Service
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MODEL : 170B4_BB/BG/BS/FB/FG/MG
170S4_F/H/FB/FG

Service Manual

Horizontal Frequency
30.0 - 82.0 KHz

TABLE OF CONTENTS

SAFETY NOTICE

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

CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING.

REFER TO BACK COVER FOR IMPORTANT SAFETY GUIDELINES

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Important Safety Notice

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Proper service and repair is important to the safe, reliable operation of all PHILIPS Consumer Electronics 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 Consumer Electronics Company will be referred to as PHILIPS.

WARNING

Critical components having special safety characteristics are identified with a ⚠ by the Ref. No. in the parts list and enclosed within a broken line*
(where several critical components are grouped in one area) along with the safety symbol ⚠ on the schematics or exploded views.

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.

* *Broken Line*

FOR PRODUCTS CONTAINING LASER :

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

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

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

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

Take care during handling the LCD module with backlight unit

- Must mount the module using mounting holes arranged in four corners.
- Do not press on the panel, edge of the frame strongly or electric shock as this will result in damage to the screen.
- Do not scratch or press on the panel with any sharp objects, such as pencil or pen as this may result in damage to the panel.
- Protect the module from the ESD as it may damage the electronic circuit (C-MOS).
- Make certain that treatment person□s body are grounded through wrist band.
- Do not leave the module in high temperature and in areas of high humidity for a long time.
- Avoid contact with water as it may a short circuit within the module.
- If the surface of panel become dirty, please wipe it off with a soft material. (Cleaning with a dirty or rough cloth may damage the panel.)

Technical Specification*

LCD panel Type NR. : M170ES05 (AU)
Outside dimensions : 358.5(w)296.5(h)19.0(d) (Typ)mm
Pitch (mm) : 0.264 (per one triad) x 0.264mm
Color pixel arrangement : RGB vertical stripes
Display surface : Hard coating, antiglare treatment of the front polarizer
Number of color : 262K colors (RGB 6 bits data)
Backlight : CCFL edge light system
Active area (WxH) : 337.92x270.336mm (17□W diagonal)
View angle : Horizontal 140 degree ,Vertical 140 degree (CR>=10)
Contrast ratio : 450:1 (Typ)
White luminance : 260 nits (Center 1 point Typ)
Scanning frequencies
Horizontal : 30 - 82 KHz
Vertical : 56 - 76 Hz
Video dot rate : 135 MHz
Power input : 90-264 V AC, 50/60 2 Hz
Power consumption : <40W maximum

Functions :
(1) D-shell analog R/G/B separate inputs, H/V sync separated, Composite (H+V) TTL level, SOG sync
(2) DVI digital Panel Link TMDS input (170B4 only)
Ambient temperature : 5 degree C - 35 degree C
Interface signals
The input signals can be applied in three different modes :
1). D-shell Analog

Input signal : Video, Hsync., Vsync

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

Sync :Separate syncTTL level , input impedance 2K2 ohm terminate

Hor. sync Positive/Negative

Ver. sync Positive/Negative

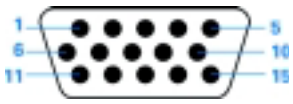
Composite sync TTL level, input impedance 2K2 ohm terminate

(Positive/Negative)

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

D-sub male with DDC2B pin assignments.blue connector thumb-operated jack screws

Pin assignment :



PIN No.	SIGNAL
1	Red
2	Green/SOG
3	Blue
4	Sense (GND)
5	Not connected
6	Red GND
7	Green GND
8	Blue GND
9	+5V
10	Sync GND
11	Sense (GND)
12	Bi-directional data
13	H/H+V sync
14	V-sync
15	Data clock

2). Intel DVI Digital

Input signal : Single channel TMDS signal

The input signals are applied to the display through DVI-D cable.

Length : 1.8 M +/- 50 mm (fixed)

Connector type : DVI-D male with DDC2B pin assignments

White connector thumb-operated jack screws

Pin No.	Description
1	TMDS data2-
2	TMDS data2+
3	TMDS data2 shield
4	NC
5	NC
6	DDC clock
7	DDC data
8	Not Connected
9	TMDS data1-
10	TMDS data1+
11	TMDS data1 shield
12	NC
13	NC
14	+5V
15	Ground(return for +5V and H/Vsync)
16	Hot plug detect
17	TMDS data0-
18	TMDS data0+
19	TMDS data0 shield
20	NC
21	NC
22	TMDS clock shield
23	TMDS clock+
24	TMDS clock-

Unit dimension / Weight

Set dimension : 375/393/180 & 375/393/180 (170B&S4) mm

N-weight/G-weight : 5.0 / 6.1 Kg

Susceptibility of display to external environment

Operating

- Temperature : 5 to 35 degree C
- Humidity : 80% max
- Altitude : 0-3658m
- Air pressure : 600-1100 mBAR

Storage

- Temperature : -20 to 60 degree C
- Humidity : 85% max (< 40□J)
- Altitude : 0-12192m
- Air pressure : 300-1100 mBAR

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

Technical Data (Continued)

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Data Storage

Factory preset modes:

This monitor has 34 Factory-preset modes as indicated lin the following table :

#	Resolution	H-Frequency	Pixel rate	V-Frequency	Comment
1	640X350	31.5K	25.175	70Hz	IBM VGA 10h
2	720X400	31.5K	28.322	70Hz	IBM VGA 3h
3	640X480	31.5K	25.175	60Hz	
4	640X480	35.0K	30.24	67Hz	
5	640X480	37.9K	31.5	72Hz	
6	640X480	37.5K	31.501	75Hz	
7	640X480	43.3K	36	85Hz	
8	800X600	35.2K	36	56Hz	
9	800X600	37.9K	40	60Hz	
10	800X600	48.1K	50	72Hz	
11	800X600	46.9K	49.498	75Hz	
12	800X600	53.7K	56.251	85Hz	
13	832X624	49.7K/	57.28	75Hz	MAC
14	1024X768	48.4K	65	60Hz	
15	1024X768	56.5K	75	70Hz	
16	1024X768	60.0K	78.75	75Hz	
17	1024X768	61.1K	83.096	76Hz	IBM XGA-2
18	1024X768	68.7K	94.5	85Hz	
19	1152X864	54.0K	79.9	60Hz	Non-VESA
20	1152X864	63.9K	94.5	70Hz	Non-VESA
21	1152X864	67.5K	108	75Hz	
22	1152X870	68.7K	100	75Hz	MAC
23	1152X900	61.8K	92.94	66Hz	SUN Mode IV
24	1152X900	71.8K	108	76Hz	SUN Mode II
25	1280X960	60.0K	108	60Hz	
26	1280X960	75.0K	129.895	75Hz	Non-VESA
27	1280X1024	64.0K	108	60Hz	
28	1280X1024	71.7K	117	67Hz	SUN Mode V
29	1280X1024	76.0K	130.223	72Hz	DOS/V
30	1280X1024	80.0K	135	75Hz	
31	1280X1024	81.1K	135.008	76Hz	SUN Mode I
32	688X556	31.3K	27	50Hz	TV-PAL
33	960X720	44.76K	57.58	60Hz	
34	960X720	56.4K	72.42	75Hz	

Power management

The power consumption and the status indication of the set with power management function are as follows,

Note : Disconnect DVI signal cable and audio module

VESA Mode	Video	H-sync	V-sync	Power Used	LED color
ON	Active	Yes	Yes	< 40 W	Blue
OFF	Blanked	No	No	< 1W	Amber

This monitor is ENERGY STAR compliant. As an ENERGY STAR Partner, PHILIPS has determined that this product meets the ENERGY STAR guidelines for energy Efficiency

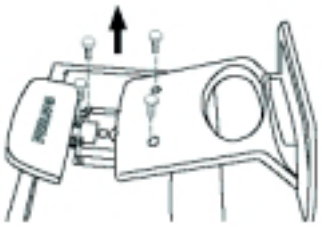
ENERGY STAR is a U.S. registered mark. AS AN ENERGY STAR PARTNER, DELL Computer Corporation HAS DETERMINED THAT THIS PRODUCT MEETS THE ENERGY STAR GUIDELINES FOR ENERGY EFFICIENCY.

Installation

Connecting to Your PC

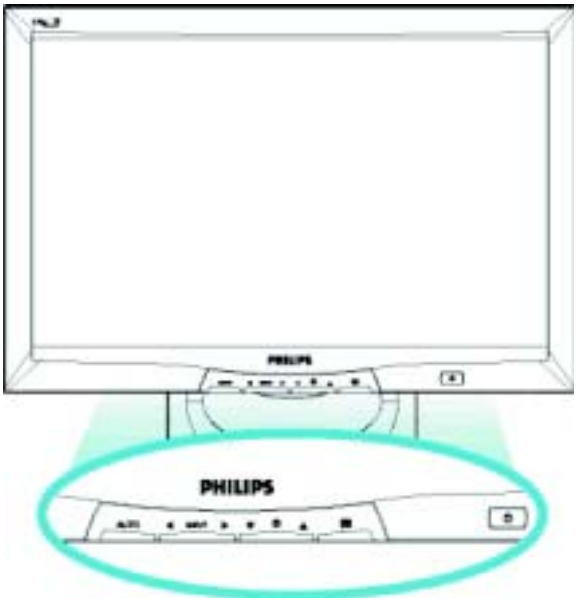
1) Thread power cord through the hole at the bottom of the base, and plug onto monitor firmly.
2) Double check all cables' connection closely. Make sure they are all connected well.
   Note: If you use an Apple Macintosh™, you need to connect the special Mac adapter to one end of the monitor signal cable.
3) Connect to PC
   (A) Turn off your computer and unplug its power cable.
   (B) Connect the monitor signal cable to the video connector on the back of your computer.
   (C) Plug the power cord of your computer and your monitor into a nearby outlet.
   (D) Turn on your computer and monitor. If the monitor Displays an image, installation is complete.

Remove the Base



1) (a) Tilt monitor on certain angle.
   (b) Pull cables out of the hole at the bottom of base.
2) (a) Put monitor face down on the safe surface.
   (b) Take off the cap of base
3) Unscrew the four screws of the base

Front View Product Description



UP and DOWN buttons are used when adjusting the OSD of your monitor

LEFT and RIGHT buttons, like the UP and DOWN buttons, are also used in adjusting the OSD of your monitor.

BRIGHTNESS hotkey. When the UP and DOWN arrow buttons are pressed, the adjustment controls for the BRIGHTNESS will show up.

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

POWER button switches your monitor on

Automatically adjust the horizontal position, vertical position, phase and clock setting.

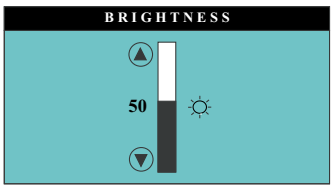
Signal inputs selective hotkeys. Allows user to switch between two video connectors (D-Sub & DVI-D), e.g. D-Sub <-> DVI-D digital inputs.

Performing auto-adjustment of the monitor

Press the AUTO button.
The picture quality (*PHASE*, *CLOCK*) and picture position will be optimally adjusted for your system.
Press the MENU button to save the settings.

Adjusting the brightness

The brightness of the monitor is adjusted directly with the arrow buttons.
Press the button ▲ or ▼.
The window *BRIGHTNESS* with a setting scale is visualised.



Press the ▲ or ▼ button to adjust the brightness.

The setting window disappears after approximately 60 seconds if no further setting is made.

All changes are stored automatically.

Installation (Continued)

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Accessory Pack

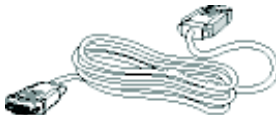
Unpack all the parts.

1) Power Cord (socket may differ for different countries)

12NC : 3138 149 77331

2) Macintosh Adapter (optional)

None



3) Interface Cable

12Nc : 3138 188 72742

4) E-DFU package with Quick Setup Guide, Using Your Monitor Manual, and CD-ROM.

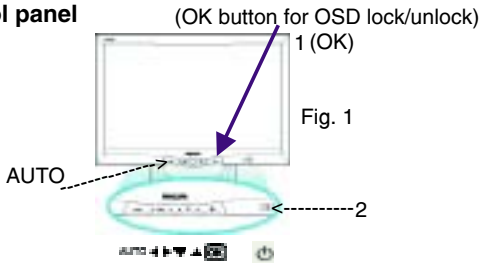
12NC : 3138 117 04881

5) Pivot CD-ROM

12NC : 3138 117 03872

OSD

Front control panel



1 = Buttons for the OSD menu (On-Screen-Display)
2 = Power button

Basic and simple instruction on the control keys.

When you press the button on the front control of your monitor, the On-Screen Display (OSD) Main Controls window will pop up and you can then start making adjustments to your monitor's various features. Use the keys to make your adjustments

State Tree

The overall behavior of monitor is depicted in the subjoined figure identifying the states in which the product may operate, as can be observed by the user.

The meaning of these states is as below:

Off : monitor set not powered.
On : monitor set powered.
Power saving : monitor set in power saving.
Active : monitor set powered and not in power saving.
Normal : normal video displaying.
OSD : interaction with On Screen Display menu.
Factory : factory programming.

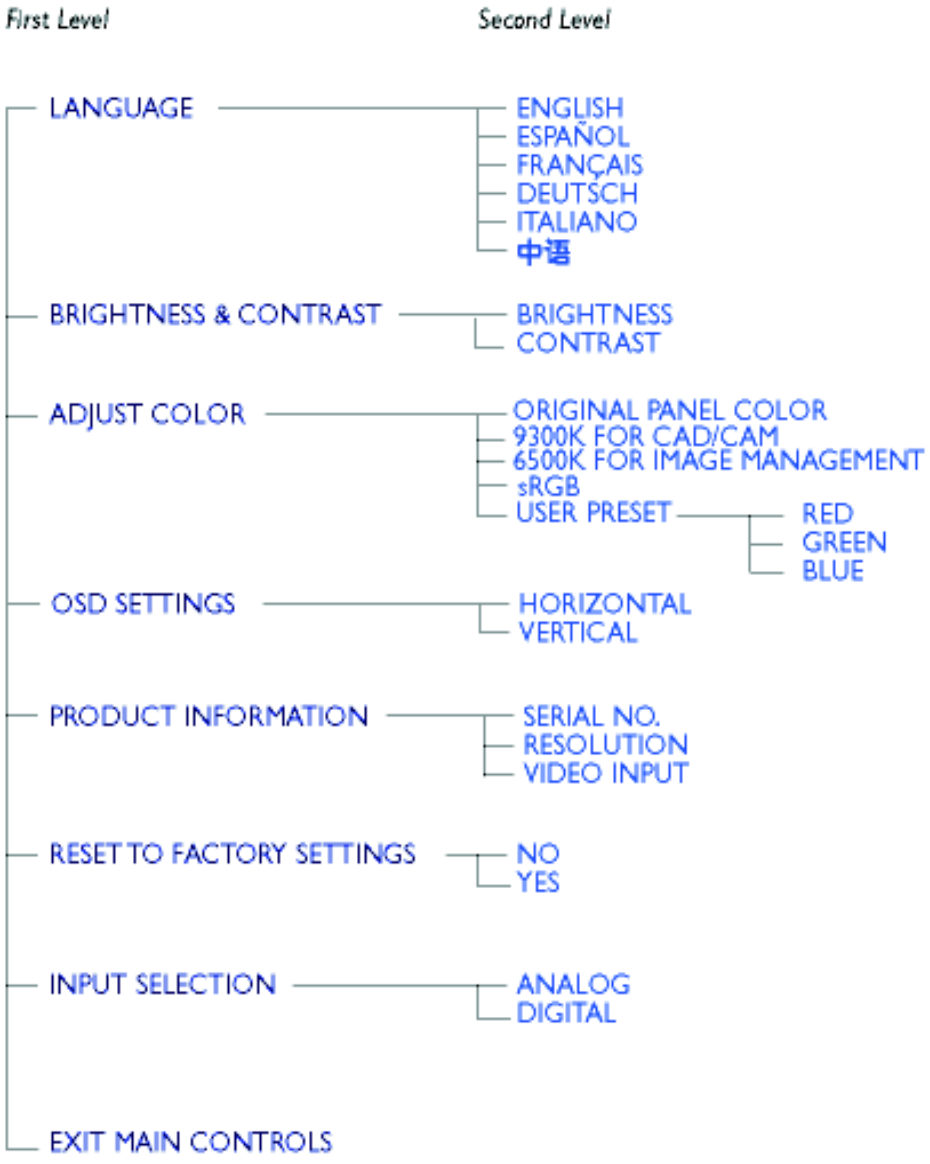
Adjust Color : Add sRGB adjust function (170B4 only)

OSD (Continued)

Analog

The OSD Menu Tree

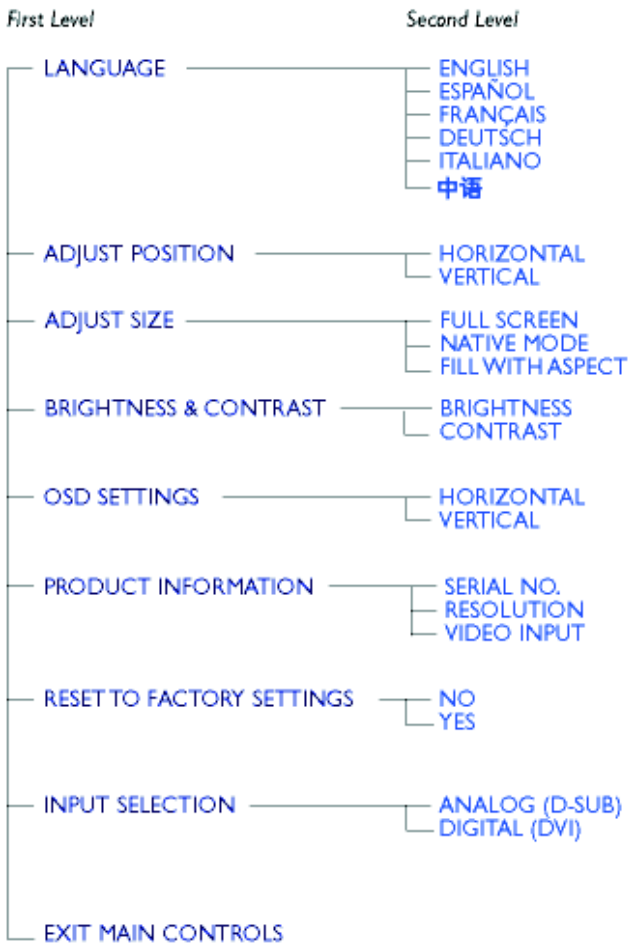
Below is an overall view of the structure of the On-Screen Display.
You can use this as reference when you want to later on work your way around the different adjustments.



Digital

The OSD Menu 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.



OSD Lock/Unlock, Aging & Service Mode, Enable/Disable "warning message"

Front control panel

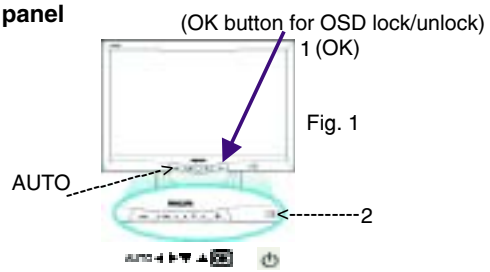


Fig. 1

1 = Buttons for the OSD menu (On-Screen-Display)
2 = Power button

To Lock/Unlock OSD function (User Mode)

The OSD function can be locked by pressing "OK" button(1) for more than 10 seconds, the screen shows following windows for 3 seconds. Everytime when you press "AUTO" or "OK" button, this message appears on the screen automatically.

ATTENTION
OSD MAIN CONTROLS LOCKED

Fig. 2

Unlock OSD function:
Locked OSD function can be released by pressing"OK" button for more than 10 seconds again.

ATTENTION
OSD MAIN CONTROLS UNLOCKED

Fig. 3

To Enable/Disable "Warning message" on screen (in User Mode)

Step 1: Turn on LCD monitor, and disconnect Interface Cable between Monitor and PC.

Step 2 :
Push AUTO " AUTO " button for more than 10 seconds to disable "warning message", bring up

ATTENTION
ATTENTION SIGNAL OFF

Step 3 :
Push AUTO " AUTO " button for more than 10 seconds again to enable "warning message", bring up

ATTENTION
ATTENTION SIGNAL ON

Status 1.: Turn off monitor, then turn on monitor again
=> go back to last display.
Status 2. **Connect signal cable again**
=> go back to Windows screen.

Access Aging.. Mode

Step 1: Turn off LCD monitor, and disconnect Interface Cable between Monitor and PC.

Step 2 :
[Push AUTO " AUTO " & OK " OK " buttons at the same time and hold it] + [Press power " " button untill comes out "AGING screen"] => then release all buttons.

Bring up :

After 15 seconds, bring up :

After 15 seconds, bring up :

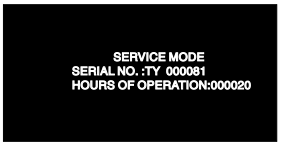
After 15 seconds, bring up :

---
repeatly
Connect signal cable again => go back to normal display.

Access "SERVICE MODE" (in USER Mode)

Step 1: Turn on LCD monitor, and disconnect Interface Cable between Monitor and PC.

Step 2 :
Push OK " OK " button for more than 10 seconds, bring up "SERVICE MODE".

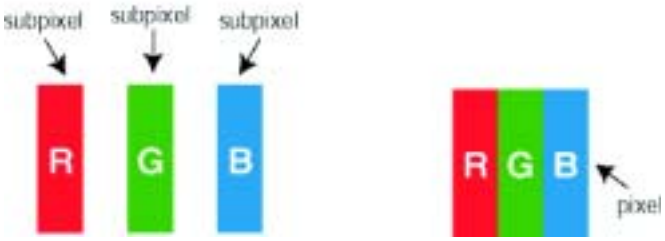


Status 1.: Turn off monitor, then turn on monitor again
=> go back to last display.
Status 2. **Connect signal cable again**
=> go back to Windows screen.

Pixel Defect Policy

Philips' Flat Panel Monitors Pixel Defect Policy

Philips strives to deliver the highest quality products. We use some of the industry's most advanced manufacturing processes and practice stringent quality control. However, pixel or subpixel defects on the TFT LCD panels used in flat panel monitors are sometimes unavoidable. No manufacturer can guarantee that all panels will be free from pixel defects, but Philips guarantees that any monitor with an unacceptable number of defects will be repaired or replaced under warranty.
This notice explains the different types of pixel defects and defines acceptable defect levels for each type. In order to qualify for repair or replacement under warranty, the number of pixel defects on a TFT LCD panel must exceed these acceptable levels.
For example, no more than 0.0004% of the subpixels on a 15" XGA monitor may be defective. Additionally, because some types or combinations of pixel defects are more noticeable than others, Philips sets even higher quality standards for those.



Pixels and Subpixels

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

Types of Pixel Defects
Pixel and subpixel defects appear on the screen in different ways. There are two categories of pixel defects and several types of subpixel defects within each category.
Bright Dot Defects Bright dot defects appear as pixels or subpixels that are always lit or "on".
These are the types of bright dot defects:

One lit red, green or blue subpixel

Two adjacent lit subpixels:
- Red + Blue = Purple
- Red + Green = Yellow
- Green + Blue = Cyan (Light Blue)

Three adjacent lit subpixels
(one white pixel)

Black Dot Defects

Black dot defects appear as pixels or subpixels that are always dark or "off".
These are the types of black dot defects:

One dark subpixel

Two or three adjacent dark subpixels

Proximity of Pixel Defects
Because pixel and subpixels defects of the same type that are nearby one another may be more noticeable, Philips also specifies tolerances for the proximity of pixel defects.

Pixel Defect Tolerances

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

BRIGHT DOT DEFECTS	**ACCEPTABLE LEVEL**
MODEL	170B4&S4
1 lit subpixel	3 or fewer
2 adjacent lit subpixels	1 or fewer
3 adjacent lit subpixels (one white pixel)	0
Distance between two bright dot defects*	15 mm or more
Bright dot defects within 20 mm circle	-
Total bright dot defects of all types	3 or fewer
BLACK DOT DEFECTS	**ACCEPTABLE LEVEL**
MODEL	170B4&S4
1 dark subpixel	4 or fewer
2 adjacent dark subpixels	2 or fewer
3 adjacent dark subpixels	1 or fewer
Distance between two black dot defects*	15 mm or more
Black dot defects within 20 mm circle*	-
Total black dot defects of all types	4 or fewer
TOTAL DOT DEFECTS	**ACCEPTABLE LEVEL**
MODEL	170B4&S4
Total bright or black dot defects of all types	4 or fewer
Note: 1 or 2 adjacent subpixel defects = 1 dot defect	

DDC Instructions

General

DDC Data Re-programming

In case the DDC data memory IC or main EEPROM which storage all factory settings were replaced due to a defect, the serial numbers have to be re-programmed"**Analog DDC IC, Digital DDC IC & EEPROM**". It is advised to re-soldered DDC IC and main EEPROM 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.

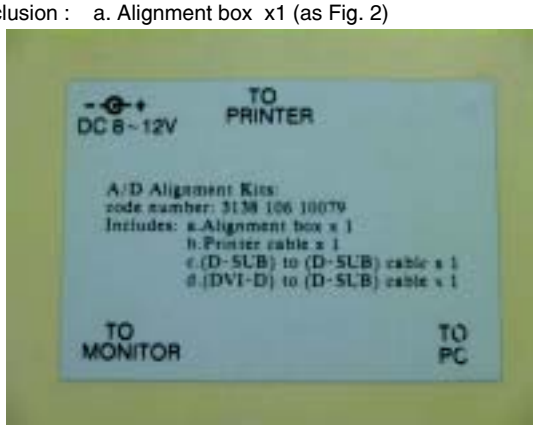
DDC EDID structure

For Analog interface: Standard Version 3.0
Structure Version 1.2
For Digital inferface: Standard Version 3.0
Structure Version 1.3

System and equipment requirements

1. An i486 (or above) personal computer or compatible.
2. Microsoft operation system Windows 95/98.
3. EDID301.EXE program (3138 106 10103) as shown in Fig. 1
4. A/D Alignment kits (3138 106 10079):
   inclusion : a. Alignment box x1 (as Fig. 2)

Fig. 2



b. Printer cable x1
c. (D-Sub) to (D-Sub) cable x1
d. (DVI-D) to (D-Sub) cable x1 (as Fig. 3)

Note: The EDID301.EXE (Release Version 1.58 20000818)is a windows-based program, which cannot be run in MS-DOS.

