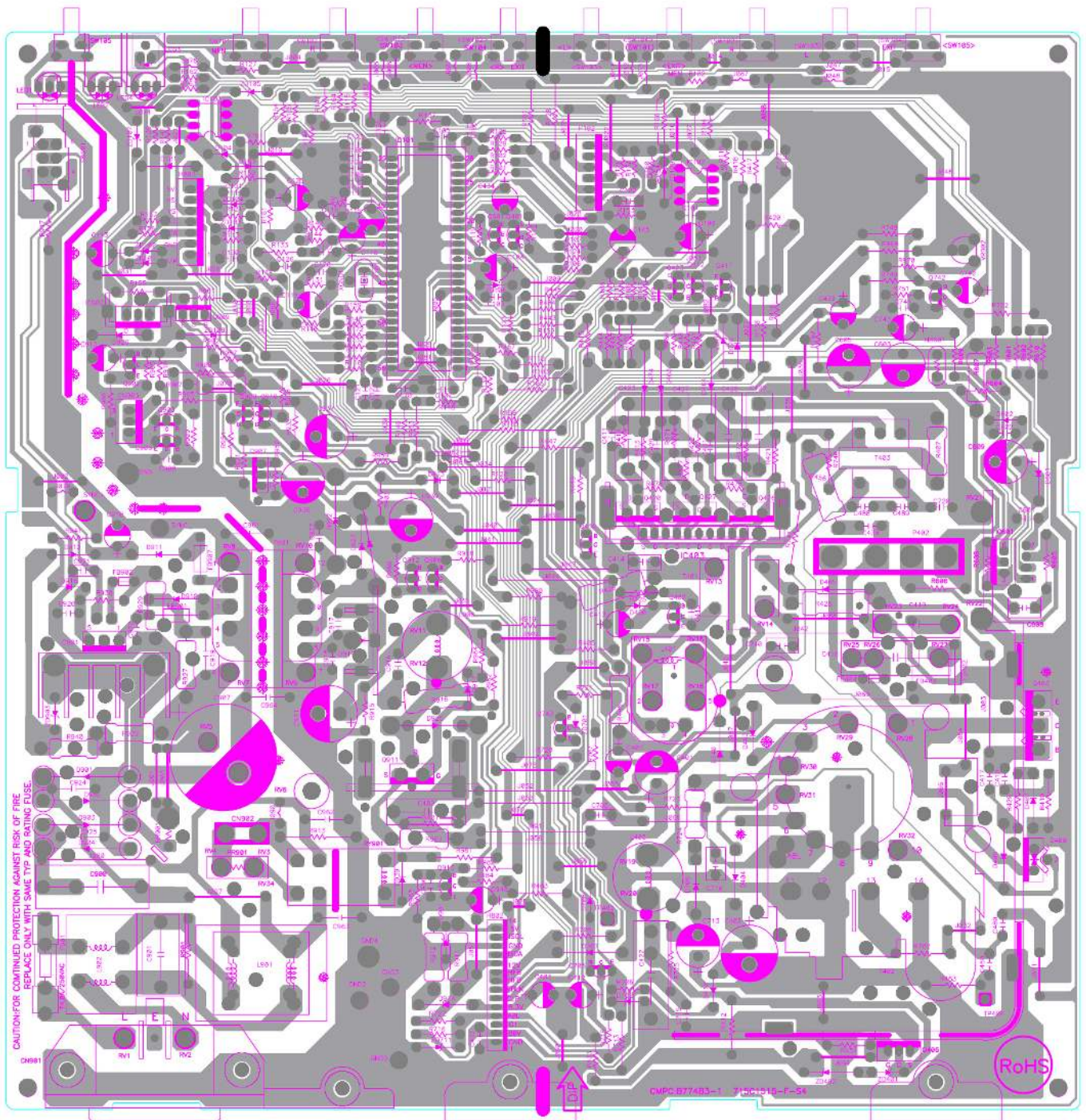
Figure 1 - Top View  
Order Number LM2476