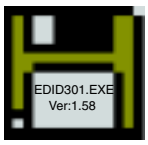
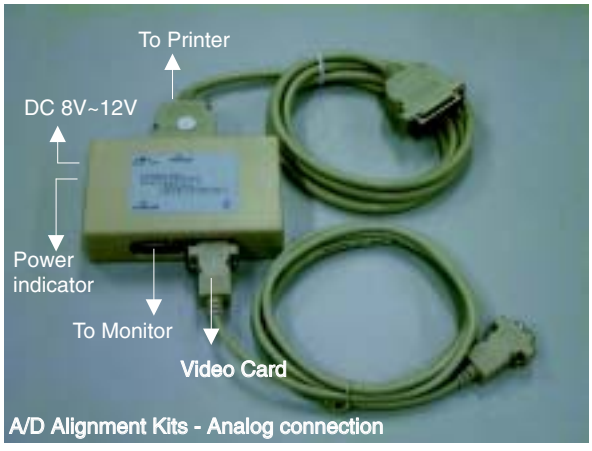


Fig. 1

Diskette with EDID301.EXE

Fig. 3

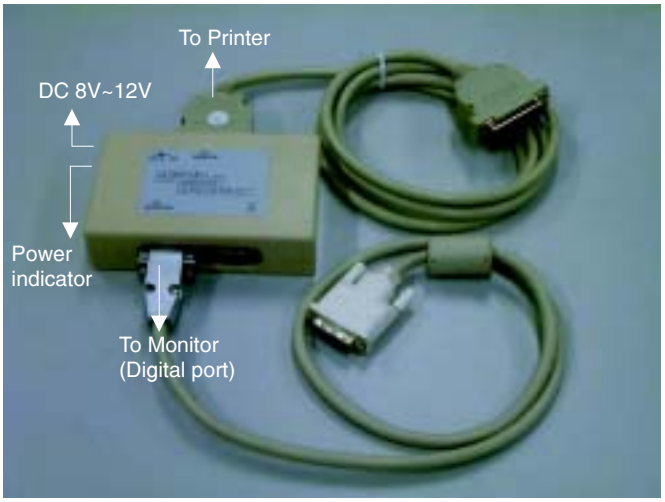
(DVI-D) to (D-Sub) cable



A/D Alignment Kits - Analog connection

Fig. 4

Note: The alignment box has already build-in a batteries socket for using **batteries (9V)** as power source. Pull out the socket by remove four screws at the rear of box. Please do not forget that remove batteries after programming. The energy of batteries can only drive circuits for a short period of time.

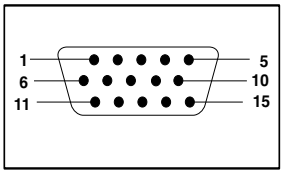


A/D Alignment Kits - Digital connection

Fig. 5

Pin assignment

A. 15-pin D-Sub Connector



Pin No.	Assignment	Pin No.	Assignment
1	Red video input	9	+5V
2	Green video input	10	Ground
3	Blue video input	11	Ground
4	Ground	12	Serial data line(SDA)
5	No Connected	13	H.Sync
6	Red video ground	14	V.Sync(VCLK for DDC)
7	Green video ground	15	Data clock line(SCL)
8	Blue video ground		

Configuration and procedure

There are 2 chips contained OSD string, serial number..etc on the circuit board, main EEPROM which storage all factory settings,OSD string. DDC IC which storage 128byte EDID data(serial number ..etc.). Following descirptions are the connection and procedure for Analog and Digital DDC application, the main EEPROM can be re-programmed along with Analog/Digital IC by enable factory memory data write function on the DDC program (EDID301.EXE).

Initialize alignment box

In order to avoid that monitor entering power saving mode due to sync will cut off by alignment box, it is necessary to initialize alignment box before running programming software (EDID301.EXE). Following steps show you the procedures and connection.

Step 1: Supply 8~12V DC power source to the Alignment box by plugging a DC power cord or using batteries.
Step 2: Connecting printer cable and video cable of monitor as Fig. 6

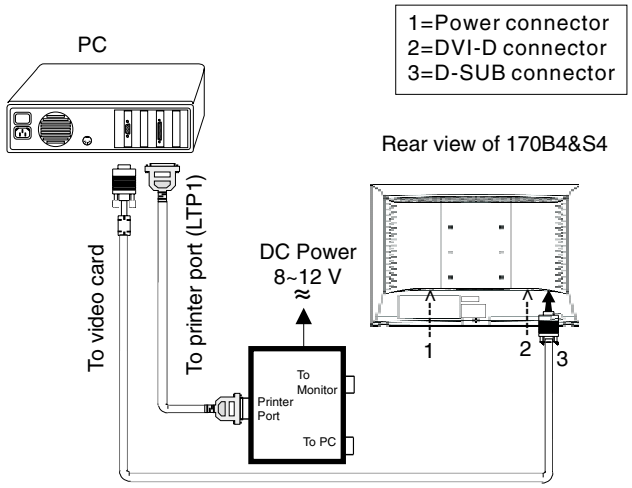


Fig. 6

Step 3: Installation of EDID301.EXE

Method 1: Start on DDC program

Start Microsoft Windows.
1. Insert the disk containing EDID301.EXE program into floppy disk drive.
2. Click Start , choose Run at start menu of Windows 95/98 as shown in Fig. 7.

Fig. 7

3. At the submenu, type the letter of your computer's floppy disk drive followed by :EDID301 (for example, A:\EDID301, as shown in Fig. 8).

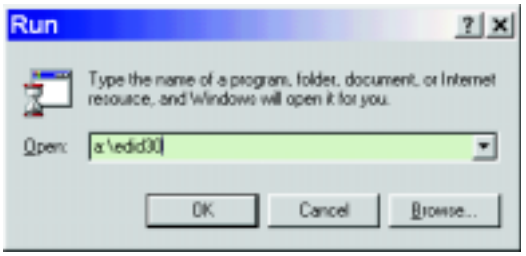


Fig. 8

4. Click **OK** button. The main menu appears (as shown in Fig. 9). **This is for initialize alignment box.**

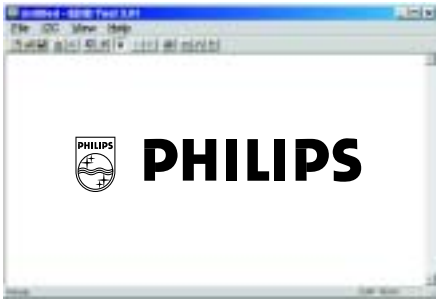


Fig. 9

Note 1: If the connection is improper, you will see the following error message (as shown in Fig. 10) before entering the main menu. Meanwhile, the (read EDID) function will be disable. At this time, please make sure all cables are connected correctly and fixedly, and the procedure has been performed properly.

Fig. 10

Method 2: After create a shortcut of EDID301.EXE

: Double click EDID301 icon (as shown in Fig. 11) which is on the screen of Windows Wallpaper.
Bring up main menu of EDID301 as shown in Fig. 12.
This is for initialize alignment box.

Fig. 11

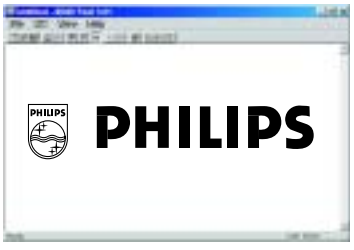


Fig. 12

Note 2: During the loading, EDID301 will verify the EDID data which just loaded from monitor before proceed any further function, once the data structure of EDID can not be recognized, the following error message will appear on the screen as below. Please confirm following steps to avoid this message.
1. The data structure of EDID was incorrect.
2. DDC IC that you are trying to load data is empty.
3. Wrong communication channel has set at configuration setup windows.
4. Cables loosed or poor contact of connection.

Fig. 13

DDC Instructions (Continued)

Re-programming Analog DDC IC

Step 1: After initialize alignment box, connecting all cables and box as shown in Fig. 14

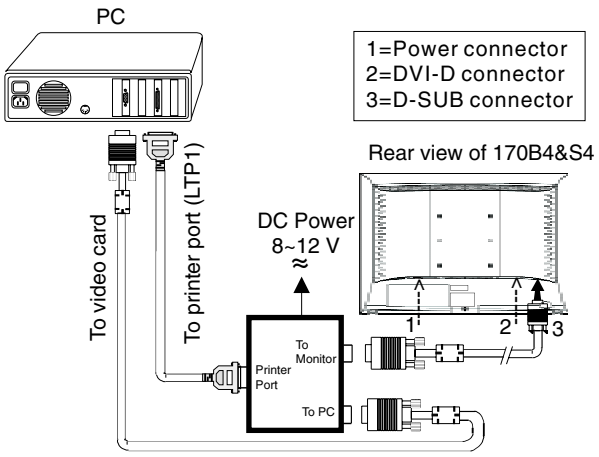


Fig. 14

Step 2: Read DDC data from monitor

1. Click icon as shown in Fig. 15 from the tool bar to bring up the Channels "Configuration Setup" windows as shown in Fig. 12.

Fig. 15

2. Select the DDC2B as the communication channel. (Disable "Factory memory data write") as shown in Fig. 16.

3. Click OK button to confirm your selection.

4. Click icon (Read EDID function) to read DDC EDID data from monitor. The EDID codes will display on screen as shown in Fig. 17.

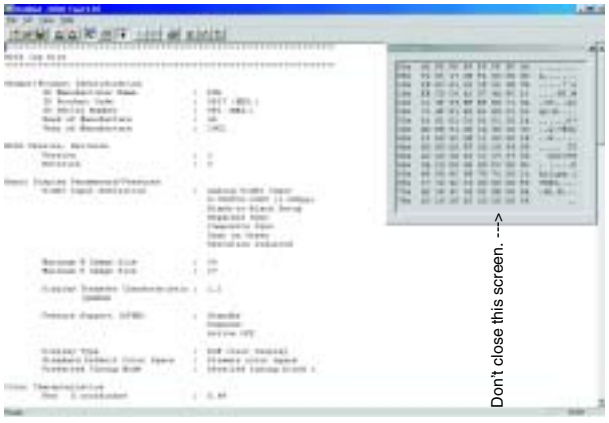


Fig. 17

Step 3: Modify DDC data (verify EDID version, week, year)

1. Click (new function) icon from the tool bar, bring up Step 1 of 9 as shown in Fig. 18 .
EDID301 DDC application provides the function selection and text change (select & fill out) from Step 1 to Step 9.

Fig. 18

Step 4: Modify DDC data (Monitor Serial No.)

1. Click **Next** , bring up Fig. 19.

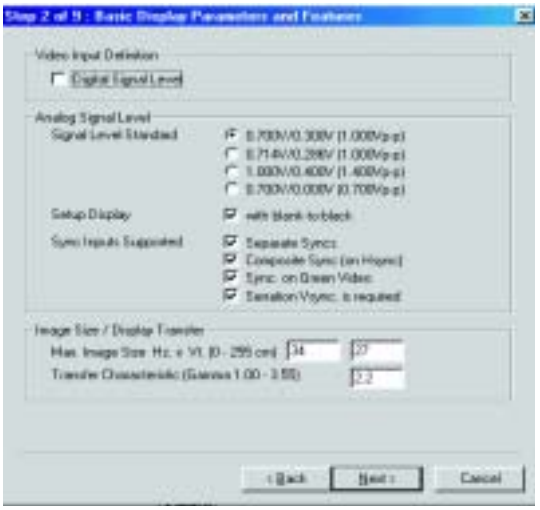


Fig. 19

2. Click **Next** , bring up Fig. 20.

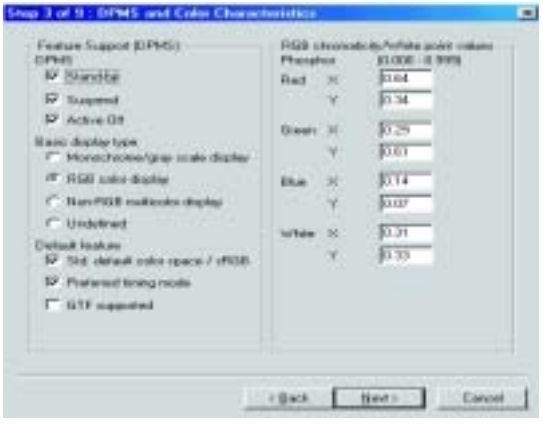


Fig. 20

3. Click **Next** , bring up Fig. 21.

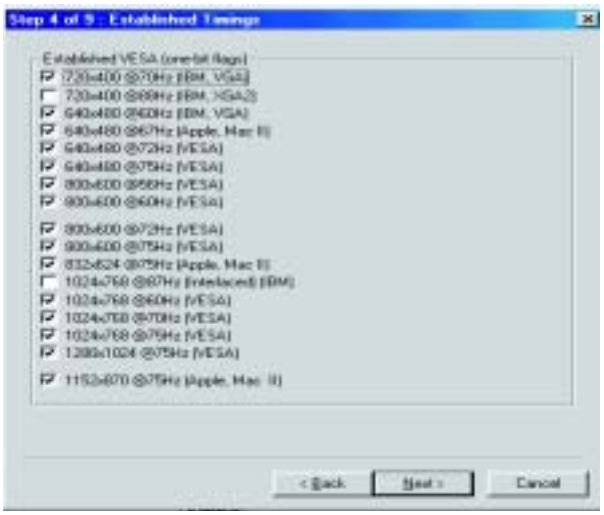


Fig. 21

4. Click **Next** , bring up Fig. 22.

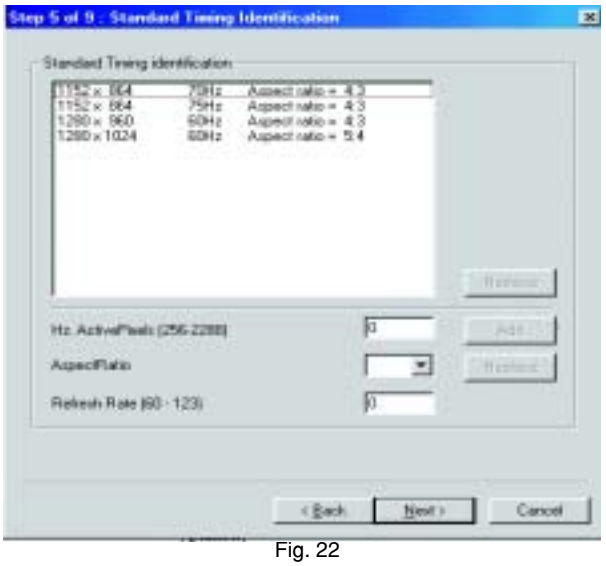


Fig. 22

5. Click **Next** , bring up Fig. 23.

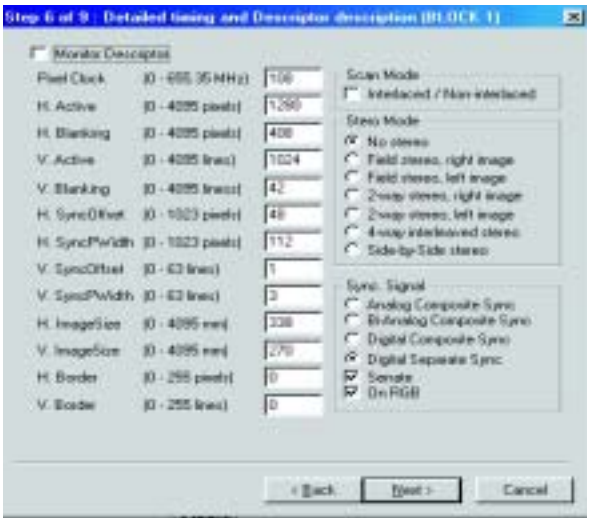


Fig. 23

6. Click **Next** , bring up Fig. 24.
(Serial number can be filled up or be changed at this moment.

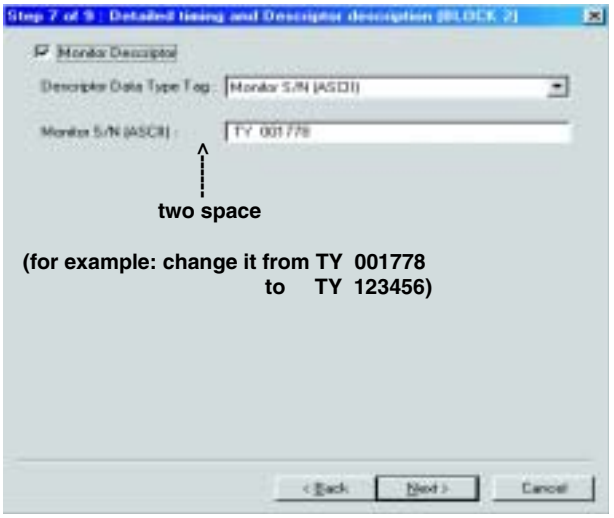
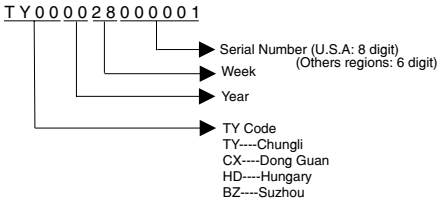


Fig. 24

Definition of Serial Number (barcode format)



7. Click **Next** , bring up Fig. 25.

Fig. 25

8. Click **Next** , bring up Fig. 26.
- Click **Finish** to exit the Step window.

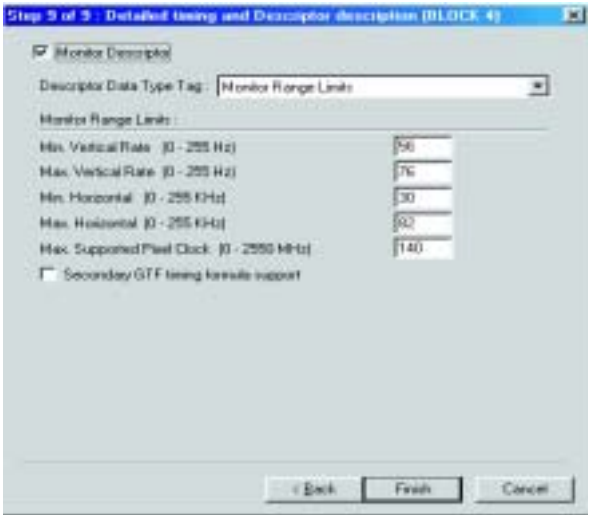


Fig. 26

DDC Instructions (Continued)

Step 6: Write DDC data

1. Configuration should be as Fig. 27.

2. **Access Factory mode**

Access Factory Mode

How to Get into Factory Mode Menu

Step 1 :

Turn off monitor.

Step 2 :

[Push AUTO " " & OK " " buttons at the same time and hold it] + [Press power " " button untill comes out "Windows screen"] => then release all buttons.

Step 3 :

Press OK " " button, bring up Factory mode indication as shown in Fig 28.

3. Click (Write EDID) icon from the tool bar to write DDC data. Bring up "Writing 0%~100%, ready" a progressing bar on the left down corner.
4. Click (Read EDID) to confirm it.

Step 7: Confirm Serial Number in User Mode

1. Press the POWER button to turn off the monitor. Press the button again to turn on the monitor.
2. Press the OK button to bring up the OSD Main Menu.
3. Press the DOWN button to select PRODUCTION INFORMATION , press the OK button to confirm your selection.
4. Re-confirm the Serial Number "123456" (example only) is updated as shown in Fig. 29.

<= Product Information

Step 8: Save DDC data

Sometimes, you may need to save DDC data as a text file for using in other IC chip. To save DDC data, follow the steps below:

1. Click (Save) icon (or click "file"-> "save as") from the tool bar And give a file name as shown in Fig. 30.
   The file type is EDID301 file (*.ddc) which can be open in WordPad. By using WordPad, the texts of DDC data & table (128 bytes, hex code) can be modified. If DDC TEXTS & HEX Table are completely correct, it can be saved as .ddc flie to re-load it into DDC IC for DDC Data application.

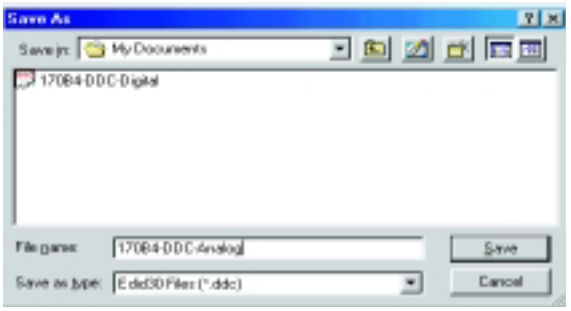


Fig. 30

2. Click **Save**.

Step 9: Load DDC data

1. Click fr the tool bar.
2. Select the file you want to open as shown in Fig. 31.
3. Click **Open**.

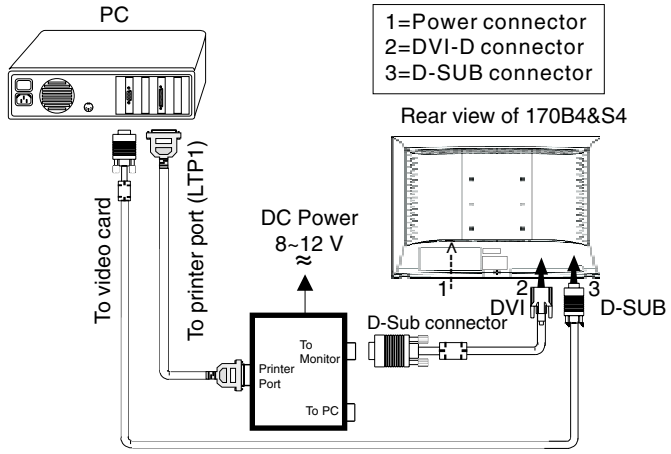
Fig. 31

Step 10: Exit DDC program

Pull down the File menu and select Exit as shown in Fig. 32.

Re-programming Digital DDC IC

Step 1: Connecting all cables and alignment box as shown in Fig. 33.



After connection for Digital DDC application, if it is still in Analog DDC application of EDID301.
Exit EDID301 program before Digital DDC application.

Step 2: Initialize alignment box
(Shortcut of EDID301.EXE on Windows Wallpaper already.)

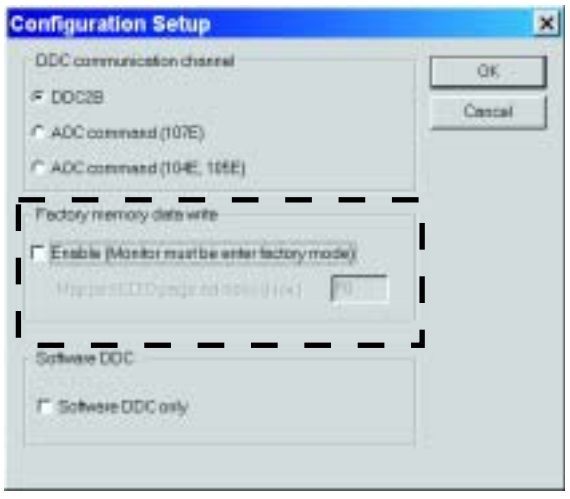
Double click EDID301 icon (as shown in Fig. 34) which is on the screen of Windows Wallpaper.
Bring up main menu of EDID301 as shown in Fig. 35.

Fig. 34

Fig. 35

Step 3: Read DDC data from monitor

1. Click icon from the tool bar to bring up the Channels Configuration Setup windows as shown in Fig. 35.
2. Select the DDC2B as the communication channel. **Disable "Factory memory data write" for Digital DDC application** as shown in Fig. 36.
3. Click OK button to confirm your selection.



4. Click icon (Read EDID function) to read DDC EDID data from monitor. The EDID codes will display on screen as shown in Fig. 37.

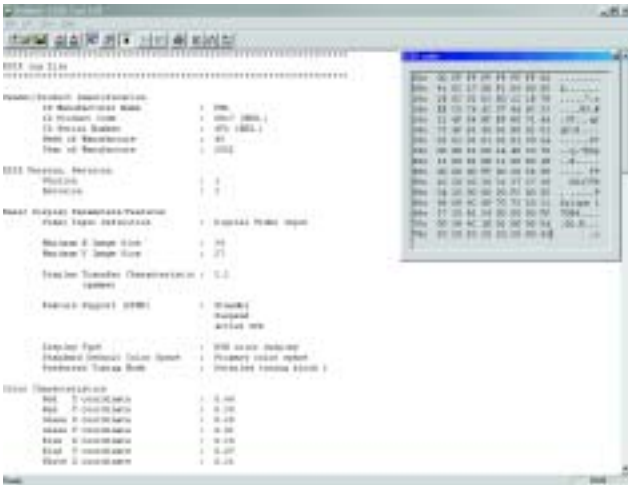


Fig. 37

Step 4: Modify DDC data (verify EDID version, week, year)

1. Click (new function) icon from the tool bar, bring up Step 1 of 9 (Digital) as shown in Fig. 38 .
EDID301 DDC application provides the function selection and text change (select & fill out) from Step 1 to Step 9.

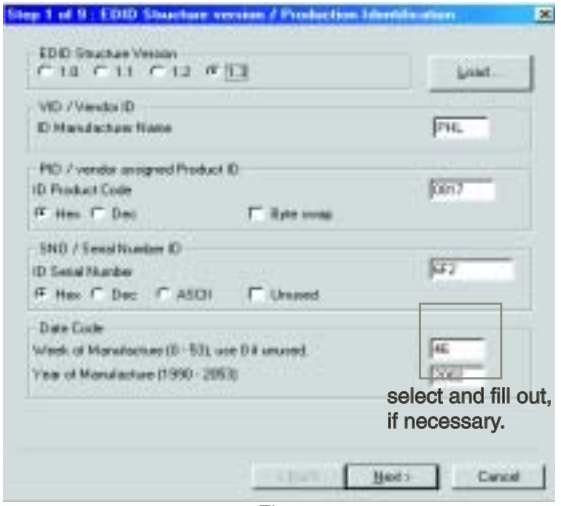


Fig. 38

Fig. 39

Fig. 40

DDC Instructions (Continued)

Fig. 41

Fig. 42

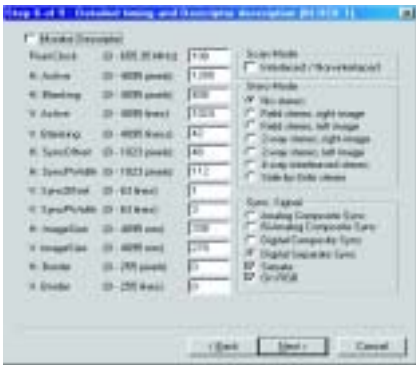


Fig. 43

Step 5: Modify DDC data (Monitor Serial No.)

Monitor Serial No. can be filled up or be changed (for example, TY 123456) as shown in Fig. 44.

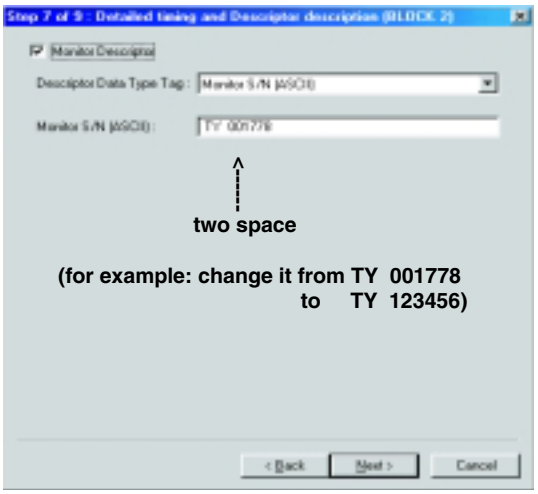


Fig. 44

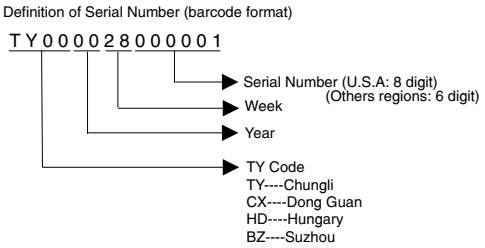


Fig. 45

Fig. 46

Click **Finish** to exit the Step window as shown in Fig. 46.

Step 6: Write DDC data

1. Click (Write EDID) icon from the tool bar to write DDC data.
2. Click (Read EDID) to re-confirm (check contents) it.

   The 128bytes DDC data which had been written into DDC IC of Digital Mode.

Step 7: Save DDC data

Sometimes, you may need to save DDC data as a text file for using in other IC chip. To save DDC data, follow the steps below:

1. Click (Save) icon (or click "file"-> "save as") from the tool bar and give a file name as shown in Fig. 47.

2. Click **Save**.

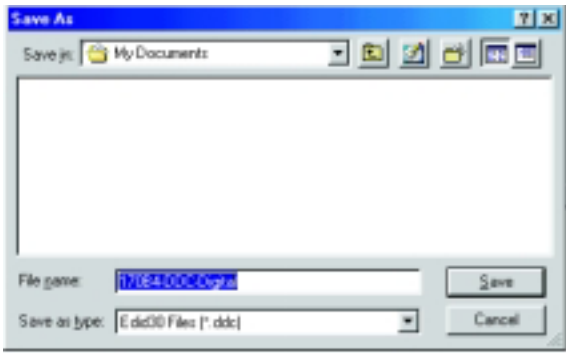


Fig. 47

Step 8: Load DDC data

1. Click from the tool bar.
2. Select the file you want to open as shown in Fig 48.
3. Click **Open**.

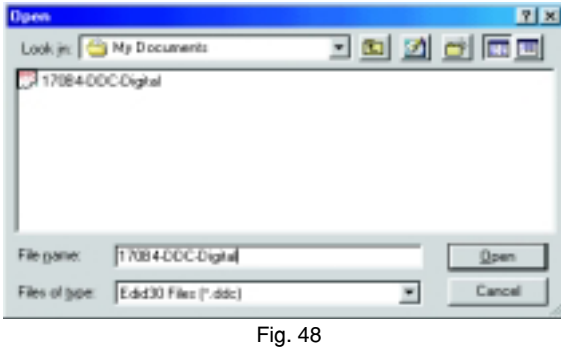


Fig. 48

Step 9: Exit DDC program

Pull down the File menu and select Exit

DDC Data of Analog

EDID log file

Vendor/Product Identification
- ID Manufacturer Name : PHL
- ID Product Code : 0817 (HEX.)
- ID Serial Number : 6F2 (HEX.)
- Week of Manufacture : 46
- Year of Manufacture : 2002

EDID Version, Revision
- Version : 1
- Revision : 3

Basic Display Parameters/Features
- Video Input Definition : Analog Video Input
  0.700V/0.300V (1.00Vpp)
  Blank-to-Black Setup
  Separate Sync
  Composite Sync
  Sync on Green
  Serration required
- Maximum H Image Size : 34
- Maximum V Image Size : 27
- Display Transfer Characteristic (gamma) : 2.2
- Feature Support (DPMS) : Standby
  Suspend
  Active Off
- Display Type : RGB color display
- Standard Default Color Space : Primary color space
- Preferred Timing Mode : Detailed timing block 1

Color Characteristics
- Red X coordinate : 0.64
- Red Y coordinate : 0.34
- Green X coordinate : 0.29
- Green Y coordinate : 0.61
- Blue X coordinate : 0.14
- Blue Y coordinate : 0.07
- White X coordinate : 0.31
- White Y coordinate : 0.33

Established Timings I :
- 720 x 400 @70Hz (IBM,VGA)
- 640 x 480 @60Hz (IBM,VGA)
- 640 x 480 @67Hz (Apple,Mac II)
- 640 x 480 @72Hz (VESA)
- 640 x 480 @75Hz (VESA)
- 800 x 600 @56Hz (VESA)
- 800 x 600 @60Hz (VESA)

Established Timings II :
- 800 x 600 @72Hz (VESA)
- 800 x 600 @75Hz (VESA)
- 832 x 624 @75Hz (Apple,Mac II)
- 1024 x 768 @60Hz (VESA)
- 1024 x 768 @70Hz (VESA)
- 1024 x 768 @75Hz (VESA)
- 1280 x 1024 @75Hz (VESA)

Manufacturer's timings : 1152 x 870 @75Hz (Apple,Mac II)

Standard Timing Identification #1
- Horizontal active pixels : 1152
- Aspect Ratio : 4:3
- Refresh Rate : 70

Standard Timing Identification #2
- Horizontal active pixels : 1152
- Aspect Ratio : 4:3
- Refresh Rate : 75

Standard Timing Identification #3
- Horizontal active pixels : 1280
- Aspect Ratio : 4:3
- Refresh Rate : 60

Standard Timing Identification #4
- Horizontal active pixels : 1280
- Aspect Ratio : 5:4
- Refresh Rate : 60

Detailed Timing #1
- Pixel Clock (MHz) : 108
- H Active (pixels) : 1280
- H Blanking (pixels) : 408
- V Active (lines) : 1024
- V Blanking (lines) : 42
- H Sync Offset (F Porch) (pixels) : 48
- H Sync Pulse Width (pixels) : 112
- V Sync Offset (F Porch) (lines) : 1
- V Sync Pulse Width (lines) : 3
- H Image Size (mm) : 338
- V Image Size (mm) : 270
- H Border (pixels) : 0
- V Border (lines) : 0
- Flags : Non-interlaced
  : Normal Display, No stereo
  : Digital Separate sync.
  : Positive Vertical Sync.
  : Positive Horizontal Sync.

Monitor Descriptor #2
- Serial Number : TY 001778

Monitor Descriptor #3
- Monitor Name : Philips 170B4

Monitor Descriptor #4
- Monitor Range Limits
- Min. Vt rate Hz : 56
- Max. Vt rate Hz : 76
- Min. Horiz. rate kHz : 30
- Max. Horiz. rate kHz : 82
- Max. Supported Pixel : 140
- No secondary GTF timing formula supported.

Extension Flag : 0

Check sum : C4 (HEX.)

****

EDID data (128 bytes)

****

0: 00 1: ff 2: ff 3: ff 4: ff 5: ff 6: ff 7: 00
8: 41 9: 0c 10: 17 11: 08 12: f2 13: 06 14: 00 15: 00
16: 2e 17: 0c 18: 01 19: 03 20: 1f 21: 22 22: 1b 23: 78
24: ee 25: c5 26: c6 27: a3 28: 57 29: 4a 30: 9c 31: 23
32: 12 33: 4f 34: 54 35: bf 36: ef 37: 80 38: 71 39: 4a
40: 71 41: 4f 42: 81 43: 40 44: 81 45: 80 46: 01 47: 01
48: 01 49: 01 50: 01 51: 01 52: 01 53: 01 54: 30 55: 2a
56: 00 57: 98 58: 51 59: 00 60: 2a 61: 40 62: 30 63: 70
64: 13 65: 00 66: 52 67: 0e 68: 11 69: 00 70: 00 71: 1e
72: 00 73: 00 74: 00 75: ff 76: 00 77: 20 78: 54 79: 59
80: 20 81: 20 82: 30 83: 30 84: 31 85: 37 86: 37 87: 38
88: 0a 89: 20 90: 00 91: 00 92: 00 93: fc 94: 00 95: 50
96: 68 97: 69 98: 6c 99: 69 100: 70 101: 73 102: 20 103: 31
104: 37 105: 30 106: 42 107: 34 108: 00 109: 00 110: 00 111: fd
112: 00 113: 38 114: 4c 115: 1e 116: 52 117: 0e 118: 00 119: 0a
120: 20 121: 20 122: 20 123: 20 124: 20 125: 20 126: 00 127: c4

DDC Data of Digital

Go to cover page

EDID log file

Vendor/Product Identification
ID Manufacturer Name : PHL
ID Product Code : 0817 (HEX.)
ID Serial Number : 6F2 (HEX.)
Week of Manufacture : 46
Year of Manufacture : 2002

EDID Version, Revision
Version : 1
Revision : 3

Basic Display Parameters/Features
Video Input Definition : Digital Video Input

Maximum H Image Size : 34
Maximum V Image Size : 27

Display Transfer Characteristic : 2.2
(gamma)

Feature Support (DPMS) : Standby
Suspend
Active Off

Display Type : RGB color display
Standard Default Color Space :
Primary color space
Preferred Timing Mode :
Detailed timing block 1

Color Characteristics
Red X coordinate : 0.64
Red Y coordinate : 0.34
Green X coordinate : 0.29
Green Y coordinate : 0.61
Blue X coordinate : 0.14
Blue Y coordinate : 0.07
White X coordinate : 0.31
White Y coordinate : 0.33

Established Timings
Established Timings I :
720 x 400 @70Hz (IBM,VGA)
640 x 480 @60Hz (IBM,VGA)
640 x 480 @67Hz (Apple,Mac II)
640 x 480 @72Hz (VESA)
640 x 480 @75Hz (VESA)
800 x 600 @56Hz (VESA)
800 x 600 @60Hz (VESA)

Established Timings II :
800 x 600 @72Hz (VESA)
800 x 600 @75Hz (VESA)
832 x 624 @75Hz (Apple,Mac II)
1024 x 768 @60Hz (VESA)
1024 x 768 @70Hz (VESA)
1024 x 768 @75Hz (VESA)
1280 x 1024 @75Hz (VESA)

Manufacturer's timings : 1152 x 870 @75Hz (Apple,Mac II)

Standard Timing Identification #1
Horizontal active pixels : 1152
Aspect Ratio : 4:3
Refresh Rate : 70
Standard Timing Identification #2
Horizontal active pixels : 1152
Aspect Ratio : 4:3
Refresh Rate : 75
Standard Timing Identification #3
Horizontal active pixels : 1280
Aspect Ratio : 4:3
Refresh Rate : 60
Standard Timing Identification #4
Horizontal active pixels : 1280
Aspect Ratio : 5:4
Refresh Rate : 60
Detailed Timing #1
Pixel Clock (MHz) : 108
H Active (pixels) : 1280
H Blanking (pixels) : 408
V Active (lines) : 1024
V Blanking (lines) : 42
H Sync Offset (F Porch) (pixels) : 48
H Sync Pulse Width (pixels) : 112
V Sync Offset (F Porch) (lines) : 1
V Sync Pulse Width (lines) : 3
H Image Size (mm) : 338
V Image Size (mm) : 270
H Border (pixels) : 0
V Border (lines) : 0
Flags : Non-interlaced Normal Display, No stereo
: Digital Separate sync.
: Positive Vertical Sync.
: Positive Horizontal Sync.
Monitor Descriptor #2
Serial Number : TY 001778
Monitor Descriptor #3
Monitor Name : Philips 170B4
Monitor Descriptor #4
Monitor Range Limits
Min. Vt rate Hz : 56
Max. Vt rate Hz : 76
Min. Horiz. rate KHz : 30
Max. Horiz. rate KHz : 82
Max. Supported Pixel : 140
No secondary GTF timing formula supported.
Extension Flag : 0
Check sum : 63 (HEX.)

****

EDID data (128 bytes)

****

0: 00 1: ff 2: ff 3: ff 4: ff 5: ff 6: ff 7: 00
8: 41 9: 0c 10: 17 11: 08 12: f2 13: 06 14: 00 15: 00
16: 2e 17: 0c 18: 01 19: 03 20: 80 21: 22 22: 1b 23: 78
24: ee 25: c5 26: c6 27: a3 28: 57 29: 4a 30: 9c 31: 23
32: 12 33: 4f 34: 54 35: bf 36: ef 37: 80 38: 71 39: 4a
40: 71 41: 4f 42: 81 43: 40 44: 81 45: 80 46: 01 47: 01
48: 01 49: 01 50: 01 51: 01 52: 01 53: 01 54: 30 55: 2a
56: 00 57: 98 58: 51 59: 00 60: 2a 61: 40 62: 30 63: 70
64: 13 65: 00 66: 52 67: 0e 68: 11 69: 00 70: 00 71: 1e
72: 00 73: 00 74: 00 75: ff 76: 00 77: 20 78: 54 79: 59
80: 20 81: 20 82: 30 83: 30 84: 31 85: 37 86: 37 87: 38
88: 0a 89: 20 90: 00 91: 00 92: 00 93: fc 94: 00 95: 50
96: 68 97: 69 98: 6c 99: 69 100: 70 101: 73 102: 20 103: 31
104: 37 105: 30 106: 42 107: 34 108: 00 109: 00 110: 00 111: fd
112: 00 113: 38 114: 4c 115: 1e 116: 52 117: 0e 118: 00 119: 0a
120: 20 121: 20 122: 20 123: 20 124: 20 125: 20 126: 00 127: 63

ISP CABLE for CPU GM5126BC

Configuration and procedure

ISP (In System Program) software is provided by Motorola to upgrade the firmware of CPU.
It is a DOS-based program, which cannot be run in MS-Windows.

ISP cable is for the interface between "Parallel Port of PC" and "15 pin-D-SUB connector of Monitor".

System and equipment requirements

1. An i486 (or above) personal computer or compatible.
2. Microsoft operation system Windows 95/98
   => **DOS environment**.
3. ISP Software
4. ISP Cable (3138 106 10148) as shown in Fig. 1

Fig. 1 => ISP CABLE : 12nc is "3138 106 10148".

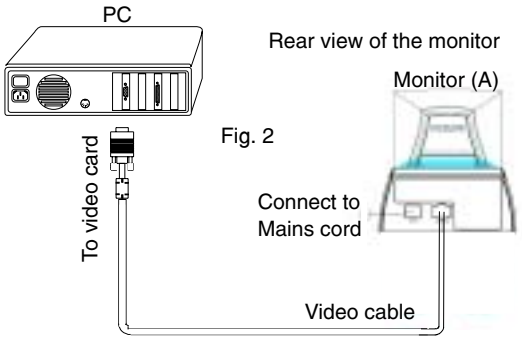
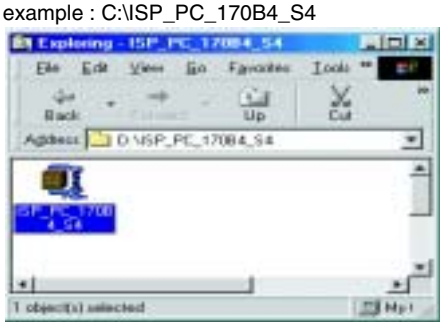
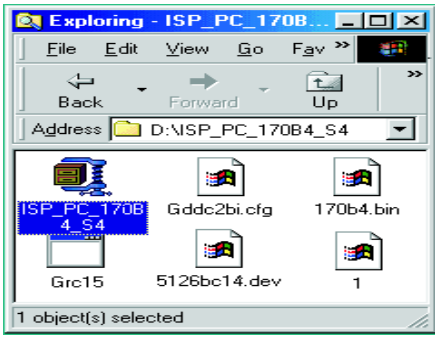


Fig. 2

Step 1 : Make a folder in your PC as shown in Fig. 3.
For example : C:\ISP_PC_170B4_S4



Step 2 : Copy ISP Software (isp120.zip) into your folder as shown in Fig.3.
Step 3 : Unzip isp.zip into your folder as shown in Fig. 4.



Step 4 : Connect ISP cable and Mains cord to Monitor (B, 170B4&S4) as shown in Fig. 5.

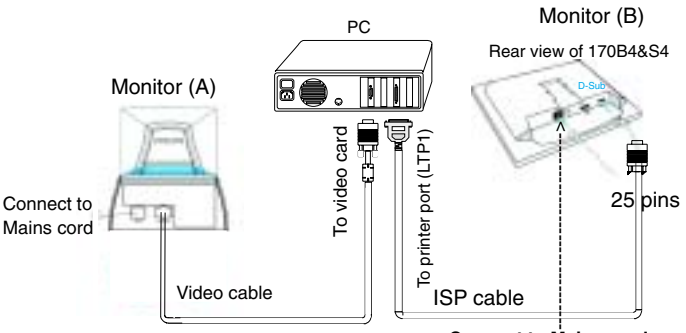


Fig. 5

Step 5 : Execute ISP Software in Monitor (A) as shown in Fig. 6 & 7.
Step 5-1.=> C:\ISP_PC_170B4_S4 (as shown in Fig. 6)

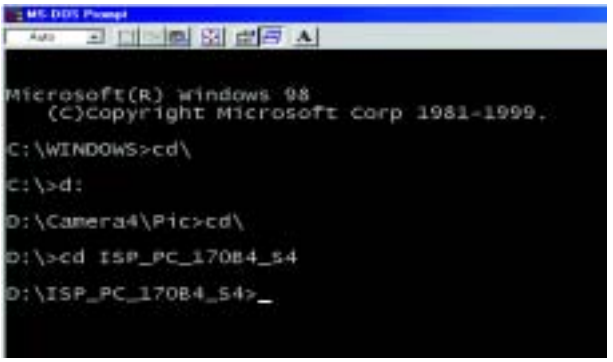


Fig. 6

Step 5-2.=> Press "Enter" key on keyboard, bring up Fig. 7.

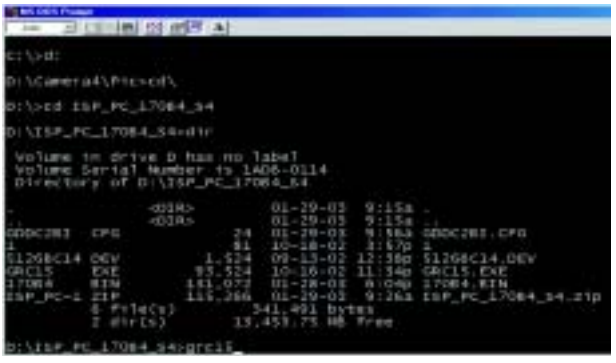


Fig. 7

(Remark: If it is necessary, press " + " to quit execution.)
Step 5-3.=> Press "Enter" key on keyboard again, bring up Fig.8.

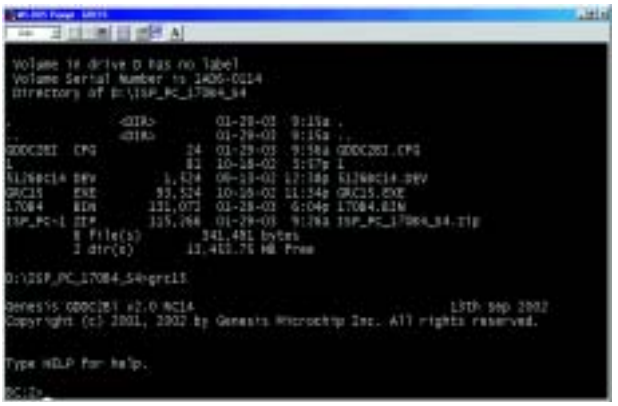


Fig. 8

ISP CABLE for CPU GM5126BC (Continued)

Go to cover page

Step 6 : Disconnect mains cord between Electrical outlet (power source) and Monitor (B) at this moment as shown in Fig. 9.

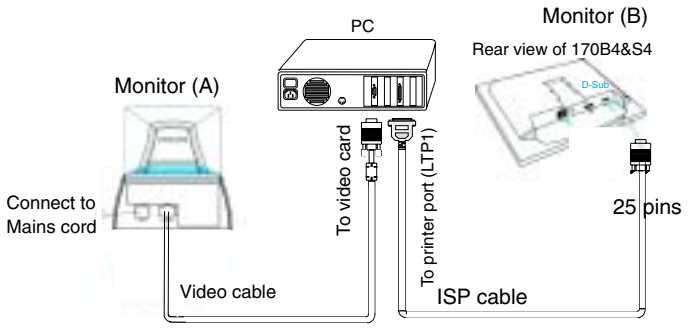


Fig. 9

Step 6-1 : reconnect mains cord between Electrical outlet (power source) and Monitor (B) again as shown in Fig. 10.

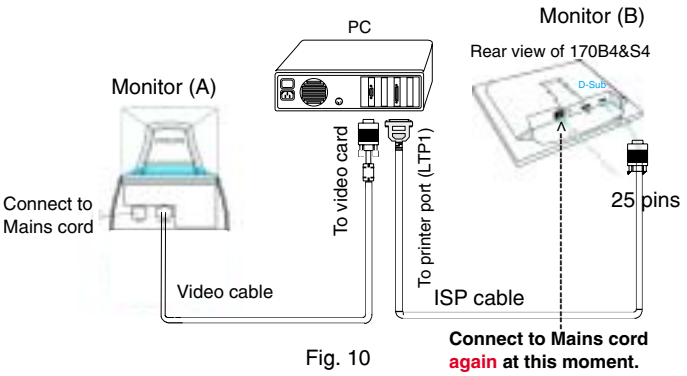


Fig. 10

In System Program (ISP) will be executed to upgrade the firmware to **Monitor (B).**

When finished, Bring up Fig. 11=>12 on the screen of Monitor (A).

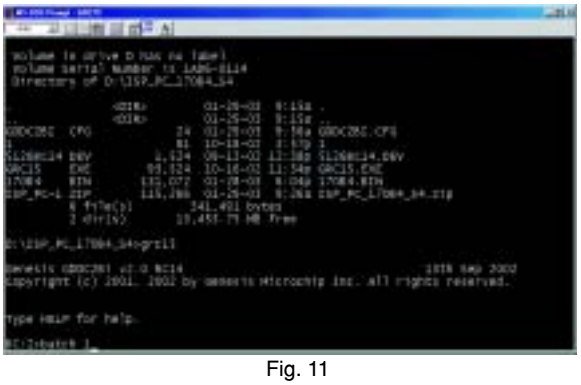


Fig. 11

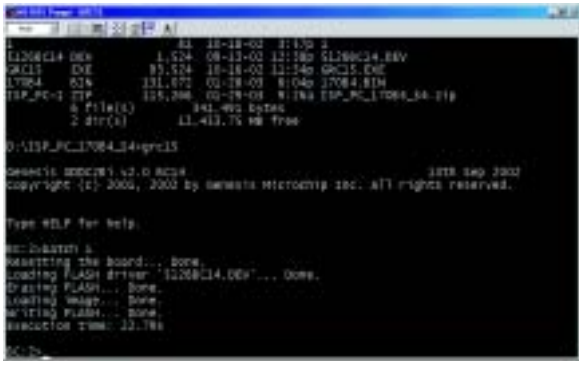


Fig. 12

Step 7 : Press "/" on keyboard, bring up Fig. 13.

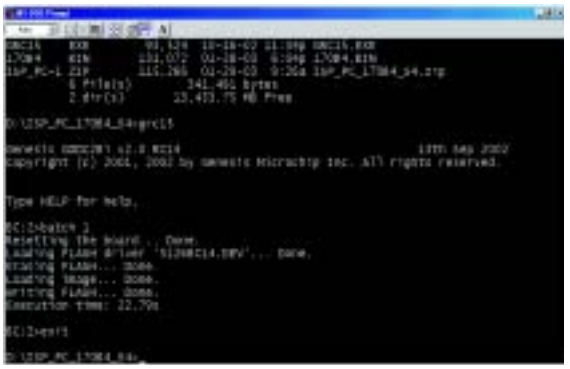


Fig. 13

Step 8 : Disconnect Mains cord from Monitor (B), 10 seconds at least.

Now, Monitor (B) can be used for display again.
(Press "AUTO" and "OK" and "POWER KNOB" at the same time to access Factory mode.)
After finished,entering factory mode to check CPU version as shown in Fig. 14.

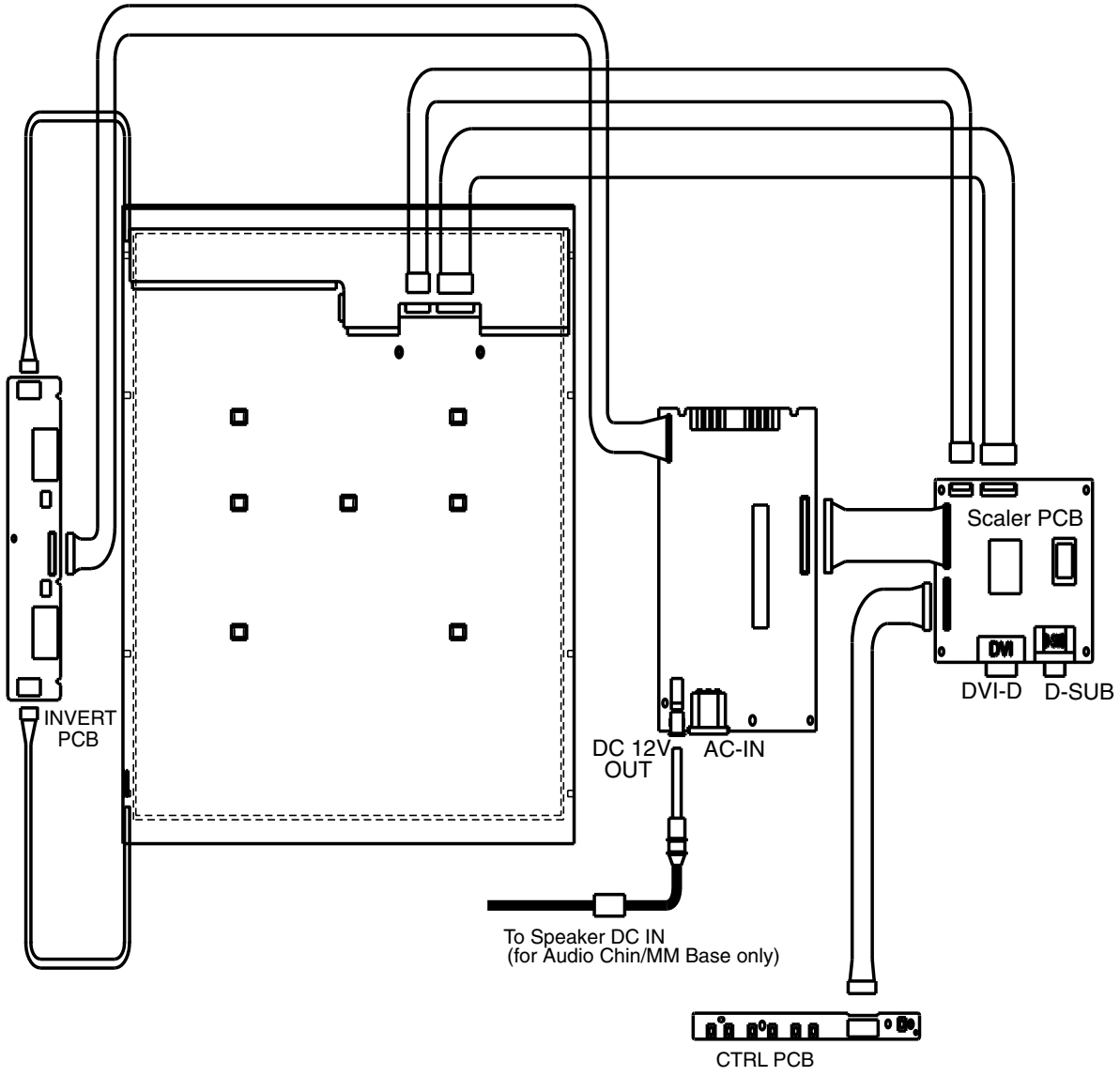
Fig. 14

Troubleshooting :

Monitor (B) : Monitor is on (LED is green.), or off, but no display (black)

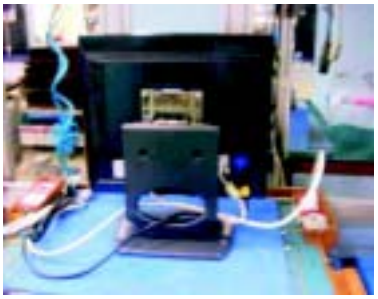
1. Make sure to disconnect the mains cord at Monitor (B), then connect it again.
2. EEPROM size may be not correct.

Wiring Diagram



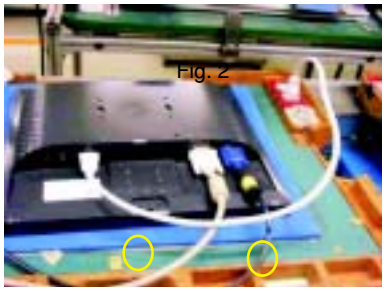
Mechanical Instructions

Step (1)
170B4 back-view.

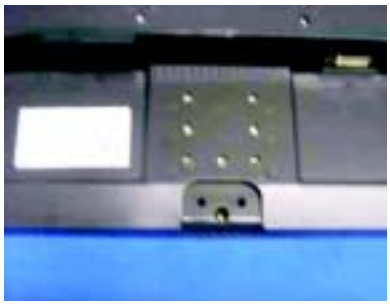


Step (2)
4 screws need to unlock .