IC901 STR-G5643D

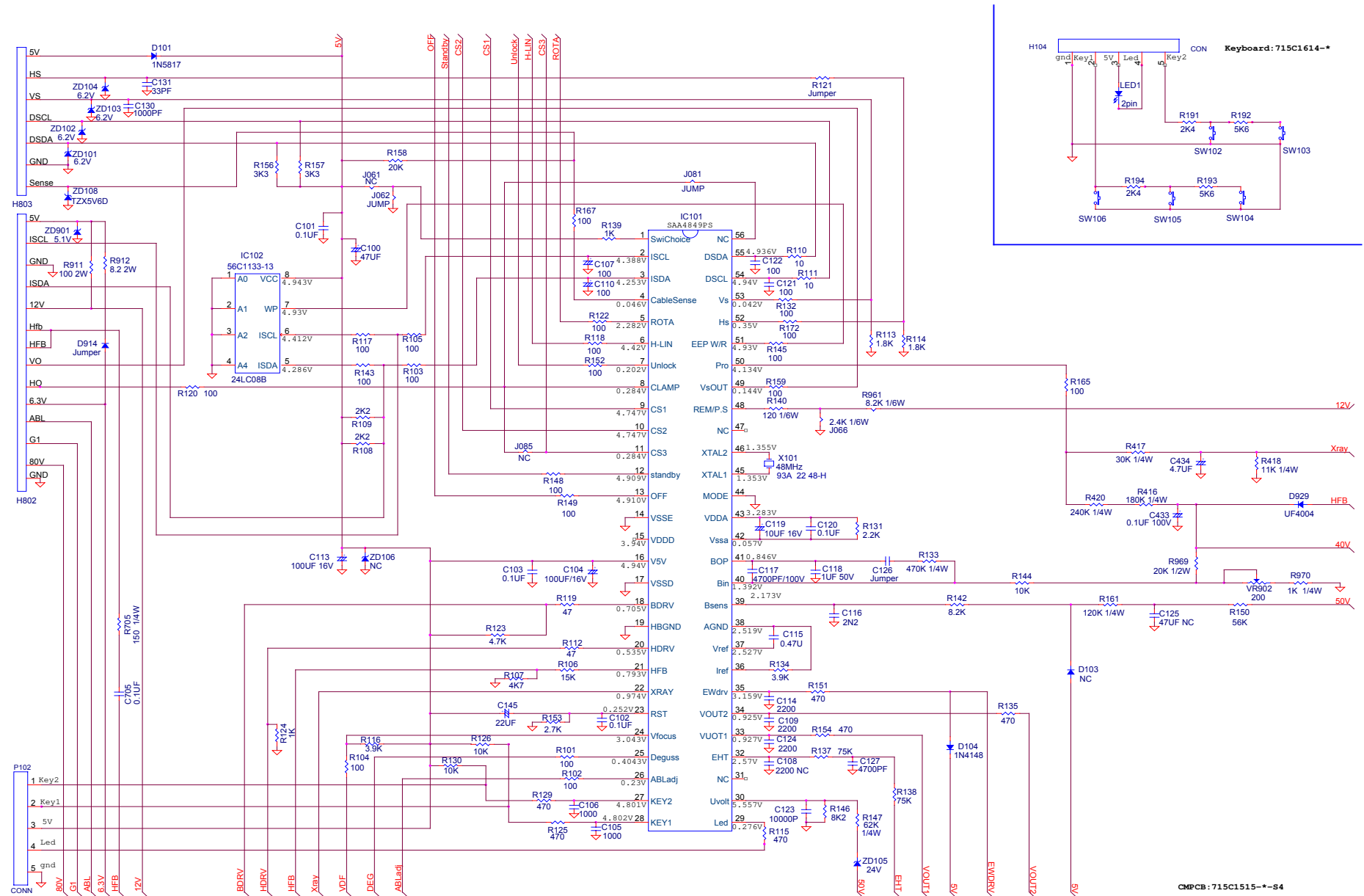
### 13. PCB Layout

#### 13.1 Main Board





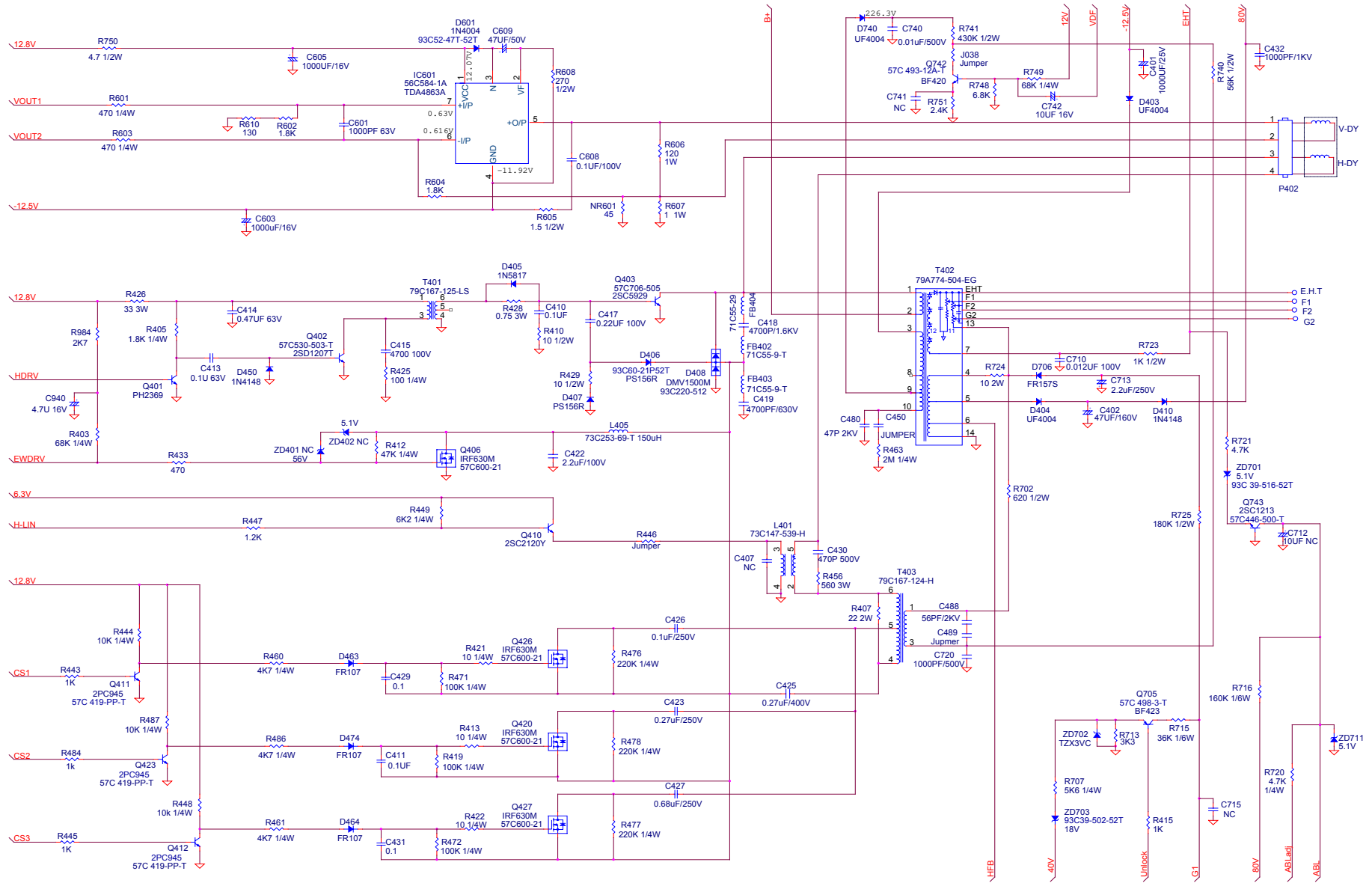
# 14. Schematic diagram CPU



Page2:CPU Section

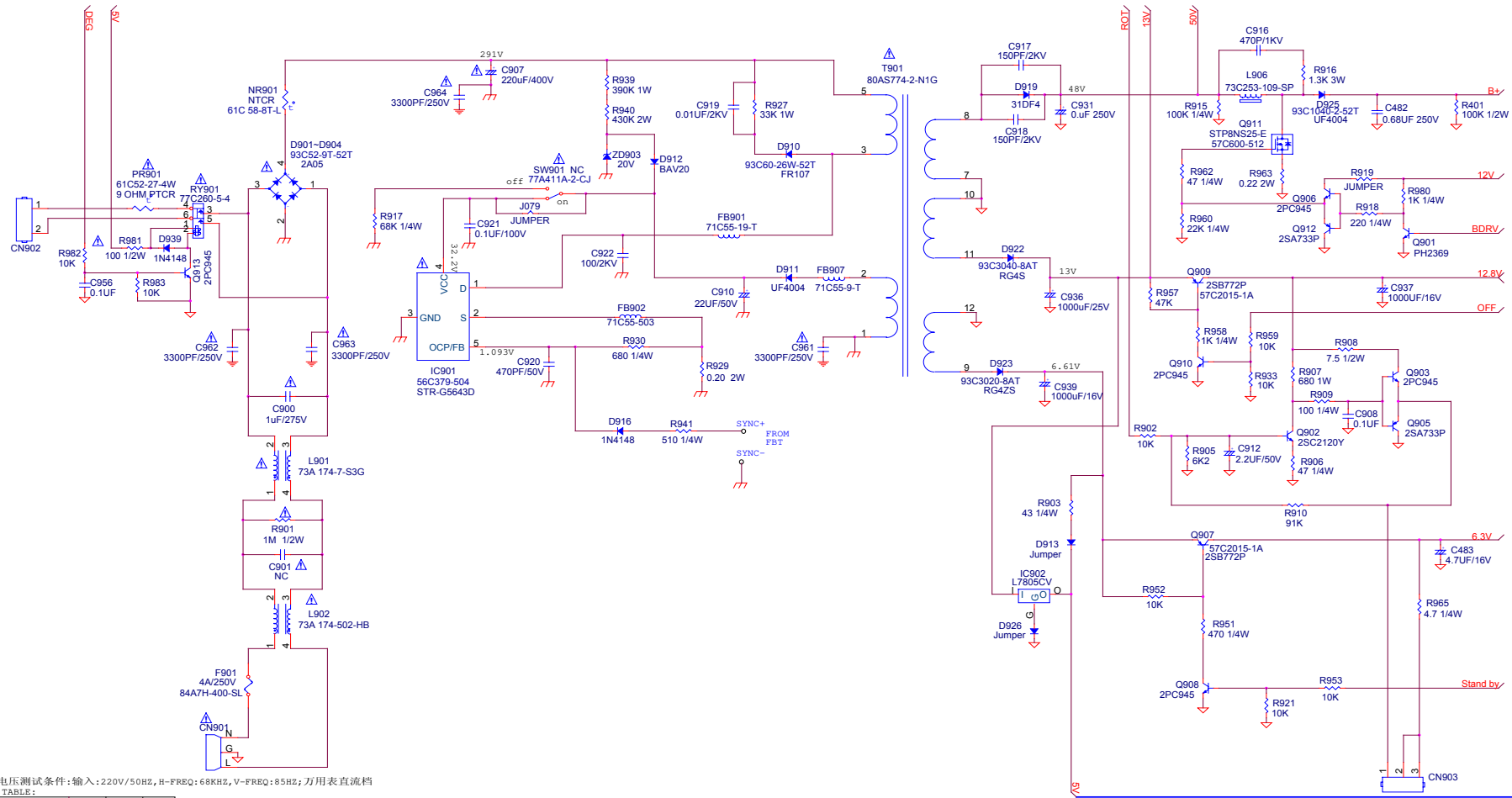
CMPCB: 715C1515--S4

Output



Power

Page3: Output Section



注: 电压测试条件: 输入: 220V/50HZ, H-FREQ: 68KHZ, V-FREQ: 85HZ; 万用表直流档

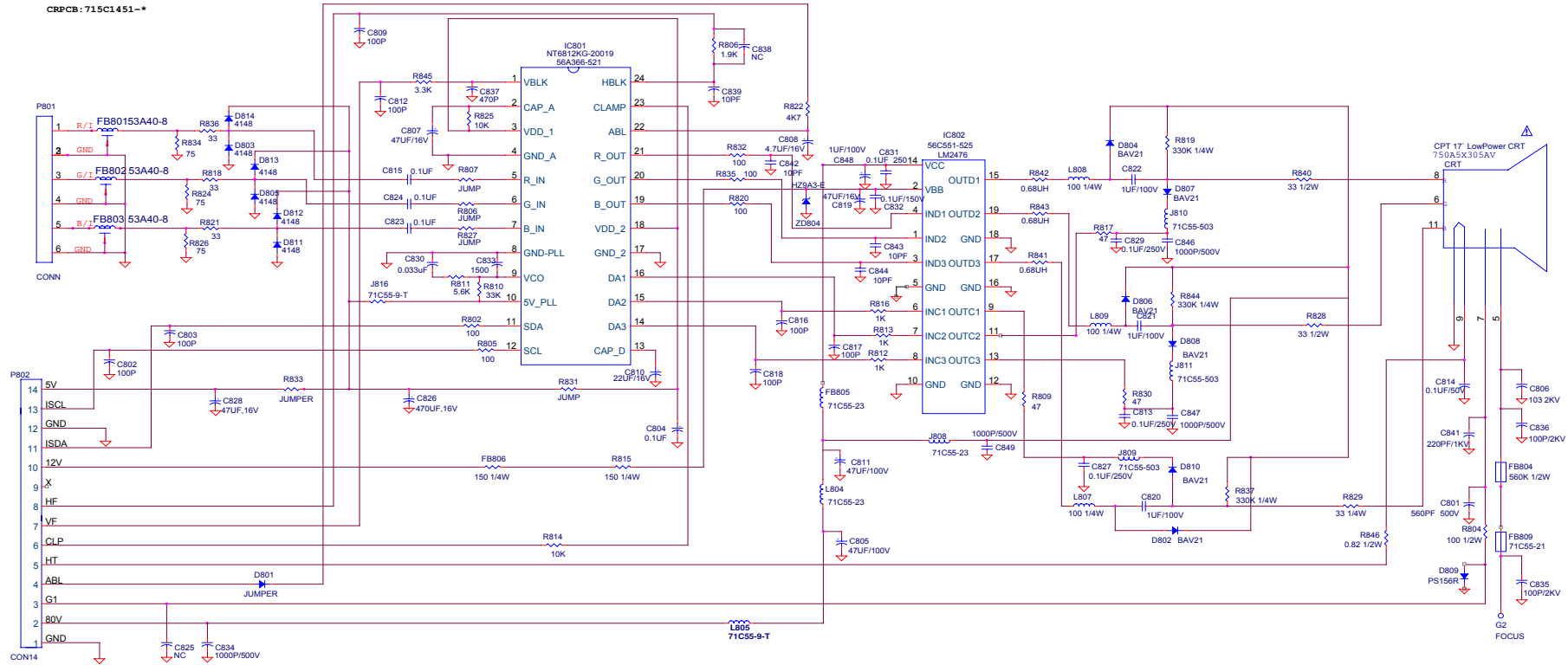
CS TABLE:

Frequency	CS1	CS2	CS3
<33KHZ	0	0	0
33KHZ~36KHZ	1	0	0
36KHZ~40KHZ	0	1	0
40KHZ~44KHZ	0	0	1
44KHZ~50KHZ	1	0	1
50KHZ~62KHZ	0	1	1
>62KHZ	1	1	1

LED1为单色发光二极管, POWERSAVING时为绿线; LED2为双色发光二极管;

Page1: Power Section Based on the Bom of Sep-19-05

Video



Page4:Video Section

Attention:Based on the Bom of Sep-19-05

## 15. General Product Specification

### Table of Contents

- 1. Scope
  - 1.1 General product feature
  - 1.2 Product range
- 2. Electrical Performance
  - 2.1 Standard testing conditions
  - 2.2 Video signals
    - 2.2.1 Video input signals
    - 2.2.2 Video driver signals
  - 2.3 DDC signals
  - 2.4 Plug and Play
  - 2.5 Preset modes timing chart
    - 2.5.1 Preset video timings
    - 2.5.2 Preload video timings
  - 2.6 Power supply
    - 2.6.1 Features
    - 2.6.2 Power consumption
    - 2.6.3 Power saving conditions
    - 2.6.4 Power recovery from power saving
  - 2.7 User controls / Indicators / Connectors