Step (3)
The Interfce cable & power cord need to Unlock .



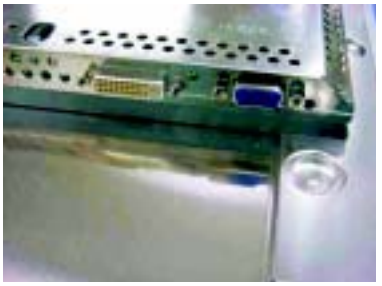
Step (4)
Unlock the screw on the back cover ..



Step (5)
Turn the screen face Up to .

Step (6)
Unlock the frame and control board .

Step (7)
Unlock & take off the back cover .

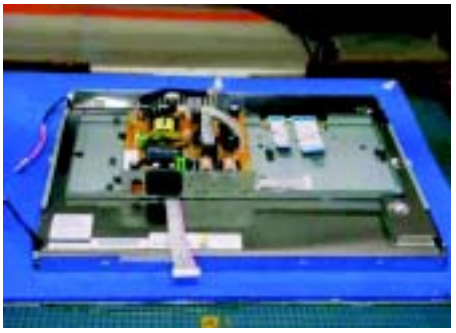


Step (8)
Unlock & remove the control board .

Step (9)
Unlock & remove the power board, take off the cable .

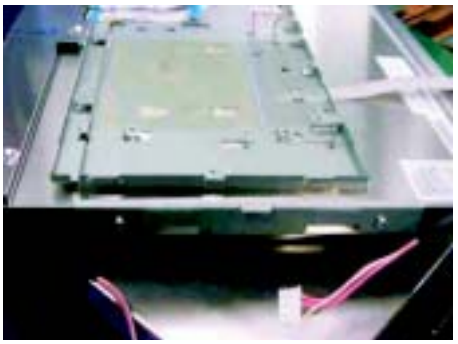
Step (10)
Unlock & remove the inverter board, take off the cable ..

Mechanical Instructions (Continued)



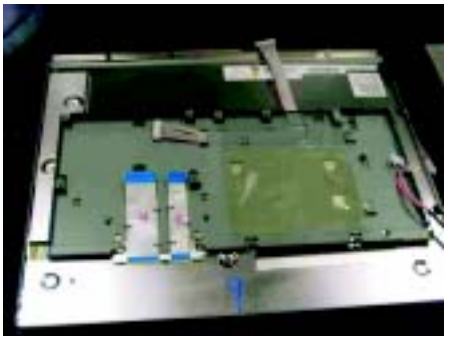
Step (11)
Unlock & remove the inverter & power board; take off the cable& cover ....

Step (13)
Unlock & remove the power, scaler Board....



Step (12)
Unlock & remove the power board ....

Step (14)
Unlock & remove the back metal cover on the LCD panel .
Done !.



****

In warranty, it is not allowed to disassembly the LCD panel, even the Backlight unit defect.
Out of warranty, the replacemtne of Backlight Unit is a correct way when the defect is caused by Backlight (CCFL,Lamp).

****

Warning and Notes

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Warnings

1. Safety regulations require that the unit should be returned in its original condition and that components identical to the original components are used. The safety components are indicated by the symbol ⚠ .

2. In order to prevent damage to ICs and transistors, all high-voltage flash-overs must be avoided. In order to prevent damage to the picture tube, the method shown in Fig. 1 should be used to discharge the picture tube. Use a high-voltage probe and a multimeter (position DC-V). Discharge until the meter reading is **0 V** (after approximately 30 seconds).

3. **ESD**
   All ICs and many other semiconductors are sensitive to electrostatic discharges (ESD). Careless handling during repair can drastically shorten their life. Make sure that during repair you are connected by a pulse band with resistance to the same potential as the ground of the unit. Keep components and tools also at this same potential.

4. When repairing a unit, always connect it to the AC Power voltage via an isolating transformer.

5. Be careful when taking measurements in the high-voltage section and on the picture tube panel.

6. It is recommended that saferty goggles be worn when replacing the picture tube.

7. When making adjustments,use plastic rather than metal tools. This will prevent any short-circuit or the danger of a circuit becoming unstable.

8. Never replace modules or other components while the unit is switched on.

9. Together with the defleciton unit, the picture tube is used as an integrated unit. Adjustment of this unit during repair is not recommended.

10. After repair, the wiring should be fastened in place with the cable clamps.

11. All units that are returned for service or repair must pass the original manufactures safety tests.

Notes

1. The direct voltages and waveforms are average voltages. They have been measured using the Service test software and under the following conditions :
   - Mode : 640 * 480 (31.5kHz / 60Hz)
   - Signal pattern : grey scale
   - Adjust brightness and contrast control for the mechanical mid-position (click position)

2. The picture tube panel has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.

3. The semiconductors indicated in the circuit diagram(s) and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

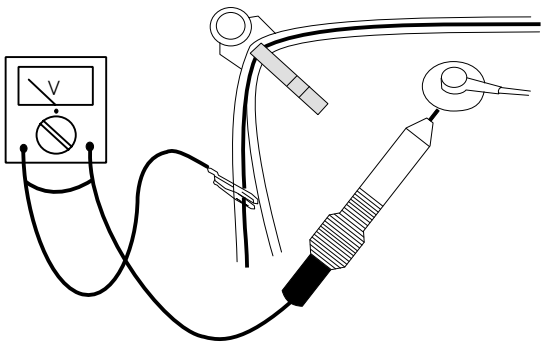


Fig.1 (CRT only)

CLOCK & PHASE Adjustments

The monitor has build-in a auto adjustment hotkey on the front panel, you may obtained a optimal video display by simply press the **AUTO** button and save the settings. CLOCK, PHASE, Vertical position, and Horizontal position are adjusted automatically.

Due to the different quality of video signal generated from graphics cards. By press AUTO button for CLOCK and PHASE adjustment automatically. Sometimes, the deviation of video signal which generated from graphics cards is out of control, then it is necessary to adjust CLOCK and PHASE functions for the optimal video display of LCD monitor by manual. Following steps will guide you to make correct adjustment of CLOCK and PHASE.

However, CLOCK and PHASE functions are only available while analog video signal is supplied. Operating unit under digital signal state, the video clock information can be obtained from graphics cards directly. Therefor, it is unnecessary to adjust these functions.

Front control panel

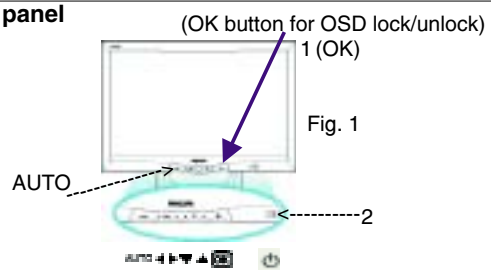


Fig. 1

1 = Buttons for the OSD menu (On-Screen-Display)
2 = Power button

Manual adjustment

If the quility of display still poor or flicker, you may also improve it by manual adjust CLOCK and PHASE functions to eliminate the flicker.

Step 1 : Click on the Start button (Win95, Win98 or Win NT) and choose " Shut Down...". as shown in Fig. 2.

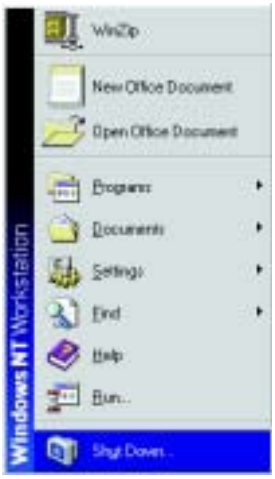


Fig. 2

Step 2 : The menu of " Shut Down Windows " is as shown in Fig. 3

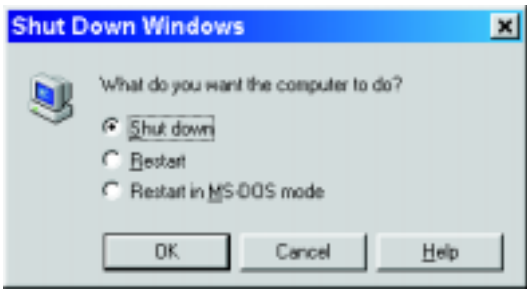


Fig. 3 (Win 98)

Step 3 : Retain Shut Down Window on the screen , follow the CLOCK and PHASE adjustment instructions for the optimal video display.

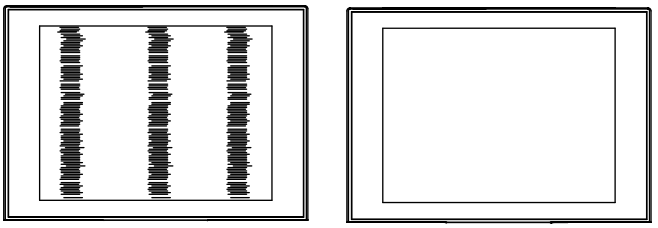
Step 4 : Press the OK button to bring up MAIN CONTROLS (OSD menu).

Fig. 4

Step 5 : Select Video Noise by press button, bring up it□s submenu.

Step 6 : Using UP or DOWN button to select "CLOCK" or "PHASE".

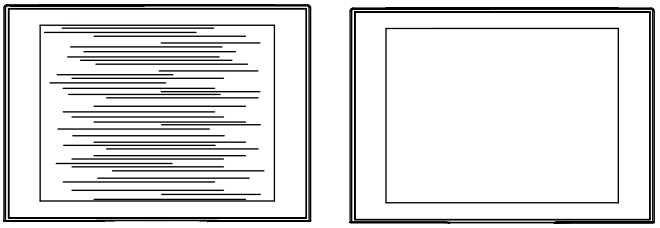
Step 7 : Press Left or Right button to adjust CLOCK. The picture will be adjusted as following figure, adjust CLOCK to fine-tune the video until optimal display is obtained.



CLOCK Phenomenon
(Before)

(After)

Step 8 : Press Left ◀ or Right ▶ button to adjust PHASE. The picture will be adjusted as following figure, adjust PHASE and check the picture, stop at the point that without any vertical jitter bar remaining on the screen.



PHASE phenomenon
(Before)

(After)

Step 9 : Quit OSD menu by press OK button to save the settings.

Electrical Instructions

0. General
When carry-out the electrical settings in many cases a video signal must be applied to the monitor. A computer with :

- ATI VGA 1024 V6-1.04/PH BETA4 interface card
- PGA 1024 (4822 212 30916), Mach 8.
- PGA 1280 (4822 212 30917), Mach 32.
- ATI GPT-1600 (4822 397 10065), Mach 64 (up to 107kHz)

are used as the video signal source. The signal patterns are selected from the "service test software" package, see user guide 4822 727 19896 (ATI1024),
or 4822 727 20273 (PGA 1280), or
4822 727 21046 (GPT-1600).

0.1 **With normal VGA card:**
If not using the ATI card during repair or alignment, The service engineer also can use this service test software adapting with normal standard VGA adaptor and using standard VGA mode 640 x 480, 31.5 kHz/60 Hz (only) as signal source.

0.2 **AC/DC Measurement:**
The measurements for AC waveform and DC figure is based on 640 x 480 31.5 kHz/60 Hz resolution mode with test pattern "16 gray scale".
Power input: 110V AC

General points

1.1 During the test and measuring, supply a distortion free AC mains voltage to the apparatus via an isolated transformer with low internal resistance.
1.2 All measurements mentioned hereafter are carried out at a normal mains voltage (90 - 132 VAC for USA version, 195 -264 VAC for EUROPEAN version, or 90 - 264 VAC for the model with full range power supply, unless otherwise stated.)
1.3 All voltages are to be measured or applied with respect to ground, unless otherwise stated.
Note: don't use heat-sink as ground.
1.4 The test has to be done on a complete set including LCD panel in a room with temperature of 25 +/- 5 degree C.
1.5 All values mentioned in these test instruction are only applicable of a well aligned apparatus, with correct signal.
1.6 The letters symbols (B) and (S) placed behind the test instruction denotes
(B): carried out 100% inspection at assembly line
(S): carried out test by sampling
1.7 The white balance (color temperature), has to be tested in subdued lighted room.
1.8 Repetitive power on/off cycle are allowed.

2. Input signal
Signal type
2.1.1 Analog Video : 0.7 Vp-p linear, positive polarity
Sync. : TTL level, separate, positive or negative polarity
Signal source: pattern generator format as attachment.
(table 1 to 29) Reference generator : QuantumData 802G

2.2 Input signal mode

(1) Preset Modes (29 modes)

#	Resolution	H-Frequency	Pixel rate	V-Frequency	Comment
1	640X350	31.5K	25.175	70Hz	IBM VGA 10h
2	720X400	31.5K	28.322	70Hz	IBM VGA 3h
3	640X480	31.5K	25.175	60Hz	
4	640X480	35.0K	30.24	67Hz	
5	640X480	37.9K	31.5	72Hz	
6	640X480	37.5K	31.501	75Hz	
7	640X480	43.3K	36	85Hz	
8	800X600	35.2K	36	56Hz	
9	800X600	37.9K	40	60Hz	
10	800X600	48.1K	50	72Hz	
11	800X600	46.9K	49.498	75Hz	
12	800X600	53.7K	56.251	85Hz	
13	832X624	49.7K/	57.28	75Hz	MAC
14	1024X768	48.4K	65	60Hz	
15	1024X768	56.5K	75	70Hz	
16	1024X768	60.0K	78.75	75Hz	
17	1024X768	61.1K	83.096	76Hz	IBM XGA-2
18	1024X768	68.7K	94.5	85Hz	
19	1152X864	54.0K	79.9	60Hz	Non-VESA
20	1152X864	63.9K	94.5	70Hz	Non-VESA
21	1152X864	67.5K	108	75Hz	
22	1152X870	68.7K	100	75Hz	MAC
23	1152X900	61.8K	92.94	66Hz	SUN Mode IV
24	1152X900	71.8K	108	76Hz	SUN Mode II
25	1280X960	60.0K	108	60Hz	
26	1280X960	75.0K	129.895	75Hz	Non-VESA
27	1280X1024	64.0K	108	60Hz	
28	1280X1024	71.7K	117	67Hz	SUN Mode V
29	1280X1024	76.0K	130.223	72Hz	DOS/V
30	1280X1024	80.0K	135	75Hz	
31	1280X1024	81.1K	135.008	76Hz	SUN Mode I
32	688X556	31.3K	27	50Hz	TV-PAL
33	960X720	44.76K	57.58	60Hz	
34	960X720	56.4K	72.42	75Hz	

(2) Factory Preset Modes (15 modes)

#	Resolution	H-Frequency	Pixel rate	V-Frequency	Comment
1	640X350	31.5KHz	25.175	70Hz	IBM VGA 10h
2	720X400	31.5KHz	28.322	70Hz	IBM VGA 3h
3	640X480	37.5KHz	31.501	75Hz	
4	640X480	35.0KHz	30.24	67Hz	
5	640X480	31.5KHz	25.175	60Hz	
6	800X600	35.2KHz	36	56Hz	
7	800X600	46.9KHz	49.498	75Hz	
8	800X600	37.9KHz	40	60Hz	
9	832X624	49.7KHz	57.28	75Hz	MAC
10	1024X768	60.0KHz	78.75	75Hz	
11	1024X768	48.4KHz	65	60Hz	
12	1152X870	68.7KHz	100	75Hz	MAC
13	1152X900	71.8KHz	108	76Hz	SUN Mode II
14	1280X1024	64.0KHz	108	60Hz	
15	1280X1024	80.0KHz	135	75Hz	
16	688X556	31.3KHz	27	50Hz	TV-PAL

2.3 Allowed 85 Hz overscan signal mode specified

Once the signal input of PC is 85Hz, this monitor is able to display at least for 10 minutes . An attention signal appears and shows This is 85Hz overscan for 5 seconds, change computer display input to 1280*768 @ 60 Hz

Dot rate (MHz)	H.freq (KHz)	Mode	Resolution	V.freq (Hz)
36.000	43.269	VESA	640 * 480	85.008
56.250	53.674	VESA	800 * 600	85.061
94.500	68.677	VESA	1024 * 768	84.997

3. Power Supply

3.1 Setup the AC I/P at 90VAC, add 2.6A loading to C2117 and DC output voltage is 3.3V +/- 0.165V DC.
1A loading to C2119 and DC output voltage is 5V +/- 0.5V. (B).
3.2 DC setting
3.01 Detach 8052 to the scaler board before testing the function.
3.02 Apply 12V DC voltage to 1105. (B)
3.03 Connect inverter board to 8051 (B)
3.04 Check voltage at C2003 should be within the range 3.3V +/- 0.165V DC.(B)

4. Display Adjustment
4.1Input signals check
In factory mode, use 64 gray level and set the R,G,B gain to 100%.
4.2 Display quality test
Use timing mode as describe in 2.2, and use the pixel on / off pattern to adjust the clock until no stripe and adjust the phase until clear picture.
Check all pre-setting 29 modes.

4.2.1 SOG mode test : Use following timing for SOG test

47.7 KHz/60Hz, 1280 X 768, pixel=80.136 MHz

Horizontal			Vertical		
Frame border	=	0	Frame border	=	0
Total size	=	20.964 µs	Total size	=	16.667 ms
Display size	=	15.973 µs	Display size	=	16.101 ms
Rear porch	=	2.496 µs	Rear porch	=	482.18 µs
Sync width	=	1.697 µs	Sync width	=	62.893 µs
Sync polarity	=	-	Sync polarity	=	+

4.3 Check of WHITE-D (B)

Apply a 1024*768 / 60Hz signal with white pattern, set brightness control at 100%, and contrast control at 70%. Adjust the R,G,B sub_gain, for the screen center,
the 1931 CIE chromaticity (X, Y) co-ordinates shall be;

	9300°K	6500°K
x (center)	0.281 ± 0.020	0.312 ± 0.020
y (center)	0.311 ± 0.020	0.338 ± 0.020

Use Minolta CA-110 for color coordinates and luminance check.
Luminance : 380 Nits in the center of the screen when brightness at 100% and contrast set to 100%.
4.4 Check the digital interface
Check the 64 gray level color poor & noise condition.

TIMING FOR 170B4 TFT SXGA COLOR LCD MONITOR
(VESA monitor timing standard Version 1.0 Release 0.7)

REFERENCE PATTERN GENERATOR : QuantumData 802G

Please refer to General product specification for detail timings.

Factory mode

Front control panel

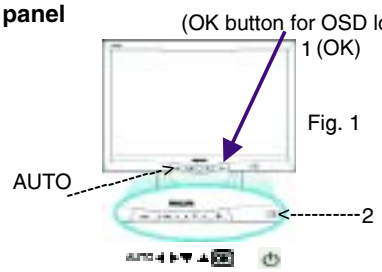


Fig. 1

1 = Buttons for the OSD menu (On-Screen-Display)
2 = Power button

Basic and simple instruction on the control keys.

When you press the button on the front control of your monitor, the On-Screen Display (OSD) Main Controls window will pop up and you can then start making adjustments to your monitor's various features.

Access Factory Mode

How to Get into Factory Mode Menu

Step 1 :
Turn off monitor.

Step 2 :
[Push AUTO " " & OK " " buttons at the same time and hold it] + [Press power " " button untill comes out "Windows screen"] => then release all buttons.

Step 3 :
Press OK " " button, bring up Factory mode indication as shown in Fig 2.

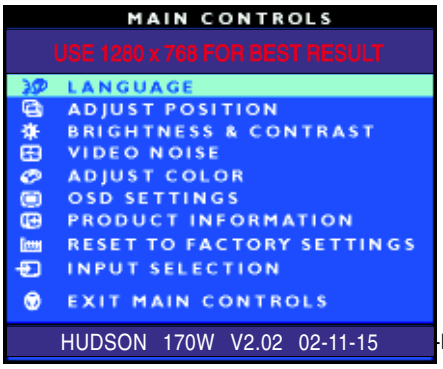


Fig. 2

Factory mode indicator

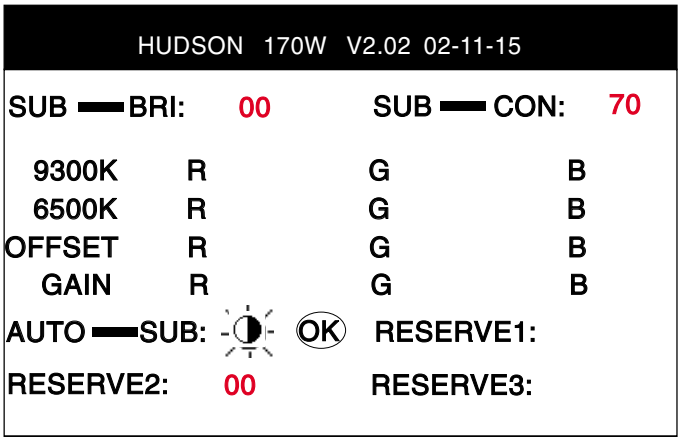


Fig. 3

SUB BRI:

NO FUNCTION.

SUB CON:

Contrast adjustment (Sub-Contrast). Use this menu item to adjust the contrast gain of pre-amp ranges from 0 to 255.

9300K R G B
6500K R G B

Color temperature gain adjustment. Use these menu items to adjust the RGB gains of pre-amp for different color temperatures, ranges from 0 to 255.

OFFSET R G B

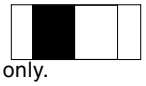
Sub-Brightness adjustment. Use this menu item to adjust the brightness level (DC-level) of pre-amp range from 0 to 255.(R/G/B ANALOG DC -level).

GAIN R G B

R/G/B GAIN adjustment. Use this menu item to adjust the R/G/B (GAIN) of Amp. range from 0 to 255.(R/G/B ANALOG GAIN Values).

AUTO SUB: OK

Do not use this function here.
It is for 1024x768/60Hz with special pattern only.

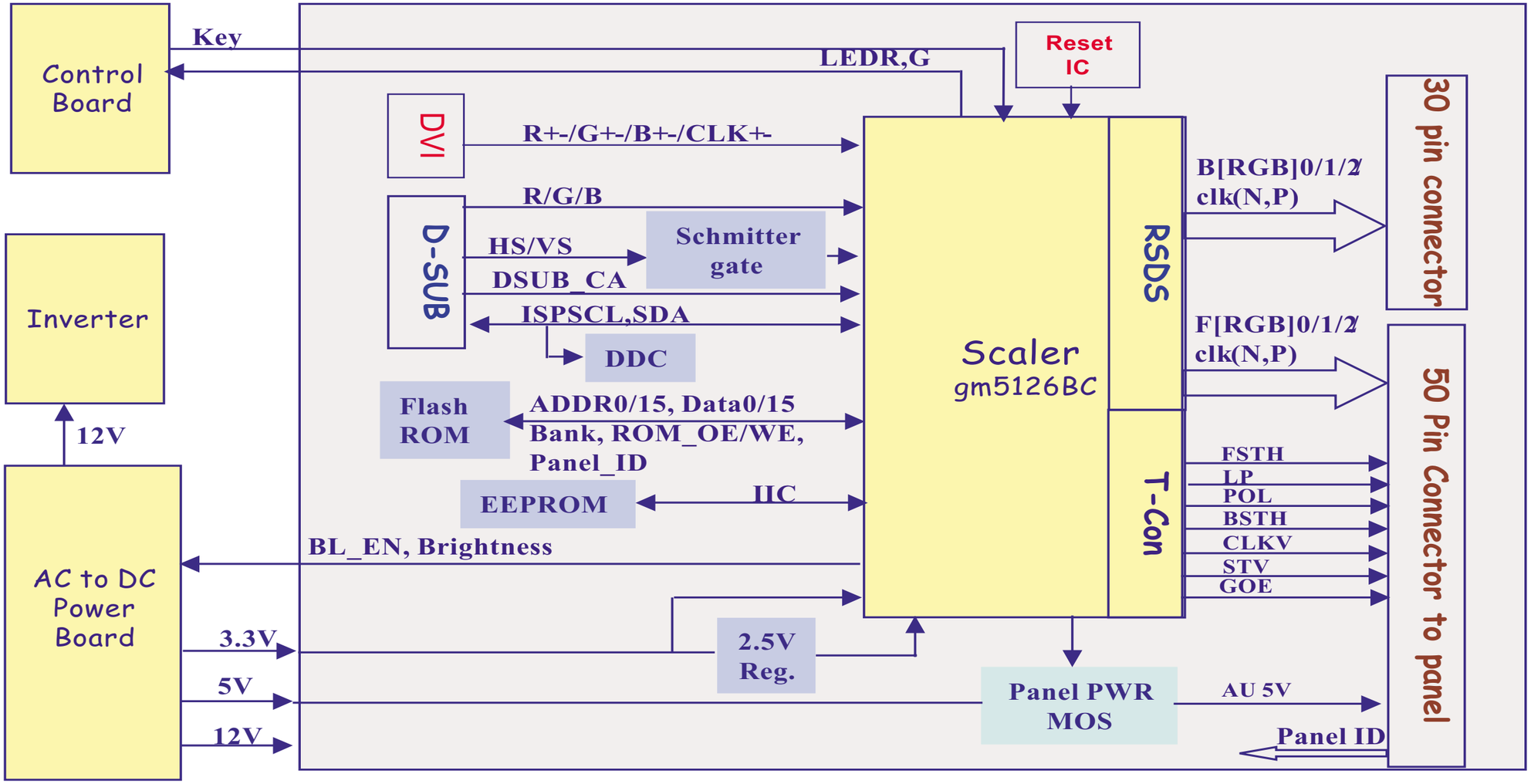


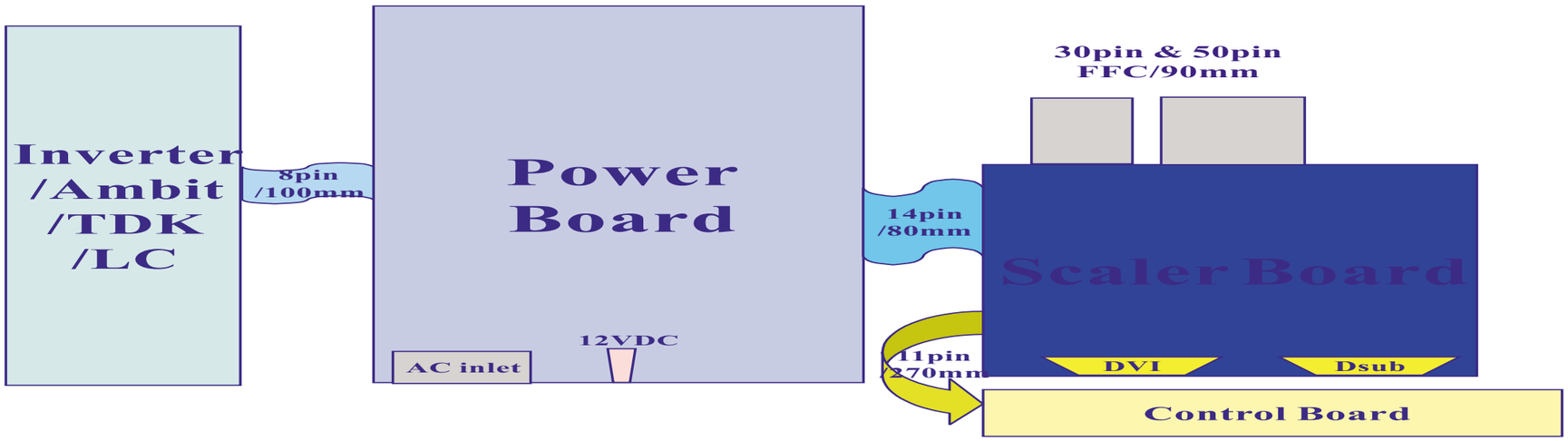
RESERVE1: NO FUNCTIONED, RESERVED ONLY.
RESERVE2: Default is "00". The others "01", "02" & "03".
RESERVE3: NO FUNCTIONED, RESERVED ONLY.

RESERVE2:
00 : Stands for 1280x768/72Hz & 1280x768/75Hz
01 : Stands for 1024x768/72Hz & 1280x768/75Hz
02 : Stands for 1024x768/75Hz & 1280x768/72Hz
03 : Stands for 1024x768/72Hz & 1024x768/75Hz

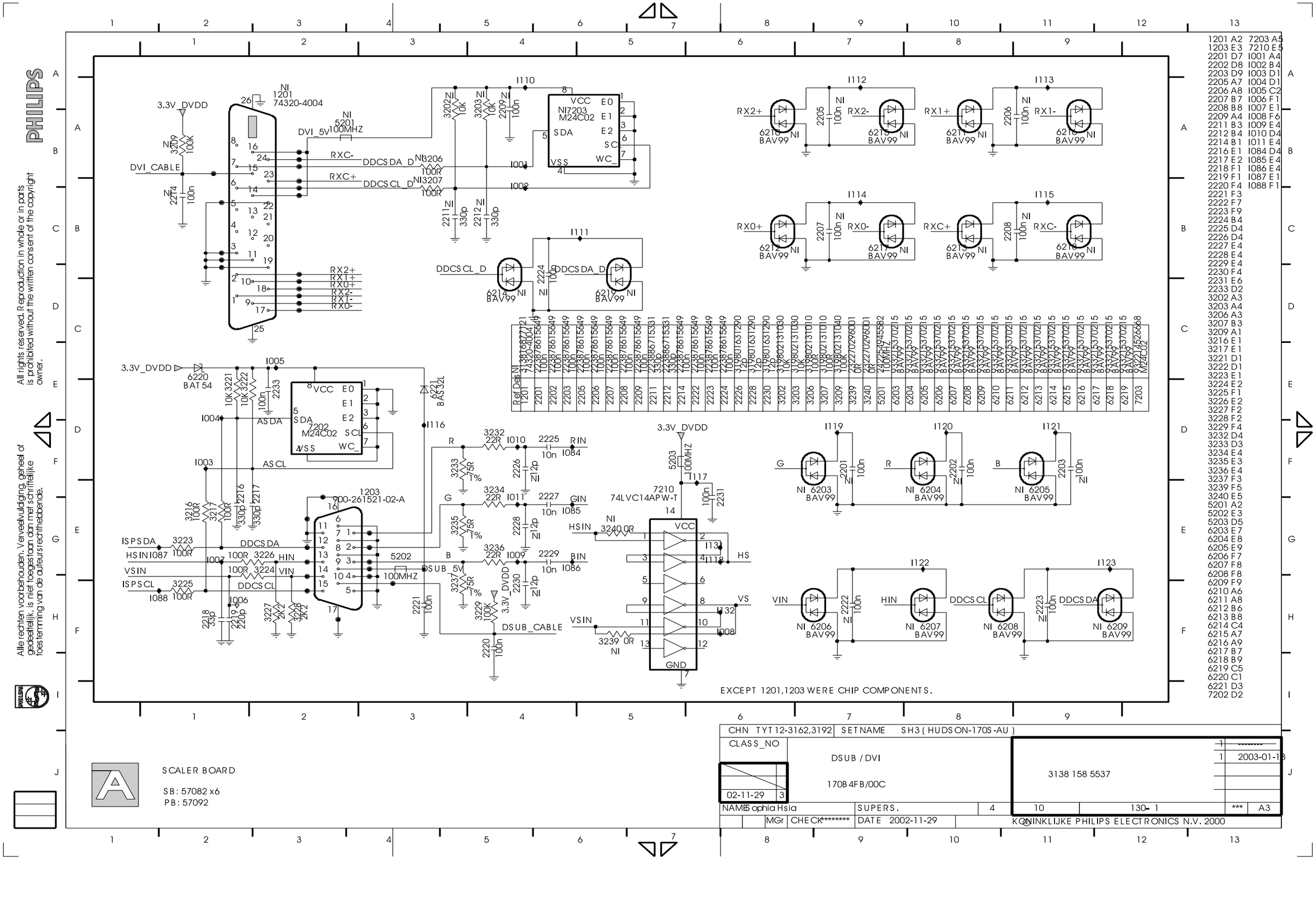
Hot key function: by pressing "**LEFT**" and "**DOWN**" key simultaneously at User mode (or Factory mode), 4 kinds (00, 01, 02, 03) of resolution can be switched on screen.

(PS: The Offset R G B function can be used on reduce or eliminate snowy noise on the background when the resolution of video signal is 1280 X 1024 vertical 60Hz. Slightly increase or decrease the value until snowy noise completely disappear.)


Control Board
Key
LEDR,G
Reset IC
DVI
R+-/G+-/B+-/CLK+-
D-SUB
R/G/B
HS/VS
Schmitter gate
DSUB_CA
ISPSCL,SDA
DDC
Flash ROM
ADDR0/15, Data0/15
Bank, ROM_OE/WE,
Panel_ID
EEPROM
IIC
Scaler
gm5126BC
RSDS
T-Con
B[RGB]0/1/2/
clk(N,P)
F[RGB]0/1/2/
clk(N,P)
30 pin connector
50 Pin Connector to panel
FSTH
LP
POL
BSTH
CLKV
STV
GOE
Inverter
12V
AC to DC Power Board
BL_EN, Brightness
3.3V
5V
12V
2.5V Reg.
Panel PWR MOS
AU 5V
Panel ID


Inverter /Ambit /TDK /LC
8pin /100mm
Power Board
AC inlet
12VDC
30pin & 50pin FFC/90mm
14pin /80mm
Scaler Board
DVI
Dsub
11pin /270mm
Control Board

D-sub / DVI Schematic Diagram



Ref Des	NI
1201	74320-4004
2201	100n
2202	100n
2203	100n
2205	100n
2206	100n
2207	100n
2208	100n
2209	100n
2211	330p
2212	330p
2214	100n
2222	100n
2223	100n
2224	100n
2226	12p
2227	12p
2228	12p
2230	12p
3202	10K
3203	10K
3206	100R
3207	100R
3209	100R
3239	0R
3240	0R
5201	100MHZ
6203	BAV99
6204	BAV99
6205	BAV99
6206	BAV99
6207	BAV99
6208	BAV99
6209	BAV99
6210	BAV99
6211	BAV99
6212	BAV99
6213	BAV99
6214	BAV99
6215	BAV99
6216	BAV99
6217	BAV99
6218	BAV99
6219	BAV99
7203	M24C02

1201	A2
1203	E3
2201	D7
2202	D8
2203	D9
2205	A7
2206	A8
2207	B7
2208	B8
2209	A4
2211	B3
2212	B4
2214	B1
2216	E1
2217	E2
2218	F1
2219	F1
2220	F4
2221	F3
2222	F7
2223	F9
2224	B4
2225	D4
2226	D4
2227	E4
2228	E4
2229	E4
2230	F4
2231	E6
2233	D2
3202	A3
3203	A4
3206	A3
3207	B3
3209	A1
3216	E1
3217	E1
3221	D1
3222	D1
3223	E1
3224	E2
3225	F1
3226	F2
3227	F2
3228	F2
3229	F4
3232	D4
3233	D3
3234	E4
3235	E3
3236	E4
3237	F3
3239	F5
3240	E5
5201	A2
5202	E3
5203	D5
6203	E7
6204	E8
6205	E9
6206	F7
6207	F8
6208	F8
6209	F9
6210	A6
6211	A8
6212	B6
6213	B8
6214	C4
6215	A7
6216	A9
6217	B7
6218	B9
6219	C5
6220	C1
6221	D3
7202	D2
7203	A5
7210	E5
I001	A4
I002	B4
I005	C2
I007	E1
I008	F6
I009	E4
I010	D4
I011	E4
I084	D4
I085	E4
I086	E4
I087	E1
I088	F1

EXCEPT 1201,1203 WERE CHIP COMPONENTS.

CHN	TYT12-3162,3192	SETNAME	SH3 (HUDSON-170S-AU)		
CLASS_NO		DSUB / DVI		3138 158 5537	1 2003-01-13
02-11-29	3	170B4FB/00C			
NAME	Sophia Hsia	SUPERS.	4	10	130- 1 *** A3
	MGr	CHECK********	DATE 2002-11-29	KONINKLIJKE PHILIPS ELECTRONICS N.V. 2000	

ROM Schematic Diagram

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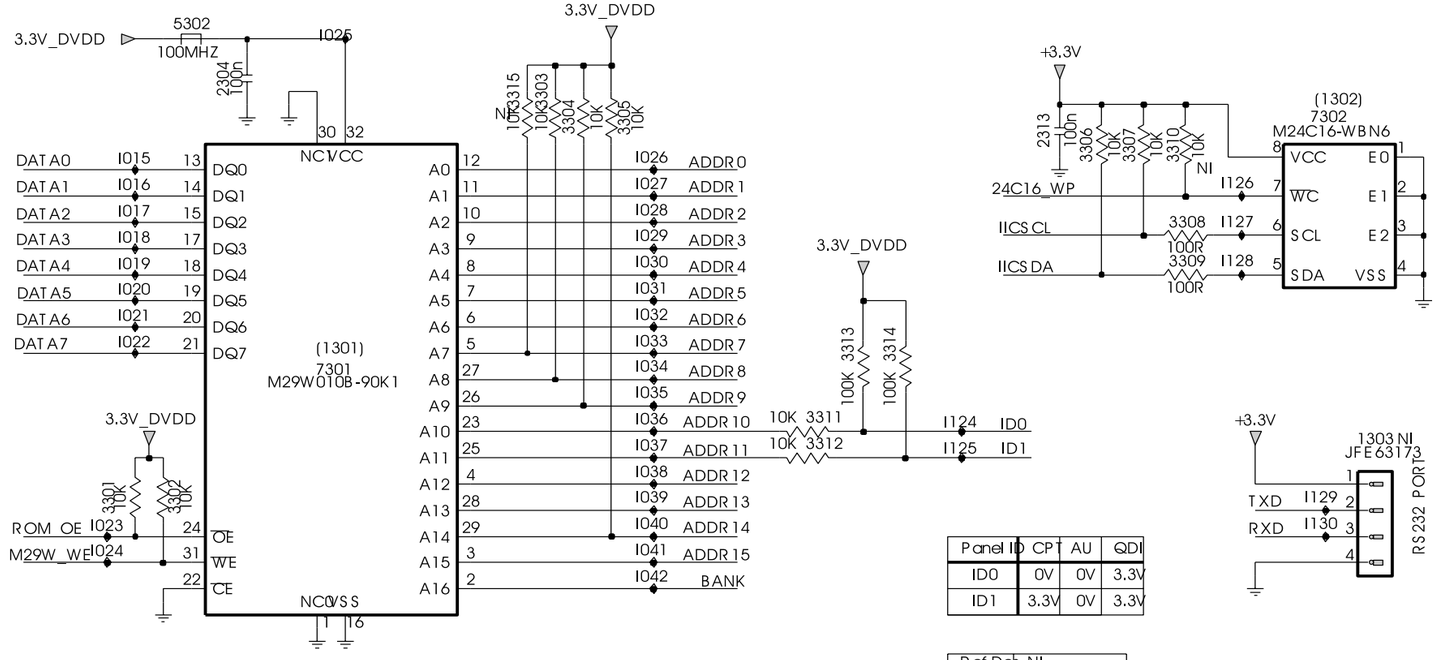
SCALER BOARD

SB: 57082 x6
PB: 57092



Panel ID	CPT	AU	QDI
ID0	0V	0V	3.3V
ID1	3.3V	0V	3.3V

Ref Des	NI
1303	313816876941 JFE63173
3310	3198021310 30 10K
3315	3198021310 30 10K

1303 D8
2304 B3
2313 B7
3301 D2
3302 D2
3303 B4
3304 B4
3305 B5
3306 B7
3307 B7
3308 C7
3309 C7
3310 B7
3311 D6
3312 D6
3313 D6
3314 D6
3315 B4
5302 B2
7301 D3
7302 C8
I015 C2
I016 C2
I017 C2
I018 C2
I019 C2
I020 C2
I021 C2
I022 D2
I023 E2
I024 E2
I025 B3
I026 C5
I027 C5
I028 C5
I029 C5
I030 C5
I031 C5
I032 C5
I033 D5
I034 D5
I035 D5
I036 D5
I037 D5
I038 D5
I039 D5
I040 E5
I041 E5
I042 E5
I124 D6
I125 D6
I126 C8
I127 C8
I128 C8
I129 D8
I130 E8

EXCEPT 1301,7302 WERE CHIP COMPONENTS.

CHN TYT12-	SETNAME SH3(HUDSON-170S-AU)		
CLASS_NO	ROM	1 --------	
2002-11-29 3	170B4FB/00C	3138 158 5537	
NAME Sophia Hsia	SUPERS.	4 10 130- 2	*** A3
MGr CHECK********	DATE 2002-11-29	KONINKLIJKE PHILIPS ELECTRONICS N.V. 2000	

Scaler Board Schematic Diagram

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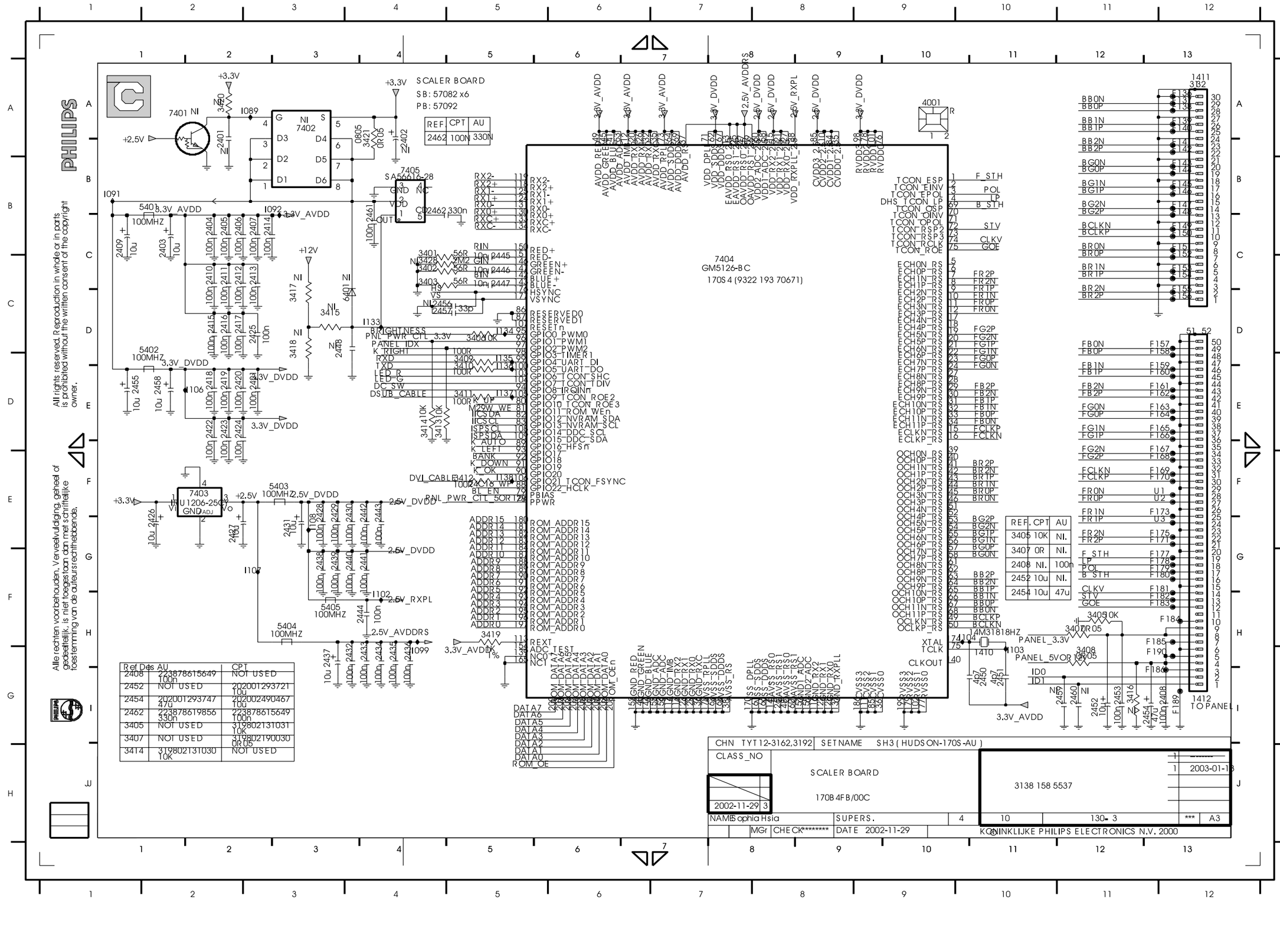

U1 E12 F140 A12
U2 E12 F141 A12
U3 E12 F142 A12
1410 G10 F143 B12
1411 A12 F144 B12
1412 G12 F145 B12
2401 A2 F146 B12
2402 A4 F147 B12
2403 B2 F148 B12
2404 B2 F149 B12
2405 B2 F150 B12
2406 B2 F151 B12
2407 B3 F152 C12
2408 G12 F153 C12
2409 B1 F154 C12
2410 C2 F155 C12
2411 C2 F156 C12
2412 C2 F157 C12
2413 C3 F158 D12
2414 B3 F159 D12
2415 C2 F160 D12
2416 C2 F161 D12
2417 C2 F162 D12
2418 D2 F163 D12
2419 D2 F164 D12
2420 D2 F165 D12
2421 D3 F166 D12
2422 D2 F167 E12
2423 D2 F168 E12
2424 D2 F169 E12
2425 C3 F170 E12
2426 E2 F171 E12
2427 E2 F173 E12
2428 E3 F175 E12
2429 E3 F177 F12
2430 E4 F178 F12
2431 E3 F179 F12
2432 G4 F180 F12
2433 G4 F181 F12
2434 G4 F182 F12
2435 G4 F183 F12
2436 G4 F184 F12
2437 G3 F185 F11
2438 F3 F186 G11
2439 F3 F189 G12
2440 F4 F190 G11
2441 F4 I089 A3
2442 E4 I091 B1
2443 E4 I092 B3
2444 F4 I099 G4
2445 B5 I102 F4
2446 C5 I103 G10
2447 C5 I104 F10
2448 C3 I106 D2
2450 G10 I107 F3
2451 G10 I108 E3
2452 G11 I133 C4
2453 G11 I134 C5
2454 G11 I135 D5
2455 D1 I136 D5
2456 C4 I137 D5
2457 C4 I138 E5
2458 D2
2459 G10
2460 G11
2461 B4
2462 B4
3401 C4
3402 C4
3403 C4
3405 F11
3406 C5
3407 F11
3408 G11
3409 D5
3410 D5
3411 D5
3412 E5
3413 D4
3414 D4
3415 C3
3416 G11
3417 C3
3418 C3
3419 F5
3420 A2
3421 A4
3428 C4
4001 A9
5401 B2
5402 D2
5403 E3
5404 F3
5405 F3
6401 C3
7401 A2
7402 A3
7403 E2
7404 C7
7405 B4
F136 A12
F137 A12
F138 A12
F139 A12

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Power Schematic Diagram

PHILIPS

1502 JFE6339V

TO POWER BOARD 8052

BRIGHTNESS
BL_EN
PANEL_IDX
PWR_SAVING

1503 JFE6339V

TO CONTROL BOSRD 1712

K_AUTO
K_OK
K_DOWN
K_UP
K_LEFT
K_RIGHT
DC_SW
PWR_SAVING

+12V
+5V
+3.3V

LED_R
LED_G

Ref Des	CPT	NI	AU
2502	223878615649 100n	NOT USED	NOT USED
2504	NOT USED	NOT USED	223878615649 100n
2510	NOT USED	223858615636	NOT USED
2511	NOT USED	223858615636	NOT USED
2512	202001293721 10u	NOT USED	NOT USED
2513	NOT USED	NOT USED	223858615636 10n
2514	NOT USED	NOT USED	202001293747 47u
2534	202001293747 47u	NOT USED	NOT USED
2535	NOT USED	NOT USED	202001293747 47u
2541	223878615647 68n	NOT USED	NOT USED
2542	223878615649 100n	NOT USED	NOT USED
2543	202001293747 47u	NOT USED	NOT USED
3510	NOT USED	232270296001	NOT USED
3516	319802190030 0R05	NOT USED	NOT USED
3517	319802131040 100K	NOT USED	NOT USED
3518	319802131040 100K	NOT USED	NOT USED
3521	NOT USED	319802190030	NOT USED
3522	319802190030 0R05	NOT USED	NOT USED
3523	NOT USED	NOT USED	319802131040 100K
3524	NOT USED	NOT USED	319802131040 100K
3526	319802131030 10K	NOT USED	NOT USED
3527	319802131040 100K	NOT USED	NOT USED
3528	319802131040 100K	NOT USED	NOT USED
5501	242254945579 100MHZ HCB3216K	NOT USED	NOT USED
5502	NOT USED	NOT USED	242254945579 100MHZ HCB3216K
5504	242254945582 100MHZ FCM2012V	NOT USED	NOT USED
7503	932209265685 MUN2211J	NOT USED	NOT USED
7504	932216638668 SI5441DC	NOT USED	NOT USED
7506	NOT USED	NOT USED	932209265685 MUN2211J
7507	NOT USED	NOT USED	932216638668 SI5441DC
7508	932209265685 MUN2211J	NOT USED	NOT USED
7509	932216638668 SI5441DC	NOT USED	NOT USED

FOR AU PANEL ONLY

PNL_PWR_CTL_5OR12V
PANEL_5VOR12V
7506 MUN2211J
7507 SI5441DC

FOR CPT PANEL ONLY

3.3V_DVDD
PNL_PWR_CTL_3.3V
PNL_PWR_CTL_5OR12V
PANEL_3.3V
PANEL_5VOR12V
7503 MUN2211J
7504 SI5441DC
7508 MUN2211J
7509 SI5441DC

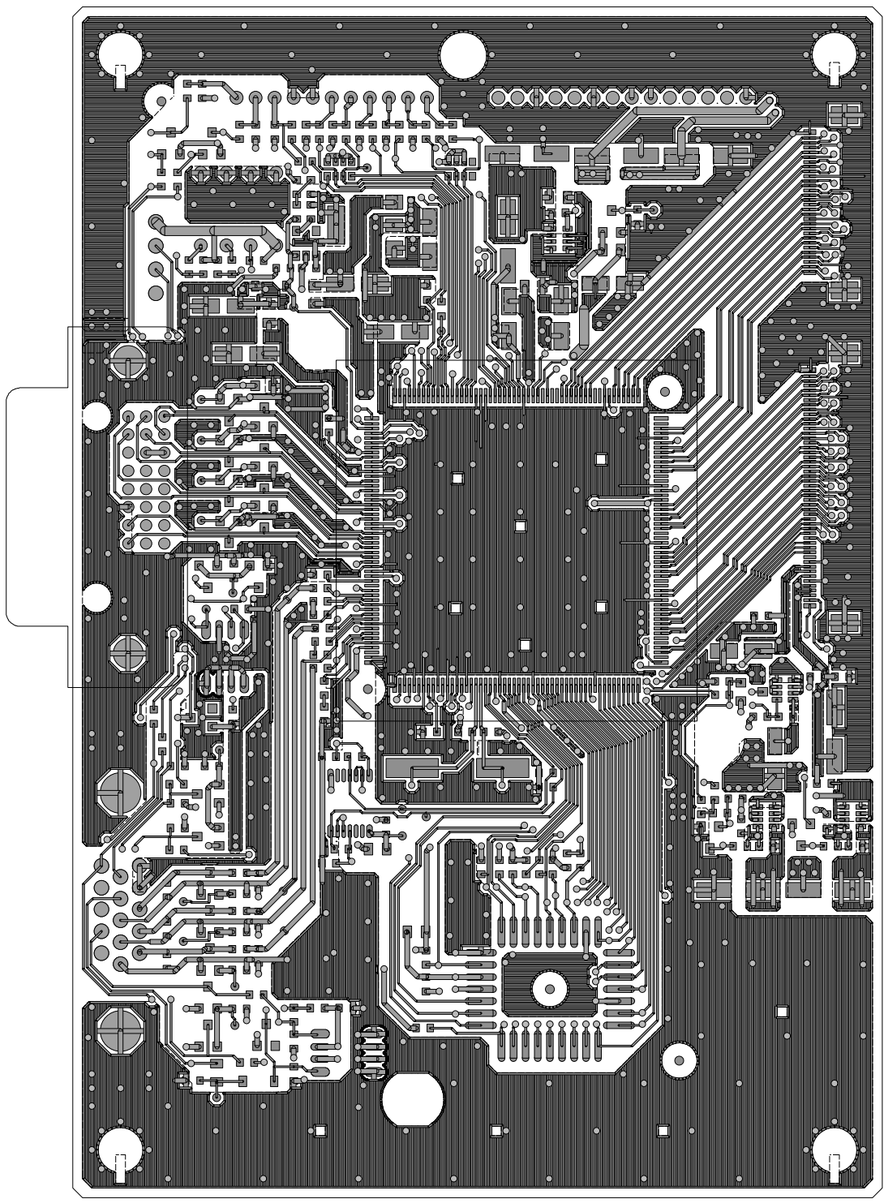
EXCEPT 1502,1503 WERE CHIP COMPONENTS.