    - 2.7.1 Front controls
    - 2.7.2 OSD menu
    - 2.7.3 LED indicator
    - 2.7.4 Monitor status information
    - 2.7.5 Power connector
    - 2.7.6 Video input connector / Video cable
- 3. Front Of Screen Performance
  - 3.1 CRT characteristics
  - 3.2 Display image / Geometric distortions
  - 3.3 Optical performance
- 4.0 Accessories
  - 4.1 Cables
  - 4.2 User's manual
  - 4.3 CD-ROM
- 5.0 Mechanical
  - 5.1 Cosmetic
    - 5.2 Mechanical data files
    - 5.3 Location of Philips logo
    - 5.4 Location of icons
    - 5.5 Color for resin / Paint
      - 5.6 Resins
      - 5.7 If paint is used
    - 5.8 Plastic mold tooling
    - 5.9 Plastics flammability
    - 5.10 Texture / Glossing of housing
    - 5.11 Tilt / Swivel base range
    - 5.12 Movement of unit with base
    - 5.13 Label
    - 5.14 Product dimension / Weight
    - 5.15 Transportation
      - 5.16 Pallet / Container loading
- 6.0 Reliability/Environment/Transportation
  - 6.1 MTBF prediction
  - 6.2 Demonstration MTBF
  - 6.3 Temperature

- 6.4 Humidity
- 6.5 Altitude
- 6.6 Air pressure
- 6.7 Earth magnetic field
- 7.0 Regulatory compliance
- 7.1 World regulatory
- 7.2 EMC requirements
- 7.3 MPR II / TCO
- 7.4 RoHS
- 7.5 WEEE
- 7.6 Ongoing regulatory

## 1. Scope

This specification describes features and performance of 107B7 CRT monitor.