SCALER BOARD
SB: 57081 x6
PB: 57091

CHN TYT12-	SETNAME SH3(HUDSON-170S-AU)		
CLASS_NO	POWER	3138 158 5537	1 --------
2002-11-29 3	170B4FB/00C		
NAME Sophia Hsia	SUPERS. 4	130- 4	A3
	CHECK DATE 2002-11-29	KONINKLIJKE PHILIPS ELECTRONICS N.V. 2000	

1502 A1 F061 E
1503 D1 F062 E
2501 B2 F063 E
2502 B3 F064 A
2503 C2 F065 A
2504 C3 F066 A
2505 C2 F067 A
2506 C3 F068 B
2510 D7 F069 B
2511 D8 F070 B
2512 D9 F071 B
2513 B8 F072 C
2514 B9 F073 C
2515 D2 I043 B3
2517 D2 I044 B3
2519 D2 I045 C3
2521 D2 I046 D3
2523 E2 I047 D3
2525 E2 I048 D3
2527 E2 I049 D3
2529 F2 I050 E3
2531 F2 I051 E3
2534 B3 I052 E3
2535 C3 I053 F2
2536 C3 I054 F3
2537 B2 I055 F3
2538 B3 I056 F4
2539 B3 I057 F4
2540 B3 I058 F4
2542 E8 I059 F4
2543 F9 I060 B7
3501 C3 I062 B7
3502 D3 I063 B8
3503 D3 I065 B9
3504 D3 I066 D6
3505 E3 I067 D7
3506 E3 I068 D7
3507 E3 I069 D8
3508 F3 I070 E9
3509 F3 I071 E7
3510 E2 I072 E8
3511 F4 I073 E8
3512 F4 I074 C8
3513 E5
3514 F5
3516 D7
3517 D8
3518 C8
3521 E7
3522 F7
3523 A8
3524 A8
2541 F7
3526 E7
3527 E8
3528 E8
5501 B2
5502 B2
5503 C2
5504 C8
7501 F3
7502 F3
7503 D7
7504 C9
7506 A7
7507 A9
7508 E7
7509 E9
F054 D1
F055 D1
F056 D1
F057 D1
F058 D1
F059 E1
F060 E1

C.B.A. (Scaler Board)



# REF	GRID LABEL	BOARD SIDE
1410	B1	B
1411	A1	B
1412	A1	B
2201	B1	B
2202	B1	B
2203	B1	B
2212	A1	B
2216	B1	B
2217	B1	B
2218	B1	B
2219	B1	B
2220	B1	B
2221	B1	B
2222	B1	B
2223	B1	B
2224	A1	B
2225	A1	B
2226	B1	B
2227	A1	B
2228	B1	B
2229	A1	B
2230	B1	B
2231	B1	B
2233	B1	B
2304	B1	B
2401	A1	B
2402	A1	B
2403	A1	B
2408	A1	B
2409	A1	B
2426	A1	B
2427	A1	B
2431	A1	B
2437	A1	B
2445	A1	B
2446	A1	B
2447	A1	B
2448	A1	B
2450	B1	B
2451	B1	B
2452	A1	B
2454	B1	B
2455	A1	B
2456	B1	B
2457	B1	B
2458	A1	B
2461	A1	B
2462	A1	B
2510	A1	B
2511	A1	B
2512	B1	B
2513	B1	B
2514	B1	B
2515	A1	B
2517	A1	B
2519	A1	B
2521	A1	B
2523	A1	B
2525	A1	B
2527	A1	B
2529	A1	B
2531	A1	B
2534	A1	B
2535	A1	B
2536	A1	B
2541	B1	B
2542	B1	B
2543	B1	B
3216	B1	B
3217	B1	B
3221	B1	B
3222	B1	B
3223	A1	B
3224	B1	B
3225	B1	B
3226	B1	B
3227	B1	B
3228	B1	B
3229	A1	B
3232	B1	B
3233	B1	B
3234	B1	B
3235	B1	B
3236	B1	B
3237	B1	B
3239	B1	B
3240	B1	B
3301	B1	B
3302	B1	B
3303	B1	B
3304	B1	B
3305	B1	B
3306	A1	B
3307	A1	B
3308	A1	B
3309	A1	B
3310	A1	B
3311	B1	B
3312	B1	B
3313	B1	B
3314	B1	B
3315	B1	B
3401	A1	B
3402	A1	B
3403	A1	B
3405	A1	B
3406	A1	B
3408	B1	B
3413	A1	B
3415	A1	B
3416	A1	B
3417	A1	B
3418	A1	B
3419	A1	B
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3421	A1	B
3426	B1	B
3427	A1	B
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3502	A1	B
3503	A1	B
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3505	A1	B
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3516	A1	B
3518	A1	B
3521	B1	B
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5302	B1	B
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5402	A1	B
5403	A1	B
5404	A1	B
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6208	B1	B
6209	B1	B
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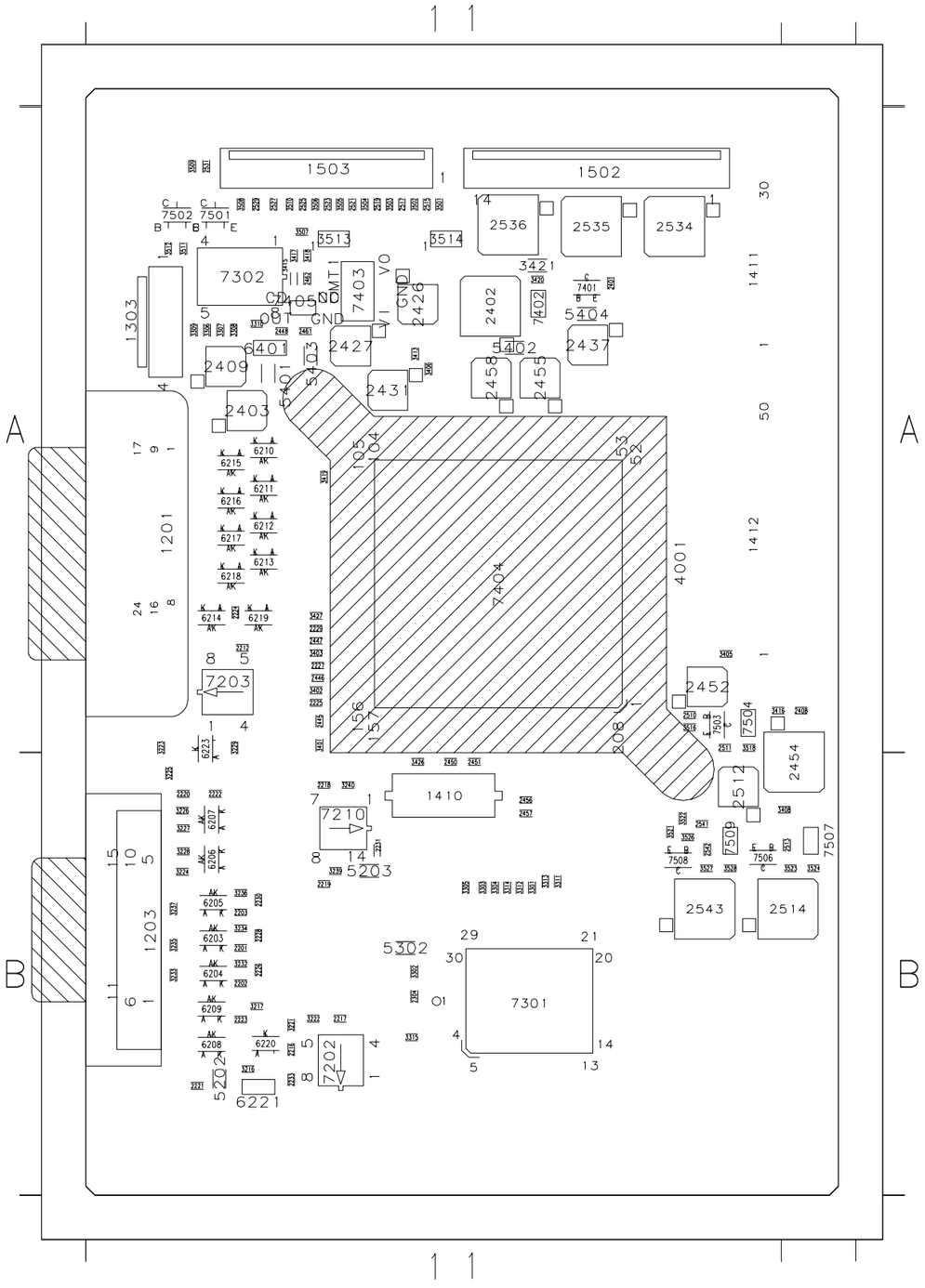
6218	A1	B
6219	A1	B
6220	B1	B
6221	B1	B
6223	A1	B
6401	A1	B
7202	B1	B
7203	A1	B
7210	B1	B
7301	B1	B
7401	A1	B
7402	A1	B
7403	A1	B
7404	A1	B
7405	A1	B
7501	A1	B
7502	A1	B
7503	A1	B
7504	A1	B
7506	B1	B
7507	B1	B
7508	B1	B
7509	B1	B

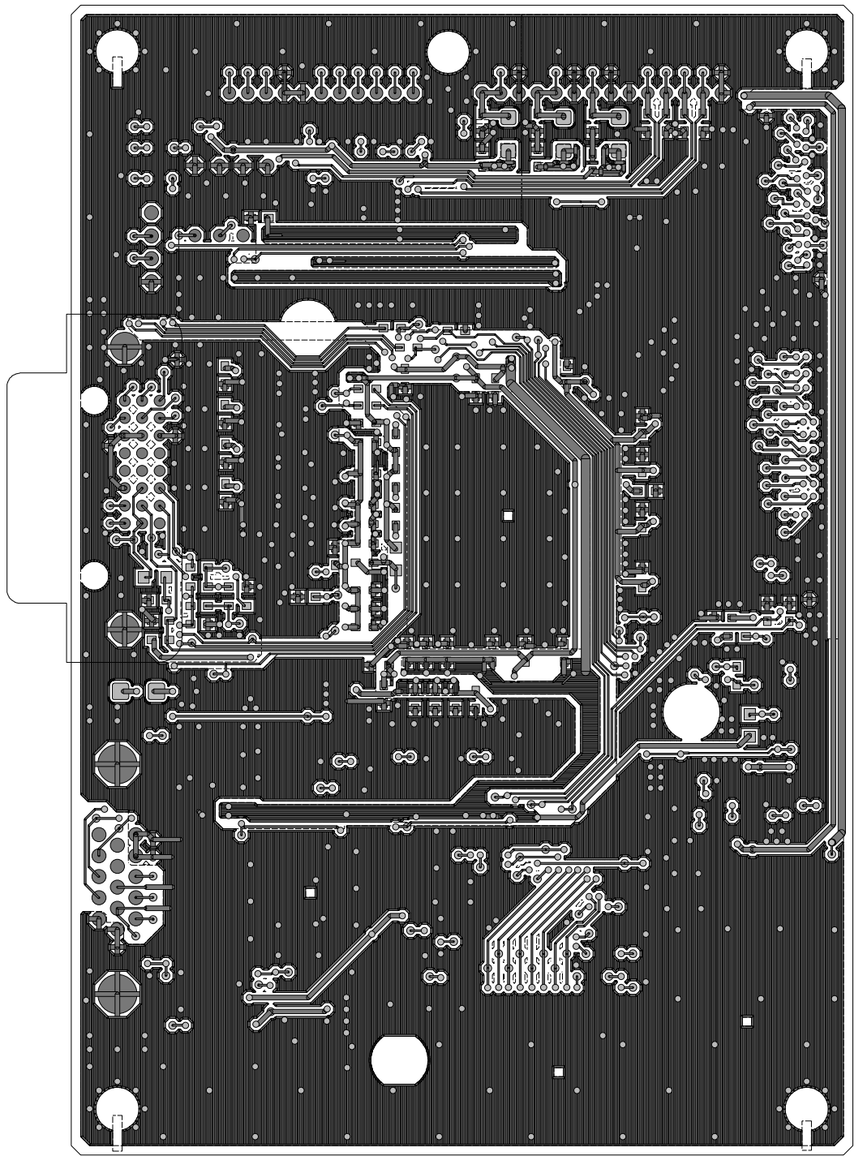
# REF	GRID LABEL	BOARD SIDE
1201	A1	B
1203	B1	B
1303	A1	B
1502	A1	B
1503	A1	B
4001	A1	B
7302	A1	B

Go to cover page

C.B.A. (Scaler Board)



C.B.A. (Scaler Board)



# REF	GRID LABEL	BOARD SIDE
2205	A1	A
2206	A1	A
2207	A1	A
2208	A1	A
2209	A1	A
2211	A1	A
2214	A1	A
2234	A1	A
2313	A1	A
2404	A1	A
2405	A1	A
2406	A1	A
2407	A1	A
2410	A1	A
2411	A1	A
2412	A1	A
2413	A1	A
2414	A1	A
2415	B1	A
2416	B1	A
2417	B1	A
2418	A1	A
2419	A1	A
2420	A1	A
2421	A1	A
2422	A1	A
2423	A1	A
2424	A1	A
2425	B1	A
2428	A1	A
2429	A1	A
2430	A1	A
2432	A1	A
2433	A1	A
2434	A1	A
2435	A1	A
2436	A1	A
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2439	A1	A
2440	A1	A
2441	A1	A
2442	A1	A
2443	A1	A
2444	A1	A
2453	A1	A
2459	A1	A
2460	A1	A
2501	A1	A
2502	A1	A
2503	A1	A
2504	A1	A
2505	A1	A
2506	A1	A
2537	A1	A
2538	A1	A
2539	A1	A
2540	A1	A
3202	A1	A
3203	A1	A
3206	A1	A
3207	A1	A
3209	A1	A
3407	A1	A
3409	A1	A
3410	A1	A
3411	A1	A
3412	A1	A
3414	A1	A
3428	A1	A
3517	A1	A
5201	A1	A
5405	A1	A
5501	A1	A
5502	A1	A
5503	A1	A
5504	B1	A
6222	B1	A

C.B.A. (Scaler Board)

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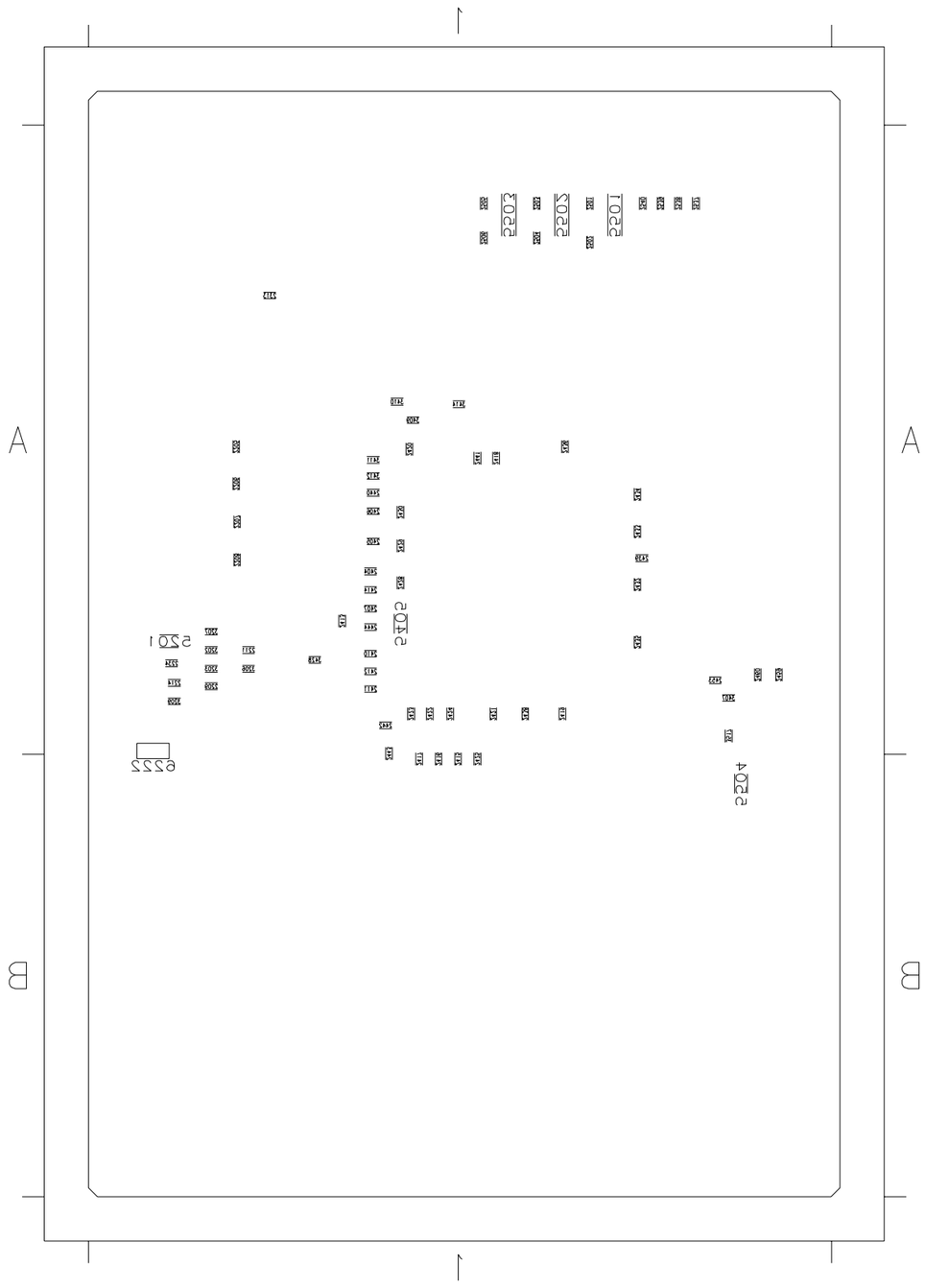

Power Shematic Diagram

PHILIPS

POWER BOARD
SB: 56922 x4
PB: 56932

AC ADAPTER

Ref Des	NI
T1102	2422086T0239 T3.15AH 250V
2101	203831000009 47n
2111	203855400009 220p
2120	202055490158 2n2
2128	223891015649 100n
3127	213811201244 240R
3135	319802190020
3136	319802151030 10K
3137	232271161824 820K
3138	232271161824 820K
3139	319802151090 10R
3140	213810113109 10R
6002	933753430133 BZD23-C15
6102	932216287683 PG4007
6116	933753430133 BZD23-C15
6117	934038620115 BZX284-C5V6
7104	CNY64_CNY64
7110	933567130126 BC517
8102	313811871211

REF.	170W	AU	CPT
3126	24K	33K	NO
3127	820K	240K	82K
3129	47K	47K	100K
2102	47n	220n	220n

CPT NI =3123,2118,6113,2119,3124,6115,7110,3136,3135,6117,3140.
AU NI =7110,3136,3135.
170W NI =3124,6117,3140.

© STAND FOR CHIP COMPONENTS.

1101	A1
1102	A1
1103	A1
1105	A9
2001	F2
2002	F2
2003	F6
2004	F4
2005	F5
2051	E3
2052	F3
2053	F3
2054	F1
2055	F1
2056	F1
2101	A1
2102	A2
2106	A5
2107	C2
2108	C4
2109	A6
2110	B2
2111	B5
2112	D3
2113	D4
2114	B7
2115	A8
2116	A8
2117	A8
2118	B8
2119	C8
2120	B6
2121	A9
2122	D7
2123	D7
2124	D7
2125	A2
2126	A2
2127	F4
2128	D4
3001	F4
3002	F6
3003	F6
3051	F3
3052	F3
3101	A4
3102	A4
3103	A4
3104	A4
3105	C3
3106	B4
3107	B4
3109	C4
3110	C4
3111	C3
3112	C4
3113	C4
3114	D4
3115	D5
3116	B5
3117	C5
3118	C6
3119	C6
3120	B5
3121	A8
3122	C4
3123	B7
3124	C8
3125	C6
3126	D7
3127	C8
3129	D7
3131	E7
3132	D3
3133	D2
3134	D9
3135	E8
3136	D9
3137	A5
3138	A5
3139	D9
3140	D9
4101	C5
4102	A8
5001	E6
5002	E2
5051	E2
5052	F2
5101	A2
5102	A3
5103	A6
5104	B6
5105	A1
5106	A3
5107	D4
6001	F6
6002	F7
6101	A4
6102	A6
6105	C4
6106	D4
6107	C4
6110	D3
6111	B5
6112	A8
6113	C8
6114	C9
6115	A9
6116	C9
6117	C9
7001	F5
7101	B3
7102	B5
7103	D4
7104	D7
7105	D5
7106	E7
7107	D3
7108	D3
7109	D9
7110	D8
8051	E4
8052	D1
8102	B1
8103	B1
9101	A1
9104	C6
9116	C5
F100	A1
F101	B1
F102	B3
F103	A5
F104	B4
F105	B1
I113	B5
I114	B5
I115	A7
I116	A8
I117	A9
I119	D6
I120	A8
I121	C7
I122	B8
I123	B9

CHN	TYT12-	SETNAME	SH3 (HUDSON-170B-AU)
CLASS_NO		Power Schematics	170B4BB/00C
2002-11-27	3	3138 158 5592	1 2002-11-27
NAME	Jack Hu/YS Tseng	SUPERS.	1
	CHECK	DATE 2002-11-25	130- 1 A3

C.B. A. (Power Board)

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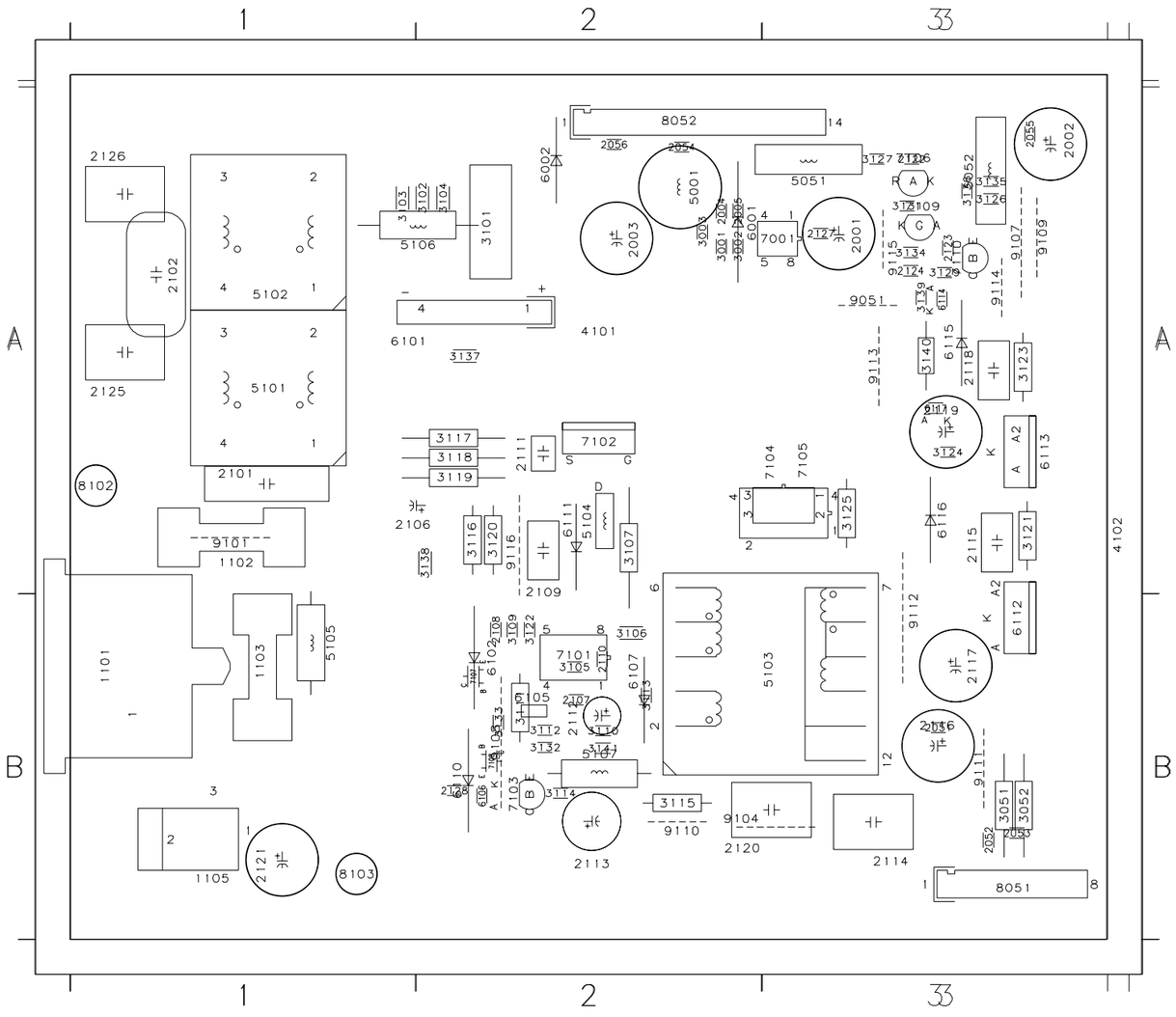
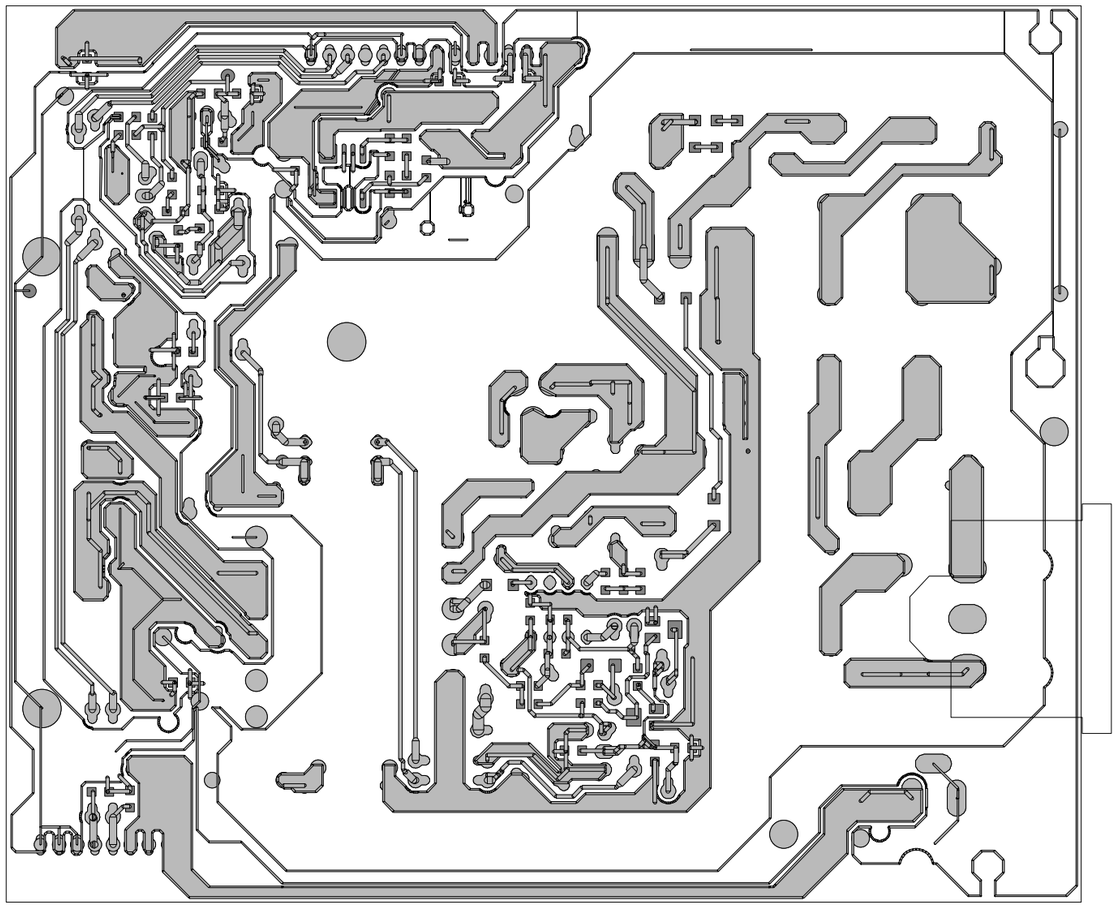


# REF	GRID LABEL	BOARD SIDE	# REF	GRID LABEL	BOARD SIDE
2004	A2	A	1101	B1	B
2005	A2	A	1102	A1	B
2051	B3	A	1103	B1	B
2052	B3	A	1105	B1	B
2053	B3	A	2001	A3	B
2054	A2	A	2002	A3	B
2055	A3	A	2003	A2	B
2056	A2	A	2101	A1	B
2107	B2	A	2102	A1	B
2108	B2	A	2106	A1	B
2110	B2	A	2109	A2	B
2122	A3	A	2111	A2	B
2123	A3	A	2112	B2	B
2124	A3	A	2113	B2	B
2127	A3	A	2114	B3	B
2128	B2	A	2115	A3	B
3001	A2	A	2116	B3	B
3002	A2	A	2117	B3	B
3003	A2	A	2118	A3	B
3102	A2	A	2119	A3	B
3103	A1	A	2120	B2	B
3104	A2	A	2121	B1	B
3105	B2	A	2125	A1	B
3106	B2	A	2126	A1	B
3109	B2	A	3051	B3	B
3110	B2	A	3052	B3	B
3112	B2	A	3101	A2	B
3113	B2	A	3107	A2	B
3114	B2	A	3111	B2	B
3122	B2	A	3115	B2	B
3124	A3	A	3116	A2	B
3126	A3	A	3117	A2	B
3127	A3	A	3118	A2	B
3129	A3	A	3119	A2	B
3131	A3	A	3120	A2	B
3132	B2	A	3121	A3	B
3133	B2	A	3123	A3	B
3134	A3	A	3125	A3	B
3135	A3	A	3140	A3	A
3136	A3	A	4101	A2	B
3137	A2	A	4102	A3	B
3138	A2	A	5001	A2	B
3139	A3	A	5051	A3	B
3141	B2	A	5052	A3	B
6105	B2	A	5101	A1	B
6106	B2	A	5102	A1	B
6114	A3	A	5103	B3	B
6117	A3	A	5104	A2	B
7001	A3	A	5105	B1	B
7107	B2	A	5106	A2	B
7108	B2	A	5107	B2	B

C.B. A. (Power Board)



Schematic diagram(Control)

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PHILIPS

Control Board

SB: 57481 x24
PB: 57491

1701 C3
1702 C3
1703 D3
1704 D3
1705 E3
1706 E3
1711 B3
1712 B1
6711 A3

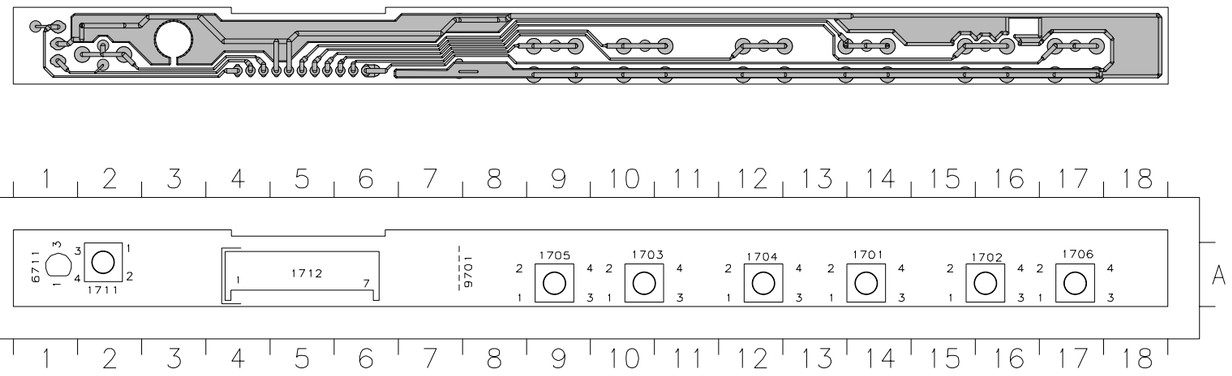
L-3WYGW6711
LED_G
LED_R

1712
JFE6337H
TO SCALER BOARD 1503

K_PWR — 1711 SKHHAJ2410
K_RIGHT — 1701 SKHHAJ2410
K_LEFT — 1702 SKHHAJ2410
K_UP — 1703 SKHHAJ2410
K_DOWN — 1704 SKHHAJ2410
K_OK — 1705 SKHHAJ2410
K_AUTO — 1706 SKHHAJ2410

CHN TYT12-3162	SETNAME SH3 (HUDSON-170B-AU)		
CLASS_NO	CONTROL BOARD	3138 158 5576	1 ------- 1 03-01-07
2002-11-27 3	170B4BB/00C		
NAME Sophia Hsia	SUPERS. 1	130- 1	A4
CHECK	DATE 2002-11-26	KONINKLIJKE PHILIPS ELECTRONICS N.V. 2000	

# REF	GRID LABEL	BOARD SIDE
1701	A14	B
1702	A16	B
1703	A10	B
1704	A12	B
1705	A9	B
1706	A17	B
1711	A2	B
1712	A5	B
6711	A1	B
9701	A8	B



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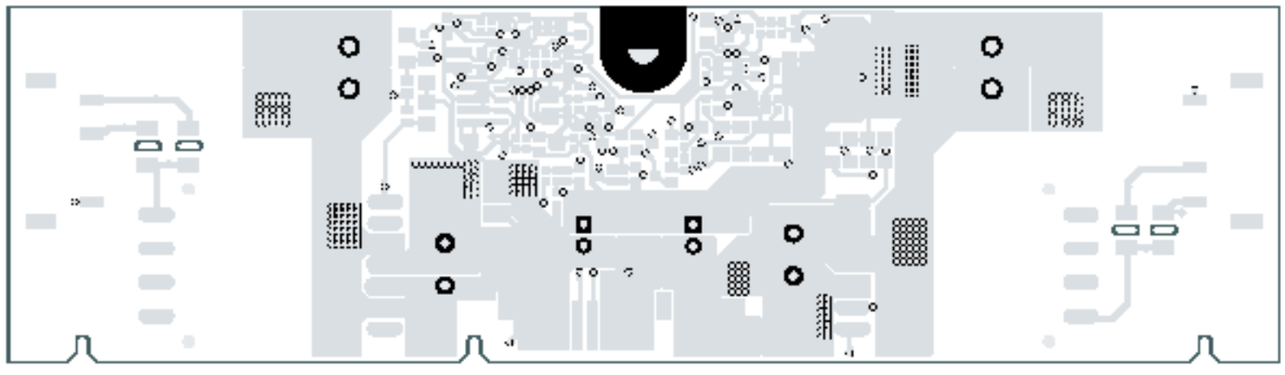

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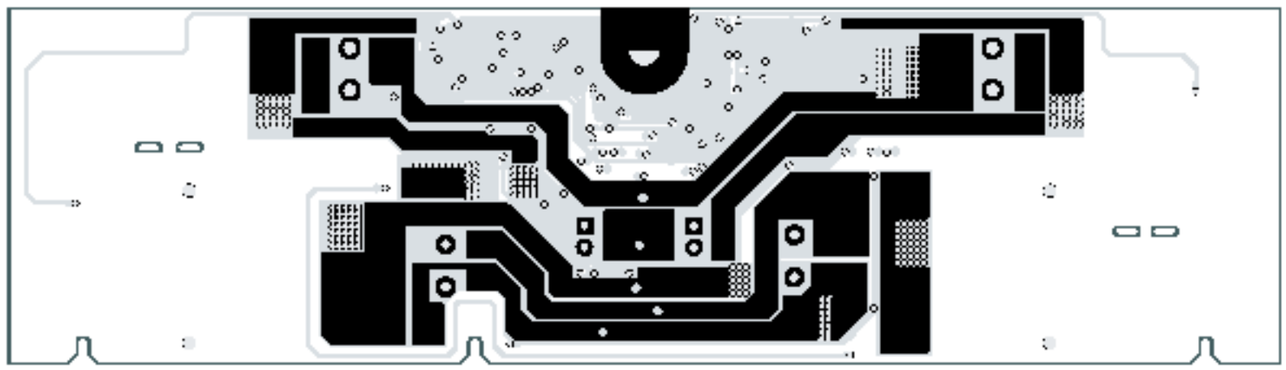
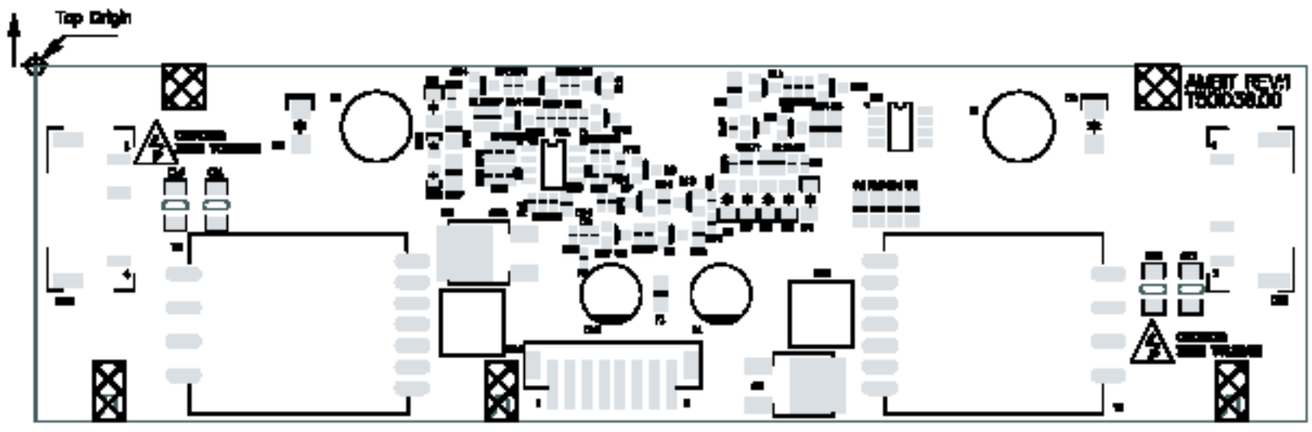
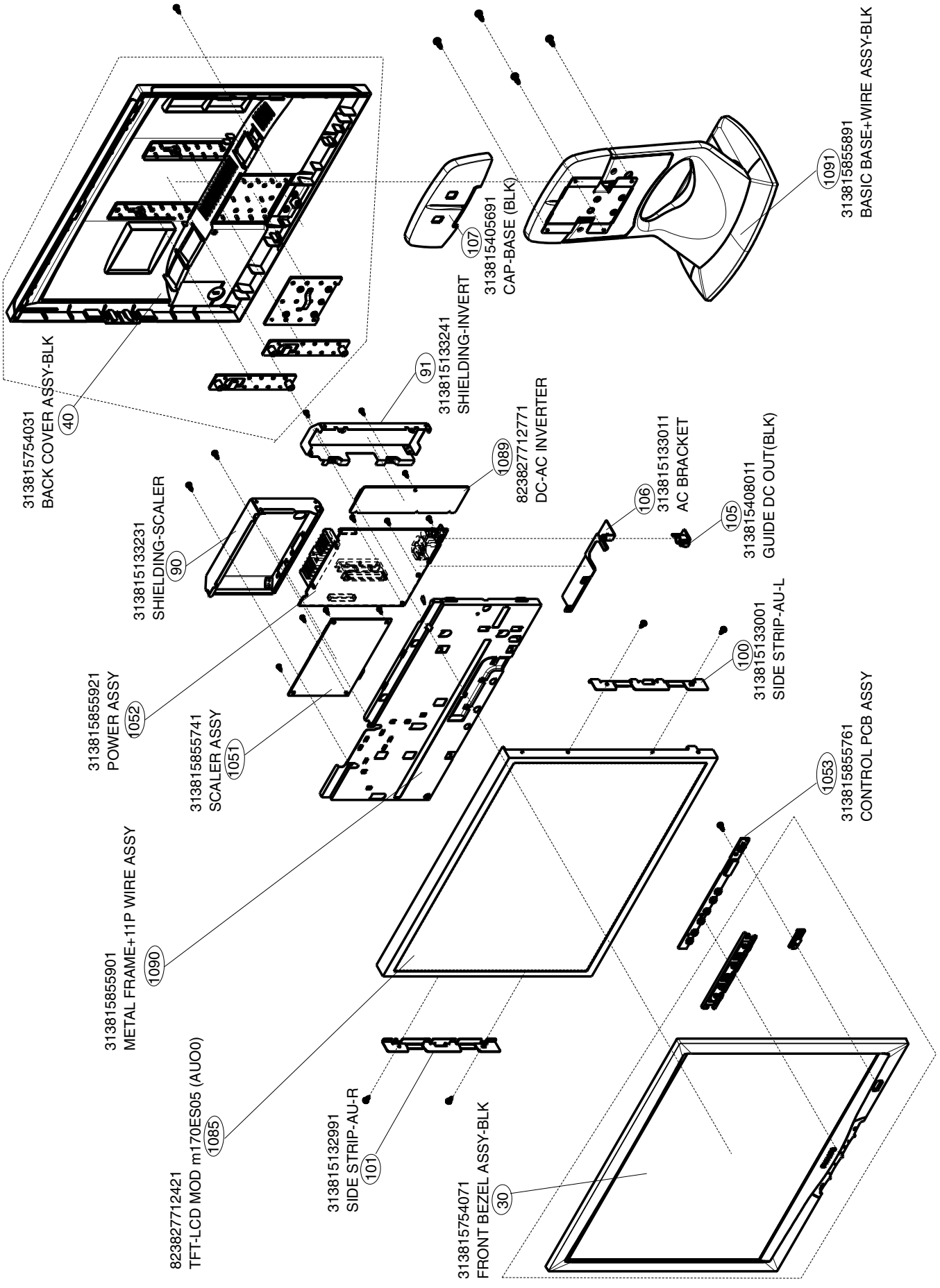


3. Top Silk Screen Overlayer:



Exploded View



Recommended Parts List

Go to cover page

Model: 170B4BB/00C

Item	Code number	Description
30	313815754071	FRONT BEZEL ASSY-BLK
40	313815754031	BACK COVER ASSY-BLK
450	313815634651	CARTON(170B4BB)
451	313815634251	CUSHION-R
452	313815634261	CUSHION-L
453	313815620801	P.E.BAG-STAT.
601	313811704881	E-D.F.U. ASSY-170B4B
1087	313812874931	▲MAINSCORD
1088	313818872742	▲CORD SUB-D 15/1M8/15 SUB-D M/M
107	313815405691	CAP-BASE (BLK)
1091	313815855891	BASIC BASE+WIRE ASSY-BLK
1090	313815855901	METAL FRAME+11P WIRE ASSY
1103	242208610239	▲FUSE 5X20 HT 3A15 250V IEC B
8051	313818871691	CBLE 330018 8/105/8 330987
8052	313818875571	CBLE 330024 14/75/14 346924
8102	313818875591	CBLE 3P/75/FHOOK
7001	932219076668	IC SM L5972D (ST00) R
7101	935270037112	IC TEA1533AP/N1 (PHSE) L
7103	933179600126	TRA SIG BC337-40 (PHSE) A
7105	932214014667	OPT CP TCET1103(G) (VISH) L
7106	933771100686	IC TL431CLP S (MOTA) R
7107	933967310685	TRA SIG SM BC848C (ONSE) R
7109	933826850126	THYRIS BT169B (PHSE) A
7202	932214526668	IC SM M24C02-WMN6 (ST00) R
7203	932214526668	IC SM M24C02-WMN6 (ST00) R
7210	935260739118	IC SM 74LVC14APW (PHSE) R
7301	932217946682	IC SM M29W010B-90K1 (ST00) L
7302	932214725682	IC M24C16-WBN6 (ST00) L
7403	932218206685	IC SM IRU1206-25CY (INR0) R
7404	932219353671	IC SM GM5126-BC (GEMI) Y
7405	935270954115	IC SM SA56616-28D (PHSE) R
7501	933967380685	TRA SIG SM BC858C (ONSE) R
7506	932209265685	TRA SIG SM MUN2211J (ONSE) R
7507	932216638668	FET POW SM SI5441DC (VISH) R

Model : 170B4BB/00C

30	313815754071	FRONT BEZEL ASSY-BLK
40	313815754031	BACK COVER ASSY-BLK
107	313815405691	CAP-BASE (BLK)
1091	313815855891	BASIC BASE+WIRE ASSY-BLK
1085	823827712421	TFT-LCD MOD m170ES05 (AUO0)

Various

450	313815634651	CARTON(170B4BB)
451	313815634251	CUSHION-R
452	313815634261	CUSHION-L
453	313815620801	P.E.BAG-STAT.
601	313811704881	E-D.F.U. ASSY-170B4B

Accessories

1087 ▲	313812874931	MAINSCORD
1088 ▲	313818872742	CORD SUB-D 15/1M8/15 SUB-D M/M

Main Panel

1051	313815855741	SCALER ASSY
1052	313815855921	POWER ASSY
1053	313815855761	CONTROL PCB ASSY
1089	823827712771	DC-AC INVERTER

Scaler Panel

1051	313815855741	SCALER ASSY

2209	223878615649	CER2 0603 X7R 16V 100N PM10 R
2211	223886715331	CER1 0603 NP0 50V 330P PM5 R
2212	223886715331	CER1 0603 NP0 50V 330P PM5 R
2214	223878615649	CER2 0603 X7R 16V 100N PM10 R
2216	223886715331	CER1 0603 NP0 50V 330P PM5 R
2217	223886715331	CER1 0603 NP0 50V 330P PM5 R
2218	223886715339	CER1 0603 NP0 50V 33P PM5 R
2219	223886715221	CER1 0603 NP0 50V 220P PM5 R
2220	223878615649	CER2 0603 X7R 16V 100N PM10 R
2221	223878615649	CER2 0603 X7R 16V 100N PM10 R
2225	223878615649	CER2 0603 X7R 16V 100N PM10 R
2227	223878615649	CER2 0603 X7R 16V 100N PM10 R
2229	223878615649	CER2 0603 X7R 16V 100N PM10 R
2231	223878615649	CER2 0603 X7R 16V 100N PM10 R
2233	223878615649	CER2 0603 X7R 16V 100N PM10 R
2304	223878615649	CER2 0603 X7R 16V 100N PM10 R
2313	223878615649	CER2 0603 X7R 16V 100N PM10 R
2403	202001293721	ELCAP SM RV2 16V 10U PM20 R
2404	223878615649	CER2 0603 X7R 16V 100N PM10 R
2405	223878615649	CER2 0603 X7R 16V 100N PM10 R
2406	223878615649	CER2 0603 X7R 16V 100N PM10 R
2407	223878615649	CER2 0603 X7R 16V 100N PM10 R
2408	223878615649	CER2 0603 X7R 16V 100N PM10 R
2409	202001293721	ELCAP SM RV2 16V 10U PM20 R
2410	223878615649	CER2 0603 X7R 16V 100N PM10 R
2411	223878615649	CER2 0603 X7R 16V 100N PM10 R
2412	223878615649	CER2 0603 X7R 16V 100N PM10 R
2413	223878615649	CER2 0603 X7R 16V 100N PM10 R
2414	223878615649	CER2 0603 X7R 16V 100N PM10 R
2415	223878615649	CER2 0603 X7R 16V 100N PM10 R
2416	223878615649	CER2 0603 X7R 16V 100N PM10 R
2417	223878615649	CER2 0603 X7R 16V 100N PM10 R
2418	223878615649	CER2 0603 X7R 16V 100N PM10 R
2419	223878615649	CER2 0603 X7R 16V 100N PM10 R
2420	223878615649	CER2 0603 X7R 16V 100N PM10 R
2421	223878615649	CER2 0603 X7R 16V 100N PM10 R
2422	223878615649	CER2 0603 X7R 16V 100N PM10 R
2423	223878615649	CER2 0603 X7R 16V 100N PM10 R
2424	223878615649	CER2 0603 X7R 16V 100N PM10 R
2425	223878615649	CER2 0603 X7R 16V 100N PM10 R
2426	202001293721	ELCAP SM RV2 16V 10U PM20 R
2427	202001293721	ELCAP SM RV2 16V 10U PM20 R
2428	223878615649	CER2 0603 X7R 16V 100N PM10 R
2429	223878615649	CER2 0603 X7R 16V 100N PM10 R
2430	223878615649	CER2 0603 X7R 16V 100N PM10 R
2431	202001293721	ELCAP SM RV2 16V 10U PM20 R
2432	223878615649	CER2 0603 X7R 16V 100N PM10 R
2433	223878615649	CER2 0603 X7R 16V 100N PM10 R
2434	223878615649	CER2 0603 X7R 16V 100N PM10 R
2435	223878615649	CER2 0603 X7R 16V 100N PM10 R
2436	223878615649	CER2 0603 X7R 16V 100N PM10 R
2437	202001293721	ELCAP SM RV2 16V 10U PM20 R
2438	223878615649	CER2 0603 X7R 16V 100N PM10 R
2439	223878615649	CER2 0603 X7R 16V 100N PM10 R
2440	223878615649	CER2 0603 X7R 16V 100N PM10 R
2441	223878615649	CER2 0603 X7R 16V 100N PM10 R
2442	223878615649	CER2 0603 X7R 16V 100N PM10 R
2443	223878615649	CER2 0603 X7R 16V 100N PM10 R
2444	223878615649	CER2 0603 X7R 16V 100N PM10 R
2445	223878615649	CER2 0603 X7R 16V 100N PM10 R
2446	223878615649	CER2 0603 X7R 16V 100N PM10 R
2447	223878615649	CER2 0603 X7R 16V 100N PM10 R
2450	223886715478	CER1 0603 NP0 50V 4P7 PM0P25 R
2451	223886715478	CER1 0603 NP0 50V 4P7 PM0P25 R
2453	223878615649	CER2 0603 X7R 16V 100N PM10 R
2454	202001293747	ELCAP SM RV2 25V 47U PM20 R
2455	202001293721	ELCAP SM RV2 16V 10U PM20 R
2457	223886715339	CER1 0603 NP0 50V 33P PM5 R
2458	202001293721	ELCAP SM RV2 16V 10U PM20 R
2461	223878615649	CER2 0603 X7R 16V 100N PM10 R
2462	223878619856	CER2 0603 Y5V 16V 330N P8020 R
2501	223878615649	CER2 0603 X7R 16V 100N PM10 R
2503	223878615649	CER2 0603 X7R 16V 100N PM10 R
2504	223878615649	CER2 0603 X7R 16V 100N PM10 R
2505	223878615649	CER2 0603 X7R 16V 100N PM10 R
2506	223878615649	CER2 0603 X7R 16V 100N PM10 R
2513	223858615636	CER2 0603 X7R 50V 10N PM10 R
2514	202001293747	ELCAP SM RV2 25V 47U PM20 R
2515	223878615649	CER2 0603 X7R 16V 100N PM10 R
2517	223878615649	CER2 0603 X7R 16V 100N PM10 R
2519	223878615649	CER2 0603 X7R 16V 100N PM10 R
2521	223878615649	CER2 0603 X7R 16V 100N PM10 R
2523	223878615649	CER2 0603 X7R 16V 100N PM10 R
2525	223878615649	CER2 0603 X7R 16V 100N PM10 R
2527	223878615649	CER2 0603 X7R 16V 100N PM10 R
2529	223878615649	CER2 0603 X7R 16V 100N PM10 R
2531	223878615649	CER2 0603 X7R 16V 100N PM10 R
2535	202001293747	ELCAP SM RV2 25V 47U PM20 R
2536	202001293747	ELCAP SM RV2 25V 47U PM20 R
2537	223878615649	CER2 0603 X7R 16V 100N PM10 R
2538	223878615649	CER2 0603 X7R 16V 100N PM10 R
2539	223878615649	CER2 0603 X7R 16V 100N PM10 R
2540	223878615649	CER2 0603 X7R 16V 100N PM10 R

3141	319802190020	RST SM 0805 JUMP. 0R05 COL R
3202	319802131030	RST SM 0603 10K PM5 COL
3203	319802131030	RST SM 0603 10K PM5 COL
3206	319802131010	RST SM 0603 100R PM5 COL
3207	319802131010	RST SM 0603 100R PM5 COL
3209	319802131040	RST SM 0603 100K PM5 COL
3216	319802131010	RST SM 0603 100R PM5 COL
3217	319802131010	RST SM 0603 100R PM5 COL
3221	319802131030	RST SM 0603 10K PM5 COL
3222	319802131030	RST SM 0603 10K PM5 COL
3223	319802131010	RST SM 0603 100R PM5 COL
3224	319802131010	RST SM 0603 100R PM5 COL
3225	319802131010	RST SM 0603 100R PM5 COL
3226	319802131010	RST SM 0603 100R PM5 COL
3227	319802132220	RST SM 0603 2K2 PM5 COL
3228	319802132220	RST SM 0603 2K2 PM5 COL
3229	319802131040	RST SM 0603 100K PM5 COL
3232	319802132290	RST SM 0603 22R PM5 COL
3233	232270467509	RST SM 0603 RC22H 75R PM1 R
3234	319802132290	RST SM 0603 22R PM5 COL
3235	232270467509	RST SM 0603 RC22H 75R PM1 R
3236	319802132290	RST SM 0603 22R PM5 COL
3237	232270467509	RST SM 0603 RC22H 75R PM1 R
3301	319802131030	RST SM 0603 10K PM5 COL
3302	319802131030	RST SM 0603 10K PM5 COL
3303	319802131030	RST SM 0603 10K PM5 COL
3304	319802131030	RST SM 0603 10K PM5 COL
3305	319802131030	RST SM 0603 10K PM5 COL
3306	319802131030	RST SM 0603 10K PM5 COL
3307	319802131030	RST SM 0603 10K PM5 COL
3308	319802131010	RST SM 0603 100R PM5 COL
3309	319802131010	RST SM 0603 100R PM5 COL
3311	319802131030	RST SM 0603 10K PM5 COL
3312	319802131030	RST SM 0603 10K PM5 COL
3313	319802131040	RST SM 0603 100K PM5 COL
3314	319802131040	RST SM 0603 100K PM5 COL
3401	232270260569	RST SM 0603 RC21 56R PM5 R
3402	232270260569	RST SM 0603 RC21 56R PM5 R
3403	232270260569	RST SM 0603 RC21 56R PM5 R
3406	319802131030	RST SM 0603 10K PM5 COL
3408	319802190030	RST SM 0603 JUMP. 0R05 COL
3409	319802131010	RST SM 0603 100R PM5 COL
3410	319802131010	RST SM 0603 100R PM5 COL
3411	319802131010	RST SM 0603 100R PM5 COL
3412	319802131010	RST SM 0603 100R PM5 COL
3413	319802131030	RST SM 0603 10K PM5 COL
3414	319802131030	RST SM 0603 10K PM5 COL
3419	232270461002	RST SM 0603 RC22H 1K PM1 R
3421	319802190020	RST SM 0805 JUMP. 0R05 COL R
3501	319802190030	RST SM 0603 JUMP. 0R05 COL
3502	319802190030	RST SM 0603 JUMP. 0R05 COL
3503	319802190030	RST SM 0603 JUMP. 0R05 COL
3504	319802190030	RST SM 0603 JUMP. 0R05 COL
3505	319802190030	RST SM 0603 JUMP. 0R05 COL
3506	319802190030	RST SM 0603 JUMP. 0R05 COL
3507	319802190030	RST SM 0603 JUMP. 0R05 COL
3508	319802132210	RST SM 0603 220R PM5 COL
3509	319802132210	RST SM 0603 220R PM5 COL
3511	319802131030	RST SM 0603 10K PM5 COL
3512	319802131030	RST SM 0603 10K PM5 COL
3513	235003510103	RST NETW SM ARV24 4X 10K PM5
3514	235003510103	RST NETW SM ARV24 4X 10K PM5
3523	319802131040	RST SM 0603 100K PM5 COL
3524	319802131040	RST SM 0603 100K PM5 COL

5201	242254945582	IND FXD 0805 EMI 100MHZ 300R R
5202	242254945582	IND FXD 0805 EMI 100MHZ 300R R
5203	242254945582	IND FXD 0805 EMI 100MHZ 300R R
5302	242254945582	IND FXD 0805 EMI 100MHZ 300R R
5401	242254945582	IND FXD 0805 EMI 100MHZ 300R R
5402	242254945582	IND FXD 0805 EMI 100MHZ 300R R
5403	242254945582	IND FXD 0805 EMI 100MHZ 300R R
5404	242254945582	IND FXD 0805 EMI 100MHZ 300R R
5405	242254945582	IND FXD 0805 EMI 100MHZ 300R R
5502	242254945579	IND FXD 1206 EMI 100MHZ 100R R
5503	242254945579	IND FXD 1206 EMI 100MHZ 100R R