- Product Name - PH107B7
- Manufacturer ID - PHL
- Product ID - 001D

### 1.1 General Product Features

- 17" Flat screen color monitor
- 0.25mm phosphor dot pitch
- Viewable Image Size 325mm x 244mm
- Universal power supply
- DPM compliant
- 8 preset modes, 6 user modes, GTF supported
- Horizontal frequency up to 86 kHz
- Vertical refresh rate up to 160 Hz
- Maximum display resolution up to 1600x1200
- VESA DDC 2B compliant
- Plug and Play
- Picture High Brightness selection
- Multi-language OSD user control
- Tilt and swivel adjustable base
- TCO03

## 1.2 Product Range

CTV	Destination	Mains Cord	Magnetic Field	Cabinet Color	Ergonomics	OSD Language
107B70/00	Europe	European	North	Grey	TCO'03	9
107B70/27	NAFTA	US	North	Grey	TCO'03	9
107B75/27	NAFTA	US	North	Black	TCO'03	9

## 2. Electrical Performance

All performance specifications are defined under "STANDARD TESTING CONDITIONS", unless otherwise specified.

### 2.1 Standard Testing Conditions

- Monitor facing to the east
- Warm up time -  $\geq 30$  min
- Ambient temperature -  $25 \pm 3$  °C
- Prime mode - 1024x768@85Hz
- Color temperature - 9300 °K
- Video signal level - 700mVpp
- Brightness setting - 50% (set to near cutoff)

### 2.2 Video Signals

#### 2.2.1 Video Input Signals

- Maximum pixel rate - 180 MHz.
- Sync input - TTL level, separate H/V sync only, "+" or "-" polarity, terminated with  $\geq 2.2k\Omega$  impedance.
- Horizontal frequency - 30 ~ 86 kHz.
- Horizontal sync width - 0.6 us minimum, 4 us maximum.
- Vertical frequency - 50 ~ 160 Hz.
- Vertical sync width - 2 lines minimum, 10 lines maximum.
- Analog RGB level - 0 ~ 700mV linear, positive polarity, terminated with  $75\Omega \pm 5\%$  impedance.
- Preset video modes - 8 preset modes. All visual performance has to fulfill the FOS performance specifications. The user can recall the factory setting in OSD menu.

- Preload video modes - 15 preload modes. Parameters preloaded in EEPROM, little size and centering deviations are allowed, but geometry distortions should be strictly managed for users easy adjustment. The user can recall the factory setting in OSD menu.
- User modes - 6 user modes. User can store adjustment result of 6 new modes, first in first out control when over 6 new modes are encountered.
- Detectable mode frequency separation -  $\pm 1\text{kHz}$  min. for H-sync,  $\pm 1\text{Hz}$  min. for V-sync.

### 2.2.2 Video Driver Signals

- Rise time -  $< 8.5\text{ns} / 30\text{Vpp}$  (real measurement, white to black)
- Fall time -  $< 8.5\text{ns} / 30\text{Vpp}$  (real measurement, black to white)
- Overshoot / undershoot -  $< 15\%$
- Black level shift -  $< 5\%$  (30 min ~ 3 hour)

### 2.3 DDC Signals

- Support VESA DDC/2B according to VESA DDC standard Ver.1.0 Rev. 3.
- DDC1 is not allowed.

The DDC components are connected to both monitor Vcc and DDC +5V (from PC via video cable), that the PC can read the DDC data also when the monitor is powered off. To prevent current feedback into PC, blocking diodes are required at monitor side.

- DDC serial Data - D-sub connector pin 12, I<sup>2</sup>C-BUS.
- DDC serial Clock - D-sub connector pin 15, I<sup>2</sup>C-BUS.

### 2.4 Plug And Play

Win Logo certification required.

- Win logo test logs to be provided by suppliers during DVT stage.

### 2.5 Preset & Preload Modes Timing Chart

#### 2.5.1 Preset video timings

Timing	1.	2.	3.
Resolution	<b>640 x 480</b>	<b>640 x 480</b>	<b>720 x 400</b>
Pixel clock	25.175 MHz	36.000 MHz	28.321 MHz
H. Frequency	<b>31.469 kHz</b>	<b>43.269 kHz</b>	<b>31.468 kHz</b>
H. Total	31.778 us	23.111 us	31.778 us
H. Active display	25.422 us	17.778 us	25.422 us
H. Back porch	1.907 us	2.222 us	1.907 us
H. Sync. Width	3.813 us	1.556 us	3.813 us
V. Frequency	<b>59.941 Hz</b>	<b>85.008 Hz</b>	<b>70.084 Hz</b>
V. Total display	16.683 ms	11.763 ms	14.268 ms
V. Active display	15.253 ms	11.093 ms	12.711 ms
V. Back porch	1.049 ms	0.578 ms	1.112 ms
V. Sync. Width	0.064 ms	0.069 ms	0.064 ms
H/V sync polarity	- / -	- / -	- / +

Timing	4.	5.	6.
Resolution	<b>800 x 600</b>	<b>800 x 600</b>	<b>1024 x 768</b>
Pixel clock	49.500 MHz	56.250 MHz	78.750 MHz
H. Frequency	<b>46.875 kHz</b>	<b>53.674 kHz</b>	<b>60.023 kHz</b>
H. Total	21.333 us	18.631 us	16.660 us
H. Active display	16.162 us	14.222 us	13.003 us
H. Back porch	3.232 us	2.702 us	2.235 us
H. Sync. Width	1.616 us	1.138 us	1.219 us
V. Frequency	<b>75.000 Hz</b>	<b>85.061 Hz</b>	<b>75.029 Hz</b>
V. Total display	13.333 ms	11.756 ms	13.328 ms
V. Active display	12.800 ms	11.179 ms	12.795 ms
V. Back porch	0.448 ms	0.503 ms	0.466 ms
V. Sync. Width	0.064 ms	0.056 ms	0.050 ms
H/V sync polarity	+ / +	+ / +	+ / +

Timing	7.	8.	
Resolution	<b>1024 x 768</b>	<b>1280 x 1024</b>	
Pixel clock	94.500 MHz	135.000 MHz	
H. Frequency	<b>68.677 kHz</b>	<b>79.976 kHz</b>	
H. Total	14.561 us	12.504 us	
H. Active display	10.836 us	9.487 us	
H. Back porch	2.201 us	1.837 us	
H. Sync. Width	1.016 us	1.067 us	
V. Frequency	<b>84.997 Hz</b>	<b>75.024 Hz</b>	
V. Total display	11.765 ms	13.329 ms	
V. Active display	11.183 ms	12.804 ms	
V. Back porch	0.524 ms	0.475 ms	
V. Sync. Width	0.044 ms	0.038 ms	
H/V sync polarity	+ / +	+ / +	

## 2.5.2 Preload video timings

Timing	1.	2.	3.
<b>Resolution</b>	<b>640 x 350</b>	<b>640 x 480</b>	<b>640 x 480</b>
<b>Pixel clock</b>	25.175 MHz	31.500 MHz	40.500 MHz
<b>H. Frequency</b>	<b>31.469 kHz</b>	<b>37.500 kHz</b>	<b>50.628 kHz</b>
<b>H. Total</b>	31.778 us	26.667 us	19.752 us
<b>H. Active display</b>	25.422 us	20.317 us	15.802 us
<b>H. Back porch</b>	1.907 us	3.810 us	1.975 us
<b>H. Sync. Width</b>	3.813 us	2.032 us	1.580 us
<b>V. Frequency</b>	<b>70.087 Hz</b>	<b>75.000 Hz</b>	<b>100.10 Hz</b>
<b>V. Total display</b>	14.268 ms	13.333 ms	9.995 ms
<b>V. Active display</b>	11.122 ms	12.800 ms	9.481 ms
<b>V. Back porch</b>	1.907 ms	0.427 ms	0.435 ms
<b>V. Sync. Width</b>	0.064 ms	0.080 ms	0.059 ms
<b>H/V sync polarity</b>	+ / -	- / -	- / -

Timing	4.	5.	6.
<b>Resolution</b>	<b>800 x 600</b>	<b>800 x 600</b>	<b>800 x 600</b>
<b>Pixel clock</b>	40.000 MHz	50.000 MHz	67.500 MHz
<b>H. Frequency</b>	<b>37.879 kHz</b>	<b>48.077 kHz</b>	<b>63.923 kHz</b>
<b>H. Total</b>	26.400 us	20.800 us	15.644 us
<b>H. Active display</b>	20.000 us	16.000 us	11.852 us
<b>H. Back porch</b>	2.200 us	1.280 us	2.370 us
<b>H. Sync. Width</b>	3.200 us	2.400 us	0.948 us
<b>V. Frequency</b>	<b>60.317 Hz</b>	<b>72.188 Hz</b>	<b>100.00 Hz</b>
<b>V. Total display</b>	16.579 ms	13.853ms	9.997ms
<b>V. Active display</b>	15.840 ms	12.480 ms	9.387 ms
<b>V. Back porch</b>	0.607 ms	0.478 ms	0.548 ms
<b>V. Sync. Width</b>	0.106 ms	0.125 ms	0.047 ms
<b>H/V sync polarity</b>	+ / +	+ / +	+ / +

Timing	7.	8.	9.
<b>Resolution</b>	<b>832 x 624</b>	<b>1024 x 768</b>	<b>1024 x 768</b>
<b>Pixel clock</b>	57.280 MHz	65.000 MHz	75.000 MHz
<b>H. Frequency</b>	<b>49.722 kHz</b>	<b>48.363 kHz</b>	<b>56.476 kHz</b>
<b>H. Total</b>	20.110 us	20.677 us	17.707 us
<b>H. Active display</b>	14.520 us	15.754 us	13.653 us
<b>H. Back porch</b>	3.910 us	2.462 us	1.920 us
<b>H. Sync. Width</b>	1.117 us	2.092 us	1.813 us
<b>V. Frequency</b>	<b>74.546 Hz</b>	<b>60.004 Hz</b>	<b>70.069 Hz</b>
<b>V. Total display</b>	13.410 ms	16.666 ms	14.272 ms
<b>V. Active display</b>	12.550 ms	15.880 ms	13.599 ms
<b>V. Back porch</b>	0.784 ms	0.600 ms	0.513 ms
<b>V. Sync. Width</b>	0.060 ms	0.124 ms	0.106 ms
<b>H/V sync polarity</b>	+ / +	- / -	- / -

Timing	10.	11.	12.
<b>Resolution</b>	<b>1152 x 864</b>	<b>1280 x 960</b>	<b>1280 x 960</b>
<b>Pixel clock</b>	108.000 MHz	108.000 MHz	148.500 MHz
<b>H. Frequency</b>	<b>67.500 kHz</b>	<b>60.000 kHz</b>	<b>85.938 kHz</b>
<b>H. Total</b>	14.815 us	16.667 us	11.636 us
<b>H. Active display</b>	10.667 us	11.852 us	8.620 us
<b>H. Back porch</b>	2.370 us	2.889 us	1.508 us
<b>H. Sync. Width</b>	1.185 us	1.037 us	1.077 us
<b>V. Frequency</b>	<b>74.979 Hz</b>	<b>60.000 Hz</b>	<b>85.000 Hz</b>
<b>V. Total display</b>	13.333 ms	16.667 ms	11.764 ms
<b>V. Active display</b>	12.678 ms	16.000 ms	11.171 ms
<b>V. Back porch</b>	0.568 ms	0.600 ms	0.547 ms
<b>V. Sync. Width</b>	0.044 ms	0.050 ms	0.035 ms
<b>H/V sync polarity</b>	- / -	+ / +	+ / +

Timing	13.	14.	15.
<b>Resolution</b>	<b>1280 x 1024</b>	<b>1600 x 1200</b>	<b>1600 x 1200</b>
<b>Pixel clock</b>	108.000 MHz	162.000 MHz	175.500 MHz
<b>H. Frequency</b>	<b>63.981 kHz</b>	<b>75.000 kHz</b>	<b>81.250 kHz</b>
<b>H. Total</b>	15.630 us	13.333 us	12.308 us
<b>H. Active display</b>	11.852 us	9.877 us	9.117 us
<b>H. Back porch</b>	2.296 us	1.877 us	1.732 us
<b>H. Sync. Width</b>	1.037 us	1.185 us	1.094 us
<b>V. Frequency</b>	<b>60.020 Hz</b>	<b>60.000 Hz</b>	<b>65.000 Hz</b>
<b>V. Total display</b>	16.661 ms	16.667 ms	15.385 ms
<b>V. Active display</b>	16.005 ms	16.000 ms	14.769 ms
<b>V. Back porch</b>	0.594 ms	0.613 ms	0.566 ms
<b>V. Sync. Width</b>	0.047 ms	0.040 ms	0.037 ms
<b>H/V sync polarity</b>	+ / +	+ / +	+ / +

## 2.6 Power Supply

### 2.6.1 Features

- AC line voltage range - 90Vac ~ 264Vac.
- AC line frequency range - 50/60 Hz  $\pm$  3 Hz.
- Input voltage transient - 300Vac for 10 seconds (China), 280Vac for 10 seconds (RoW).
- Inrush current - < 50 A at 240Vac cold start.
- Earth leakage current - < 1.0mA at 240Vac.
- Power factor correction - According to EN61000-3-2

### 2.6.2 Power consumption

It is equipped with two-stage power saving management. A delay of 5 seconds before entering the power saving state is required to avoid misunderstanding of display resolution and timing mode changes.

- Power on - < 75w. (Test requirements refer to EN61000-3-2)
- Active off - < 2w at 120Vac / 240Vac.
- Switch off - < 2w at 120Vac / 240Vac.

**2.6.3 Power saving conditions**

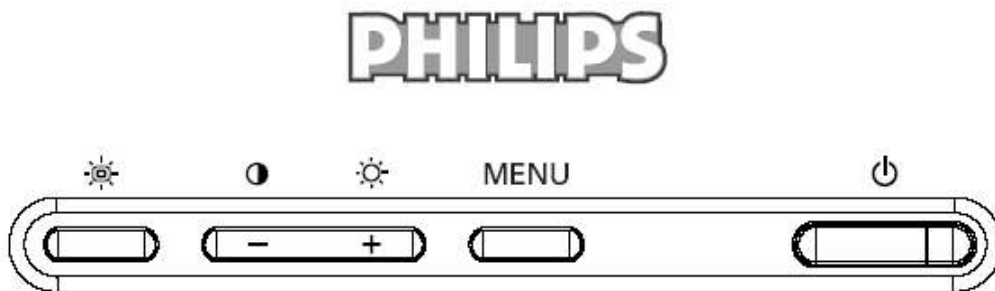
The monitor enters DPM off mode when no H&V sync or one of H-sync / V-sync input is absent. No message appears before entering DPM mode.

**2.6.4 Power recovery from power saving**

Both H-sync and V-sync are detected.

**2.7 User Controls / Indicators / Connectors**

**2.7.1 Front controls**



- OSD menu is accessed by the keypad.

Key (R to L)	Function
Power	Tact DC switch
Menu	OSD Menu
" + "	Brightness/Adjust increase/Menu selection
" - "	Contrast/Adjust decrease/Menu selection
High Brightness	HB 4 levels hot key selection

- Access main menu by pressing "MENU" key.
- Select function via "+/-" & "MENU" keys, increase/decrease via "+/-" keys.
- Brightness control - Direct access only by hotkey.
- Contrast control - Direct access only by hotkey.

- High Brightness - By hotkey only, 4 levels.
  1. Text
  2. Internet
  3. Game
  4. Multimedia

2.7.2 OSD menu

- Languages (per region) - **9 languages** (English, French, German, Italian, Spanish, Portuguese, Korean, Turkish, Russian).
- OSD tree - As shown below.

OSD tree / English			
1 <sup>st</sup> level	2 <sup>nd</sup> level	3 <sup>rd</sup> level	
LANGUAGE (per region)	8 LANGUAGES		
	9 LANGUAGES		
ZOOM			
ADJUST HORIZONTAL	POSITION		
	SIZE		
ADJUST VERTICAL	POSITION		
	SIZE		
ADJUST SHAPE	ADJUST SIDE CURVE		PINCUSHION
			BALANCED
	ADJUST SIDE ANGLES		TRAPEZOID
	ROTATE IMAGE	PARALLELOGRAM	
ADJUST COLOR		ROTATE	
	9300K FOR GENERAL USE		
	6500K FOR IMAGE MANAGEMENT		
	5500K FOR PHOTO RETOUCH		
	sRGB		
	USER PRESET		
	RED		
	GREEN		
BLUE			
RESET TO FACTORY SETTING	NO		
	YES		
EXTRA CONTROLS	ADJUST MOIRE	HORIZONTAL	
		VERTICAL	
DEGAUSS			
CLOSE MAIN CONTROLS			

- OSD lock - Lock all OSD by holding down "MENU" key for 15 seconds.

2.7.3 LED indicator

- Normal on - Green.
- Active off - Green Blinking (1sec on / 1sec off).
- Switch off - Blank.

### 2.7.4 Monitor status information

- Self-test feature - "CHECK SIGNAL CABLE" message appears when video cable is disconnected.
- Out of scan range - "FREQUENCY IS OUT OF RANGE" appears when input H-sync or V-sync out of range.
- Resolution & H/V input - Shown in OSD menu "EXTRA CONTROLS".

### 2.7.5 Power connector

- AC socket 3-pin IEC-320-C13, at rear side.

### 2.7.6 Video input connector/Video cable

- 1.5m non-detachable fly-in video cable with D-Sub 15 pin male blue connector, pin assignment of D-Sub:

Pin	Function
1	Red video
2	Green video
3	Blue video
4	GND
5	Self test
6	Red GND
7	Green GND
8	Blue GND
9	+5V (Supply from PC for DDC circuit)
10	Sync GND
11	GND
12	DDC serial data
13	H-sync
14	V-sync
15	DDC serial clock

- H-sync line impedance must be within 50 ~ 70Ω (TDR measurement).
- V-sync line impedance should be within 40 ~ 70Ω (TDR measurement).
- RGB signal lines must be 75Ω ± 5% coaxial.
- R, G, B coaxial shield must connect to D-Sub metal shell.

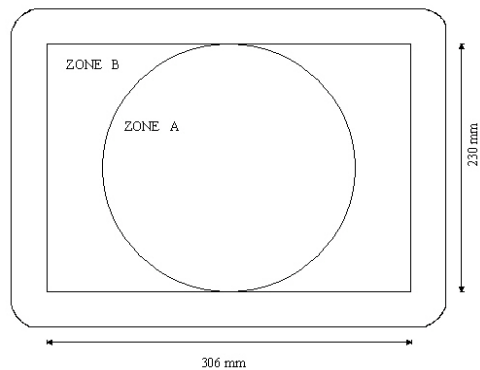
## 3. Front Of Screen Performance

### 3.1 CRT characteristics

Vendor	LPD	CPT
<b>CRT Type Number</b>		
<b>Screen &amp; Mask</b>	Flat screen & Shadow mask	Flat screen & Shadow mask
<b>Screen Diagonal Size</b>	444mm	444mm
<b>Phosphor Area</b>	325mm x 244mm	325mm x 244mm
<b>VIS (front bezel opening)</b>		
<b>Neck size</b>	29.1mm	29.1mm
<b>Deflection Angle</b>	90°	90°
<b>Yoke impedance</b>	LH: xxx uH LV: xxx mH RH: xxx Ω RV: xxx Ω	LH: xxx uH LV: xxx mH RH: xxx Ω RV: xxx Ω
<b>Phosphor Dot Pitch</b>	0.25mm	0.25mm
<b>Phosphor Type</b>	P22, medium short persistence	P22, medium short persistence
<b>Light Transmission rate</b>		
<b>Surface Treatment</b>	Anti glare/Anti static	Anti glare/Anti static
<b>Surface Resistance</b>		
<b>CRT net Weight</b>		

### 3.2 Display image / Geometric distortions

- Nominal display size - 306mm x 230mm ± 4mm for all preset modes.  
306mm x 230mm ± 12mm for preload modes.
- Size control range - Nominal total size: -15mm to full scan.
- Raster centering - < 4mm for prime mode.
- Image centering - < 5mm for all preset modes.  
< 12mm for preload modes.
- Position control range - H: ± 10mm minimum, V: ± 8mm minimum.
- Line straightness - Border overall distortion < 2.0mm for all preset modes, the waviness of any vertical or horizontal should be less than 1.0mm over a 50mm distance.
- Image tilt - < 1.0mm (each side).
- Dynamic EHT size regulation - < 1.0mm (each side).
- Static EHT size regulation - < 1.5mm (each side).
- Image size stability - < 1.0% (110Vac ~ 240Vac) as a function of supply voltage.  
< 1.0% (5 ~ 40°C) as a function of temperature.
- Linearity [(max-min)/mean] - Pattern: 12 x 9 blocks.  
Prime modes: 1024x768@85, 1280x1024@75.  
  
Overall H&V < 10% (prime modes).  
Adjacent H&V < 6% (prime modes).  
Overall H&V < 14% (other modes).  
Adjacent H&V < 7% (other modes).
- Convergence - Zone A < 0.25mm, Zone B < 0.35mm.  
Zone B < 0.4mm (for modes < 50kHz).



Mis-convergence measurement area

- Jitter - 0.1mm. (No annoying level by visual)

&lt;

### 3.3 Optical performance

- Focus - "me" pattern characters must be clearly identified at prime mode, brightness 50%, set contrast for 25FI at full white.
- Full white luminance -  $29 \pm 4$  fl (brightness: 50%, contrast: maximum).
- 5x5cm block luminance -  $40 \pm 5$  fl (brightness: 50%, contrast: maximum).
- Raster light output (w/o video signal, brightness at 50%, contrast at 0%) -  $< 0.3$  fl (raster has to disappear when brightness set to 0%).
- Raster light output (w/o video signal, brightness at 100%, contrast at 0%) -  $> 0.3$  fl.
- High Brightness (5x5cm white block, brightness at 50%, contrast at maximum)- (check at 9300K only)  
Text:  $40 \pm 5$  fl  
Internet:  $60 \pm 8$  fl  
Game:  $80 \pm 8$  fl  
Multimedia:  $100 \pm 10$  fl
- Brightness uniformity -  $> 75\%$  (9 block measurements for center to corner).
- Preset 9300K colour -  
 $x = 0.283 \pm 0.015$   
 $y = 0.297 \pm 0.015$
- Preset 6500K colour -  
 $x = 0.313 \pm 0.015$   
 $y = 0.329 \pm 0.015$
- Preset 5500K colour -  
 $x = 0.332 \pm 0.015$   
 $y = 0.347 \pm 0.015$
- Preset sRGB colour -  
 $x = 0.313 \pm 0.015$ , (brightness set at  $23 \pm 3$  fl)  
 $y = 0.329 \pm 0.015$ .
- White colour uniformity -  $< 0.015$  (contrast at maximum for center to corner).
- Colour tracking -  $< 0.020$  (set contrast from 10fl to maximum).

- Moire - The clouding effect must not rise to disturbing levels in anywhere of the screen with luminance setting from 15 to contrast 100%.
- Video blanking - During mode change or unstable input signal, the video will be blanking for 1s to 2s, no switching behaviour is visible.
- Local doming - Not allowed.
- Proximity - No on-screen interference can be seen, when two monitors are placed side by side (distance: 30cm) and operate in different modes.

#### 4. Accessories

##### 4.1 Cables

- Power cord (option) - Length: 1.5 M +/- 50 mm

##### 4.2 User's manual

- 8 languages Quick Setup Guide.

##### 4.3 CD-ROM

- User's manual, driver,.....

#### 5. Mechanical

##### 5.1 Cosmetic

Philips ID

##### 5.2 Mechanical data files

ProE files required

##### 5.3 Location of logo

Per Philips make-up sheet

##### 5.4 Location of icons

Per Philips make-up sheet

### 5.5 Color for resin/paint

Per Philips make-up sheet

### 5.6 Resins

- RoHS requirements.
- WEEE requirements.

### 5.7 If paint is used

- RoHS requirements.
- WEEE requirements.

### 5.8 Plastic mold tooling

- Tooling to be designed to minimize cosmetic defects induced by molding process (sink, blush, weld lines, gate marks, ejector marks, etc.).
- Painting to cover up cosmetic defects due to molding is strongly discouraged.

### 5.9 Plastics flammability

- All Plastics except Base / Pedestal to be Flame Retardant UL 94-V0 or Better (if monitor weighs less than 18kg; UL94-V0 is OK).
- Base / Pedestal to be Flame Retardant UL 94-HB.
- All major plastic parts (bezel, back cover) need to be molded from same resin. Base / Pedestal otherwise specified.

### 5.10 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 UAN-D249.
- $\leq 20$  gloss units

### 5.11 Tilt/Swivel Base ranges

- Tilt Range - Up =  $14^\circ \pm 1^\circ$ , Down =  $3.5^\circ \pm 1^\circ$
- Swivel Range -  $\pm 90^\circ$
- Base should not break plastic when attempting to rotate it past the stops.

### 5.12 Movement of unit with base

- Base must have non-marring, non-staining feet.
- Unit must tilt up and down with no “Stick / Slip”.
- Base must provide sufficient friction to hold unit in desired position after adjusting tilt.

### 5.13 Label

- Regulatory label / Carton label should follow Philips requirement.
- Detail documents refer to Philips Engineering Reference Book.

### 5.14 Product Dimensions / Weight

- Unit dimension (with stand) - 397mm (W) x 428mm (H) x 423.5mm (D)
- Packed unit dimension (carton) - 460mm (W) x 450mm (H) x 526mm (D) for China, India  
446mm (W) x 420mm (H) x 475mm (D) for other regions
- Net weight - 13.5 kg
- Gross weight - 15.8 kg (for China, India)  
15.4 kg (for other regions)

### 5.15 Transportation

Transportation standards refer to UAN-D1534/00 and TYE-M0002

#### 5.15.1 Transportation packages

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 TYE-M0002. The cushion material shall be constructed using EPS material.

Carton paper (Double wall AB flute corrugate board, colour brown)

Bursting -	19.3 kgf/cm <sup>2</sup> min
Compression -	670 kgf min

#### 5.15.2 Transportation test procedures

The overall test sequence is: vibration test, drop test and when applicable cold drop test. The sequential tests have to be carried out using the same packaging.

Vibration, drop test should be performed at ambient temperature (20°C to 23°C) and relative humidity (40% to 65%).

--- DBC test required and refer to TYE-M0002.

- Transportation test specification for all regions except China/India, refer to UAN-D1534/01

Sequential tests:

1. Vibration test
2. Drop test
3. Single package resonance test (optional)
4. Compression test
5. Stacking test (optional)

- Transportation test specification for China/India, refer to UAN-D1534/02

Sequential tests:

1. Vibration test
2. Bump test
3. Drop test
4. Multiple drop tests (after vibration)
5. Cold drop test when applicable (after vibration)
6. Compression test
7. Stacking test (optional)

**5.16 Pallet / Container loading**

- Air shipment - tbc
- Sea container 20'(pallet/slip sheet) - 300 sets with pallet  
310 sets without pallet
- Sea container 40'(pallet/slip sheet) - 630 sets with pallet  
635 sets without pallet
- Sea container 40' High Cube (pallet/slip sheet) - 756 sets with slip sheet
- Truck shipment for China - 400 sets

**Table 5.16.1. Air shipment container loading**

TBC

**Table 5.16.2. Sea shipment container loading for China & India**

Quantity	Container size											
	40'			20'			40' High Cube			PWHC 45'		
	W/ Pallet		W/ SLIP SHEET	W/ Pallet		W/ SLIP SHEET	W/ Pallet		W/ SLIP SHEET	W/ Pallet		W/ SLIP SHEET
	Yes	No		Yes	No		Yes	No		Yes	No	
Layers	4			4			5					
Sets/Layer (PA)	4			4			4					
Sets/Layer (PB)	2			NA			2					

Sets/Block (PA)	16			16			20					
Sets/Block (PB)	8			NA			10					
Blocks/Container (PA)	24			12			24					
Blocks/Container (PB)	2			NA			2					
Total sets	400			192			500					

**Table 5.16.3. Sea shipment container loading for other regions**

Quantity	Container size											
	40'			20'			40' High Cube			PWHC 45'		
	W/ Pallet		W/ SLIP SHEET	W/ Pallet		W/ SLIP SHEET	W/ Pallet		W/ SLIP SHEET	W/ Pallet		W/ SLIP SHEET
	Yes	No		Yes	No		Yes	No		Yes	No	
Layers	5		5	5		5	5		6			
Sets/Layer (PA)	6		6	6		6	6		6			
Sets/Layer (PB)	NA		NA	NA		NA	NA					
Sets/Block (PA)	30		30	30		30	30		36			
Sets/Block (PB)	NA		NA	NA		NA	NA					
Blocks/Container (PA)	21		21	10		10	21		21			
Blocks/Container (PB)	NA		NA	NA		NA	NA					
Total sets	630		630	300		300	630		756			

**Table 5.16.4. Truck loading for China**

TBC

**6.0 Reliability / Environment / Transportation**

**6.1 MTBF Prediction** > 100k hours (excluding CRT)

**6.2 Demonstration MTBF** > 75k hours (excluding CRT)

**6.3 Temperature**

- Operating (guaranteed performance according to spec requirements): 0 to 40 degree
- Storage - -20 to 60 °C
- Shipping - -40 to 65 °C

**6.4 Humidity**

- Operating (non-condensing) - 5 to 90%
- Storage (non-condensing) - 5 to 95%

- Shipping (non-condensing) - 5 to 95%

6.5 Altitude

- Operating - 0 to 10,000 ft
- Storage - 0 to 35,000 ft
- Shipping - 0 to 35,000 ft

6.6 Air pressure

- Operating - 700 to 1100 mbar
- Storage - 300 to 1100 mbar
- Shipping - 300 to 1100 mbar

6.7 Earth magnetic field

<b>North Hemispheric</b>	H=0, V=450, Z=0mG
<b>South Hemispheric</b>	H=0, V= -500, Z=0mG
<b>Equatorial</b>	H=0, V=0, Z=0mG

7. REGULATORY COMPLIANCE

7.1 Worldwide regulatory -

International Regulatory Specification			
Country	Domain	Safety / Emc / Ergonomics / Standards	Documents
INTERNATIONAL	Sa	IEC60950-1: 2001. Group -and national differences of all countries listed in CB Bulletin No. 107A	CB Report and CB certificate
EUROPE	Sa	European Low Voltage Directives 73/23/EEC and 93/68/EEC	Declaration of Conformity
	E	European Electromagnetic Compatibility Directive 89/336/EEC amended by the directive 93/68/EEC. EN 55022:1998 Class B	Declaration of Conformity and Full EMC/CE test report
		EN 55024: 1998	
		EN 61000-3-2: 2000	
		IEC 61000-3-3: 1994/EN61000-3-3: 1995	
	CISPR 22:1997 Class B International EMC standard		
GERMANY	Sa	EN60950-1: 2001	TUV certificate

	O	ISO 9241-3-7-8 (CRT) & 13406-2 (LCD), prEN 50279:1998	TUV-ERG certificate
	O	GS-Mark / EK1-ITB 2000	TUV-GS certificate
	X	Decree ROV 08.01.87 (CRT)	PTB
SWEDEN	Sa	EN60950-1: 2001	SEMKO certificate
	O	TCO 99 (TCO03) (to TCO models)	TCO99 (TCO03) report + certificate
	O	MPR 1990: 8 / MPR 1990:10 (to MPR models)	Meet requirement
RUSSIA	Sa	GOST R 50377-1992	GOST certificate
SOUTH AFRICA	Sa	SABS IEC 60950 and IEC 60950-1	Certificate of Conformity
	E	EN55022 or Cisper 22	Certificate of Conformity
USA	Sa	UL 60950-1: 2003	UL certificate
	E	FCC Part 15 Class B	FCC ID grant or DOC
	O	Energy Star	EPA registration
	X	21CFR 1002.10 to 13 (CRT)	DHHS report
CANADA	Sa	CSA C22.2 No 60950	CSA certificate
	E	ICES-003 issue 3	Statement on label
	E	RED (CRT)	DNHW
MEXICO	Sa	NOM-019-SCFI-1994	NOM certificate
KOREA	Sa	Korean Safety Control law IEC 60950	eK certificate
	E	Regulations laws: EMI 1996-78, 80. EMS 1996-79,81	MIC certificate
SINGAPORE	Sa	IEC60950	PSB certificate
CHINA	Sa	GB4943-2001	CCC certificate
	E	GB9254-1998; 17625.1-2003	
	O	CSC/G1205-2004	CECP certificate
TAIWAN	Sa	CNS-14336 (IEC 60950-1)	BSMI certificate
	E	CNS-13438 (CISPR22) Class B	
	O	Criteria 18 (Monitor) (LCD)	Green Mark / certificate
AUSTRALIA/ NEW-ZEALAND	E	AS/NZS3548: 1995	Declaration of Conformity
ISRAEL	S	IS 1121, IEC60950/IEC60950-1	Certificate of Conformity
	E	EN or Cisper 22	Certificate of Conformity
Saudi Arabia	S	IEC standard	SASO
	E	IEC standard	SASO
Japan	Sa	EN60950-1:001 (AC adapter only)	PSE
	E	VCCI class B (CISPR 22)	VCCI Certificate
Argentina	Sa	EN60950-1: 2001	IRAM
<b>Sa = Safety</b>			

<b>E = Electromagnetic Compatibility</b>
<b>O = Other which including recycling, energy saving, ergonomics</b>
<b>X = X-ray</b>
<b>For detailed regulatory items please refer to the international regulatory specification provided by Philips.</b>

### 7.2 EMC requirements

Supplier DVT EMI test result must be submitted prior to DVT samples delivery, and PVT EMI test result must be submitted again prior to PVT samples delivery. Which also has to meet Philips' immunity testing specification.

### 7.3 MPR II / TCO

<b>CTV</b>	<b>Front Bezel Color</b>	<b>Back Cover Color</b>	<b>MPRII</b>	<b>TCO-99</b>	<b>TCO-03</b>
<b>107B70</b>	Grey	Grey	X	X	Y
<b>107B75</b>	Black	Black	X	X	Y

### 7.4 RoHS

Restriction on the use of certain hazardous substances.  
Lead, Cadmium, Mercury, Hexavalent Chromium, Polybrominated Biphenyl (PBB) and Polybrominated Biphenyl Ether (PBDE) (flame retardant).

### 7.5 WEEE

Producer's responsibility for retailer takes back schemes and recycling.  
--System implemented.  
--Collection and recycle targets.

### 7.6 Ongoing regulatory

There's a possibility that other regulatory certificates will be required during the life of the product. It is the responsibility of the supplier to provide related documentation.