6220	933742280215	DIO SIG SM BAT54 (PHSE) R
6221	933913910115	DIO SIG SM BAS32L (PHSE) R

7202	932214526668	IC SM M24C02-WMN6 (ST00) R
7203	932214526668	IC SM M24C02-WMN6 (ST00) R
7210	935260739118	IC SM 74LVC14APW (PHSE) R
7301	932217946682	IC SM M29W010B-90K1 (ST00) L
7302	932214725682	IC M24C16-WBN6 (ST00) L
7403	932218206685	IC SM IRU1206-25CY (INR0) R
7404	932219353671	IC SM GM5126-BC (GEMI) Y
7405	935270954115	IC SM SA56616-28D (PHSE) R
7501	933967380685	TRA SIG SM BC858C (ONSE) R
7502	933967380685	TRA SIG SM BC858C (ONSE) R
7506	932209265685	TRA SIG SM MUN2211J (ONSE) R
7507	932216638668	FET POW SM SI5441DC (VISH) R

Power Panel

1052	313815855921	POWER ASSY

2001	202203100068	ELCAP GL 25V S 470U PM20 B
2002	202203100068	ELCAP GL 25V S 470U PM20 B
2003	202203100131	ELCAP LZ 10V S 820U PM20 B
2004	223858015641	CER2 0805 X7R 50V 22N PM10 R
2005	223886115221	CER1 0805 NP0 50V 220P PM5 R
2051	223858016627	CER2 0805 X7R 50V 10N PM10 R
2052	223858016627	CER2 0805 X7R 50V 10N PM10 R
2053	223858016627	CER2 0805 X7R 50V 10N PM10 R
2054	222278019763	CER2 0805 Y5V 16V 1U PM20 R
2055	222278019763	CER2 0805 Y5V 16V 1U PM20 R

Parts List

2056	222278019763	CER2 0805 Y5V 16V 1U PM20 R
2102	203830100314	CAP MPP 275V S 220N PM10 B
2106	202203100077	ELCAP KM 450V S 82U PM20 B
2107	223858015641	CER2 0805 X7R 50V 22N PM10 R
2108	223858015641	CER2 0805 X7R 50V 22N PM10 R
2109	225260108026	CER2 DC X7R 1KV S 1N PM10 A
2110	222278019763	CER2 0805 Y5V 16V 1U PM20 R
2112	203803513304	ELCAP RGA 25V S 100U PM20 A
2113	203803513704	ELCAP RGA 100V S 22U PM20 A
2114	202055490158	CERSAF CD 250V S 2N2 PM20 B
2115	225260108026	CER2 DC X7R 1KV S 1N PM10 A
2116	202203100132	ELCAP LZ 25V S 1000U PM20 B
2117	202203100132	ELCAP LZ 25V S 1000U PM20 B
2118	225260108026	CER2 DC X7R 1KV S 1N PM10 A
2119	202203100128	ELCAP LZ 16V S 1000U PM20 A
2121	202203100068	ELCAP GL 25V S 470U PM20 B
2122	223886115399	CER1 0805 NP0 50V 39P PM5 R
2123	223858015631	CER2 0805 X7R 50V 3N9 PM10 R
2124	223891015649	CER2 0805 X7R 25V 100N PM10 R
2125	202055490158	CERSAF CD 250V S 2N2 PM20 B
2126	202055490158	CERSAF CD 250V S 2N2 PM20 B
2127	222278019763	CER2 0805 Y5V 16V 1U PM20 R

3001	319802154720	RST SM 0805 4K7 PM5 COL R
3002	232273463302	RST SM 0805 RC12H 3K3 PM1 R
3003	232273465602	RST SM 0805 RC12H 5K6 PM1 R
3051	212211000329	RST MFLM MF1/2WS A 100R PM1 A
3052	212211000329	RST MFLM MF1/2WS A 100R PM1 A
3101	212261200061	NTC DC SCK-164 S 16R PM15 B
3102	232271161474	RST SM 1206 RC01 470K PM5 R
3103	232271161824	RST SM 1206 RC01 820K PM5 R
3104	232271161474	RST SM 1206 RC01 470K PM5 R
3105	232273461002	RST SM 0805 RC12H 1K PM1 R
3106	232271161108	RST SM 1206 RC01 1R PM5 R
3107	212211000315	RST MFLM MF1/2WS A 10R PM1 A
3109	319802151230	RST SM 0805 12K PM5 COL R
3110	319802151030	RST SM 0805 10K PM5 COL R
3111	212211000396	RST MFLM MF1/2WS A 33K PM1 A
3112	213811201134	RST SM 0805 RC05 130K PM5 R
3113	232273061333	RST SM 0805 RC11 33K PM5 R
3114	319802154720	RST SM 0805 4K7 PM5 COL R
3115	213811273472	RST CRB CFR-25 A 4K7 PM5 A
3116	212211000418	RST MFLM MF1/2WS A 220K PM1 A
3117	212211000455	RST MFLM MF1/2WS A 0R68 PM1 A
3118	212211000455	RST MFLM MF1/2WS A 0R68 PM1 A
3119	212211000455	RST MFLM MF1/2WS A 0R68 PM1 A
3120	212211000418	RST MFLM MF1/2WS A 220K PM1 A
3121	212211000315	RST MFLM MF1/2WS A 10R PM1 A
3122	319802154710	RST SM 0805 470R PM5 COL R
3123	212211000311	RST MFLM MF1/2WS A 4R7 PM1 A
3124	319802154710	RST SM 0805 470R PM5 COL R
3125	213811273821	RST CRB CFR-25 A 820R PM5 A
3126	232273463303	RST SM 0805 RC12H 33K PM1 R
3127	232273462404	RST SM 0805 RC12H 240K PM1 R
3129	319802154730	RST SM 0805 47K PM5 COL R
3131	319802152230	RST SM 0805 22K PM5 COL R
3132	319802154730	RST SM 0805 47K PM5 COL R
3133	319802156830	RST SM 0805 68K PM5 COL R
3134	319802151020	RST SM 0805 1K PM5 COL R
3139	319802151090	RST SM 0805 10R PM5 COL R
3140	213810113109	RST CRB CFR-12 A 10R PM5 A

5001	313818875691	COI CHOKE 35UH 82M OHM DR10X
5051	313810874951	CHOKE COIL 5.0UH PM10
5052	313810874951	CHOKE COIL 5.0UH PM10
5101	313818870151	LINE FILTER 9MH
5102	313818870151	LINE FILTER 9MH
5103	313818875791	TFM SMT LAYER LS-NB02P-013 WI
5104	242254942026	IND FXD BEAD EMI 100MHZ 50R A
5105	243853598028	IND FXD BEAD EMI 100MHZ 75R R
5106	243853598028	IND FXD BEAD EMI 100MHZ 75R R
5107	243853598028	IND FXD BEAD EMI 100MHZ 75R R

6101	932213176671	BRIDGE GBU8J (GI00) Y
6105	933952580685	DIO SIG SM BAV103 (TEG0) R
6106	934038700115	DIO REG SM BZX284-C12 (PHSE) R
6107	933653500113	DIO REC BYV26C A (PHSE) R
6110	933117750133	DIO REG BZX79-C6V8 A (PHSE) A
6111	933723420133	DIO REC BYD33J A (PHSE) A
6114	934038720115	DIO REG SM BZX284-C15 (PHSE) R
6115	932219207683	DIO REC 2EZ10 A (PAJI) R
6117	934038620115	DIO REG SM BZX284-C5V6 (PHSE)F

7001	932219076668	IC SM L5972D (ST00) R
7101	935270037112	IC TEA1533AP/N1 (PHSE) L
7103	933179600126	TRA SIG BC337-40 (PHSE) A
7105	932214014667	OPT CP TCET1103(G) (VISH) L
7106	933771100686	IC TL431CLP S (MOTA) R
7107	933967310685	TRA SIG SM BC848C (ONSE) R
7108	933967310685	TRA SIG SM BC848C (ONSE) R
7109	933826850126	THYRIS BT169B (PHSE) A

Cable

8051	313818871691	CBLE 330018 8/105/8 330987
8052	313818875571	CBLE 330024 14/75/14 346924
8102	313818875591	CBLE 3P/75/FHOOK

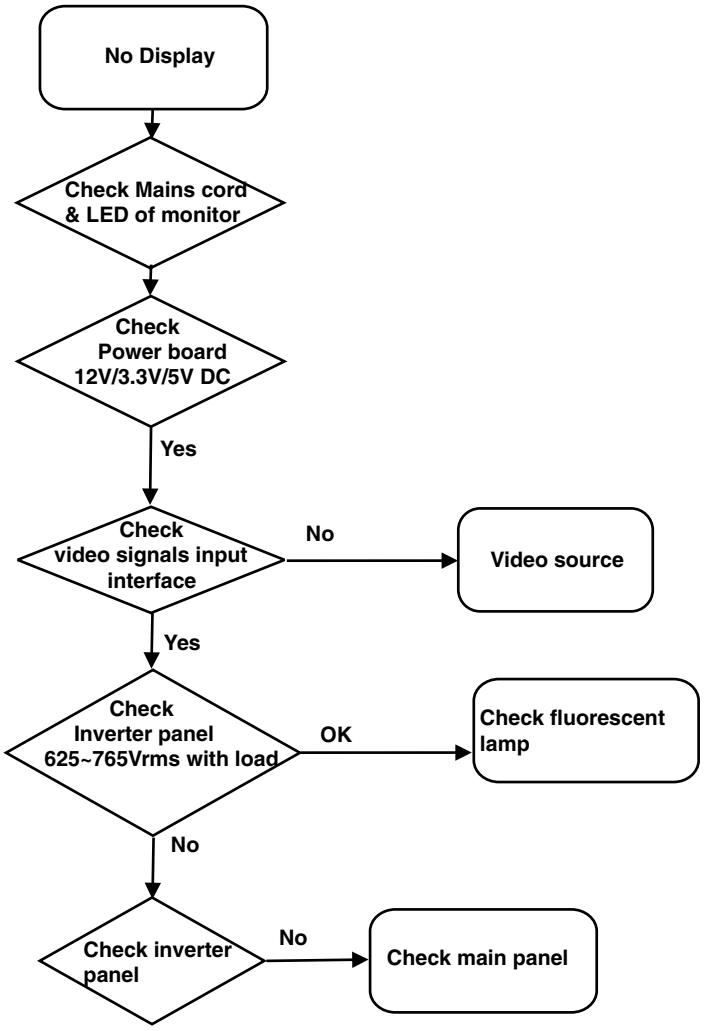
Control Panel

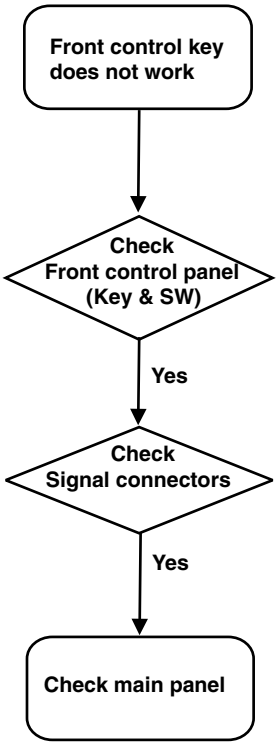
1053	313815855761	CONTROL PCB ASSY

LED

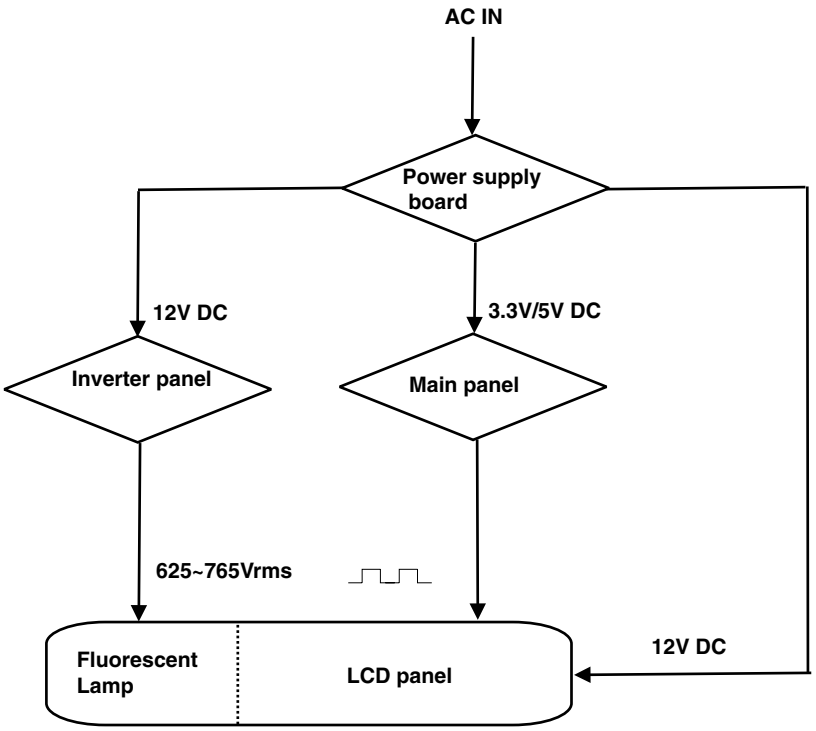
6711	932214603682	LED VS L-3WYGW (KIEL) B

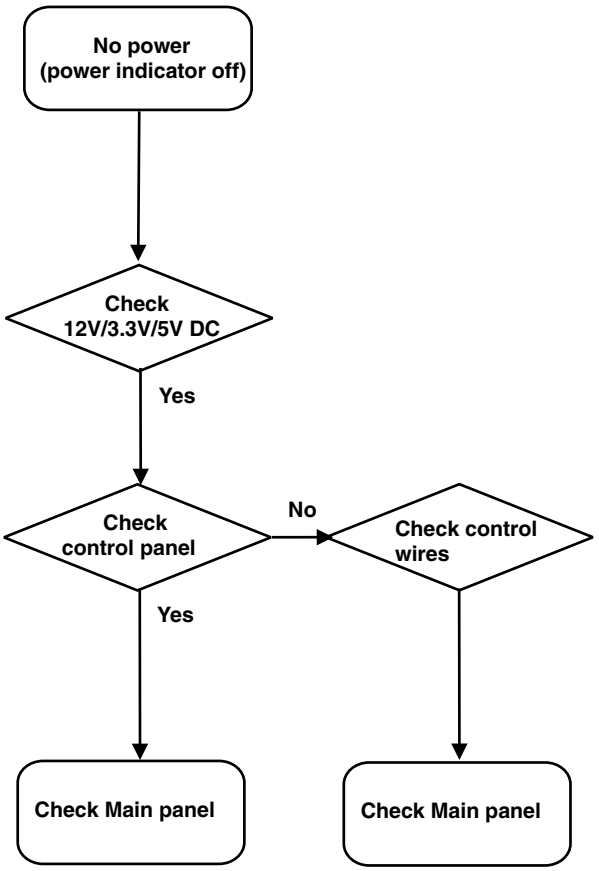
Repair Flow Chart



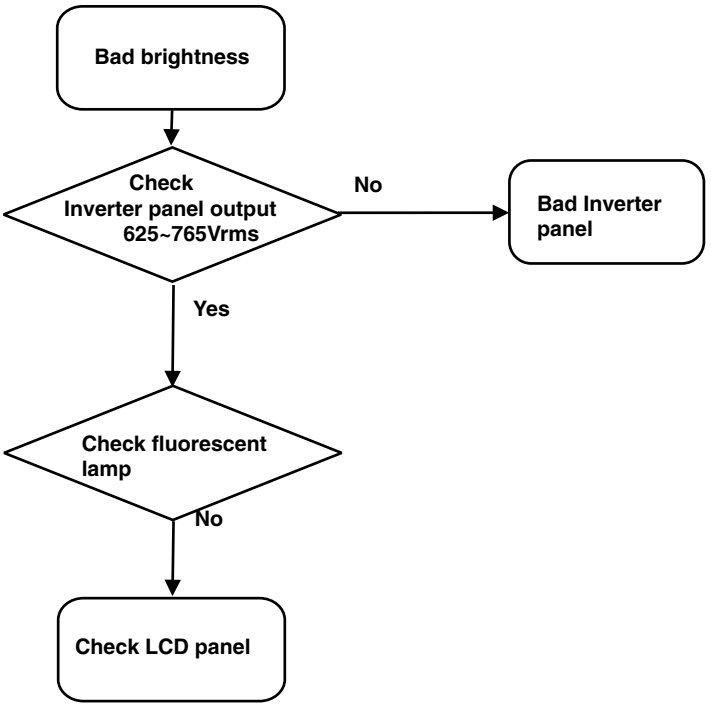


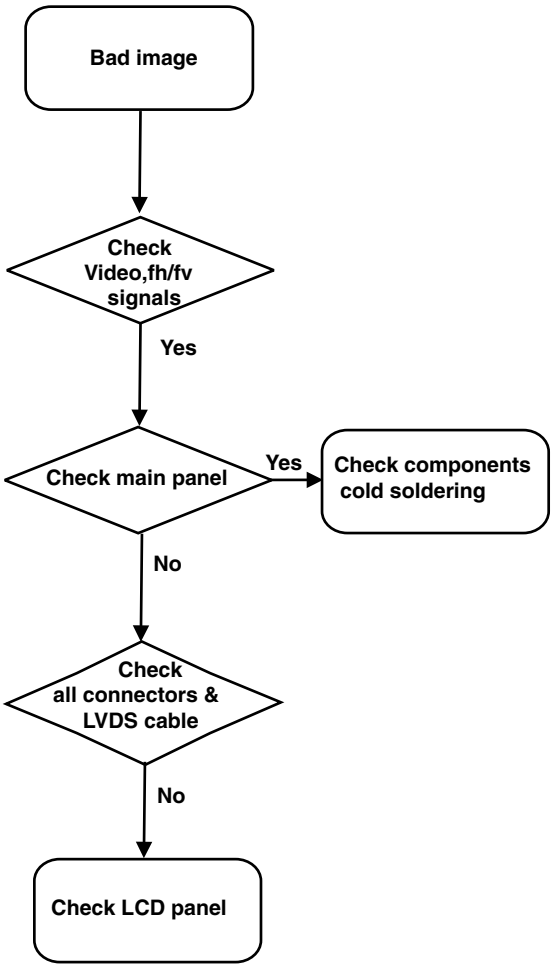
Repair Flow Chart (Continued)





Repair Flow Chart (Continued)



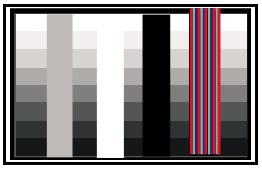
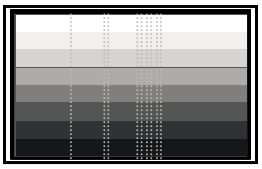
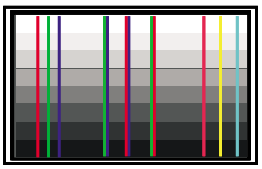
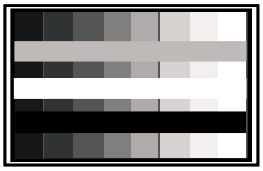
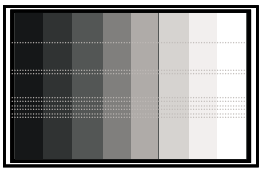
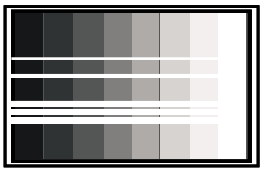
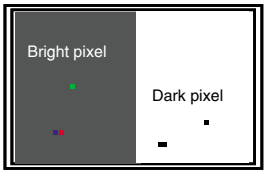
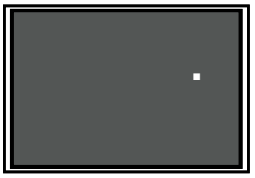
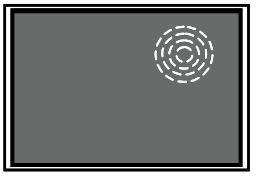
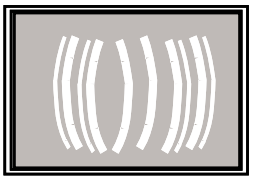


Failure Mode of LCD panel

Go to cover page

Quick reference for failure mode of LCD panel

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

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

0. Warning

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the unit via a wrist wrap with resistance. Keep components and tools also at the same potential !

1. Servicing of SMDs (Surface Mounted Devices)

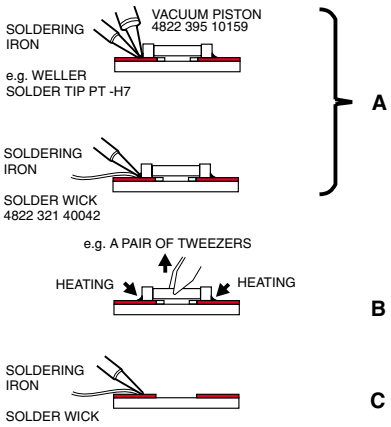
1.1 General cautions on handling and storage

- Oxidation on the terminals of SMDs results in poor soldering. Do not handle SMDs with bare hands.
- Avoid using storage places that are sensitive to oxidation such as places with sulphur or chlorine gas, direct sunlight, high temperatures or a high degree of humidity. The capacitance or resistance value of the SMDs may be affected by this.
- Rough handling of circuit boards containing SMDs may cause damage to the components as well as the circuit boards. Circuit boards containing SMDs should never be bent or flexed. Different circuit board materials expand and contract at different rates when heated or cooled and the components and/or solder connections may be damaged due to the stress. Never rub or scrape chip components as this may cause the value of the component to change. Similarly, do not slide the circuit board across any surface.

1.2 Removal of SMDs

- Heat the solder (for 2-3 seconds) at each terminal of the chip. By means of litz wire and a slight horizontal force, small components can be removed with the soldering iron. They can also be removed with a solder sucker (see Fig. 1A)

Fig. 1 DISMOUNTING



- While holding the SMD with a pair of tweezers, take it off gently using the soldering iron's heat applied to each terminal (see Fig. 1 B).
- Remove the excess solder on the solder lands by means of litz wire or a solder sucker (see Fig. 1C).

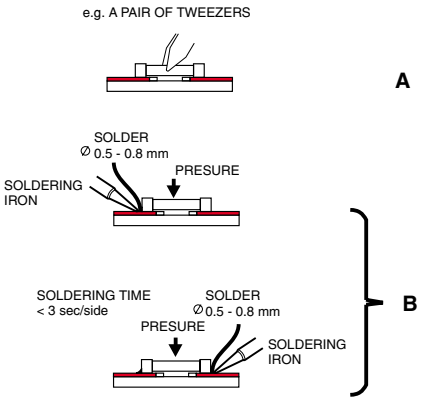
1.3 Caution on removal

- When handling the soldering.iron. use suitable pressure and be careful.
- When removing the chip, do not use undue force with the pair of tweezers.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- The chip, once removed, must never be reused.

1.4 Attachment of SMDs

- Locate the SMD on the solder lands by means of tweezers and solder the component on one side. Ensure that the component is positioned correctly on the solder lands (see Fig.2A).
- Next complete the soldering of the terminals of the component (see Fig. 2B).

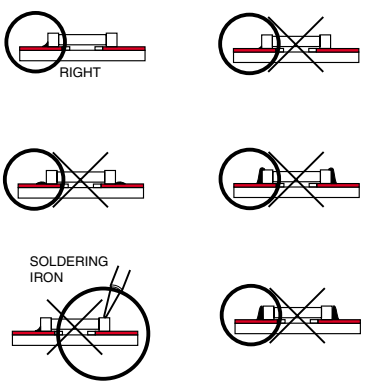
Fig. 2 MOUNTING



2. Caution when attaching SMDs

- When soldering the SMD terminals, do not touch them directly with the soldering iron. The soldering should be done as quickly as possible, care must be taken to avoid damage to the terminals of the SMDs themselves.
- Keep the SMD's body in contact with the printed board when soldering.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- Soldering should not be done outside the solder land.
- Soldering flux (of rosin) may be used, but should not be acidic.
- After soldering, let the SMD cool down gradually at room temperature.
- The quantity of solder must be proportional to the size of the solder land. If the quantity is too great, the SMD might crack or the solder lands might be torn loose from the printed board (see Fig. 3).

Fig. 3 Examples



CA110 Application

Go to cover page

After installation of Chroma 2250, CA110 and LCD monitor.

LCD monitor & Chroma 2250 :

- Turn on LCD monitor.
- Turn on Chroma 2250 as shown in Fig. 3.
- Provide CROSS-Hatch pattern at timing H=60.023KHz/1024 pixels
  V=75.029Hz/768 lines
  by Chroma 2250 (as shown in Fig.3 & Fig. 4.).

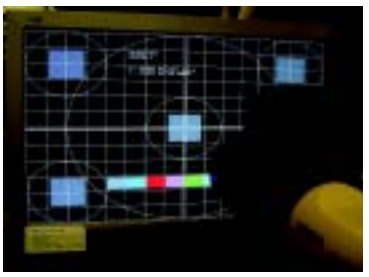
LCD Colour Analyzer CA-110 :

- Put on the cover (black) of Probe CA-A30 as shown in Fig.5.
- Set "Measurement/viewing selector" to ● for zero calibration of CA-110.
- Turn on CA-110 as shown in Fig. 6.
- Press "0-CAL" button as shown in Fig. 7.

Step A: Access Factory Mode

Fig. 3

Fig.4



Access Factory Mode

Fig. 1

Access Factory Mode

How to Get into Factory Mode Menu

Step 1 :
Turn off monitor.

Step 2 :
[Push AUTO " " & OK " " buttons at the same time and hold it] + [Press power " " button untill comes out "Windows screen"] => then release all buttons.

Step 3 :
Press OK " " button, bring up Factory mode indication as shown in Fig 2.

Fig. 5

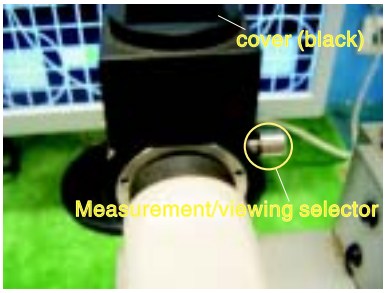


Fig. 2

Factory Mode indication==>

Fig. 6
(TURN ON)

Use ▼▲ button to select factory adjustment indication (for example: Hudson 170W V2.02 02-11-15), which is the entrance of the factory adjustment menu, press OK " " button to access it. The window shows as below.

Fig. 7
(Press 0-CAL)

CA110 Application (Continued)

Step B: Brightness & Contrast setting (pre-setting)

Brightness : at 100%
Contrast : at 100%

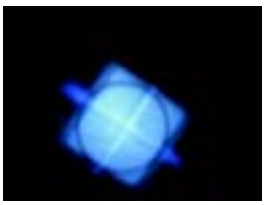
Fig. 8

Probe CA-A30 :

- Remove the cover (black) of CA-A30 as shown in Fig.9.
- Move the "Lens barrel" back and forth to get the optimal image as shown in Fig. 10 & Fig. 11.
- Then, turn the "Measurement/viewing selector" counterclockwise as shown in Fig. 11.
- At this moment the indicator on CA-110 as shown in Fig. 12. (example only)

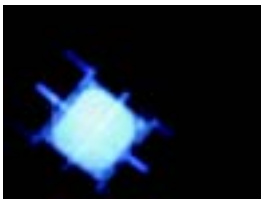
Fig. 9

Fig. 10



unclear image

Fig. 11



clear image

Fig. 12

Step C: Colour Temperature : Original Panel & 9300K & 6500K

White pattern & OSD position :

- Provide the "Full White" pattern by Chroma 2250 as shown in Fig. 13.

Fig. 13

OSD position : Move to optimal position as shown in Fig. 14.

Fig. 14

CA110 Application (Continued)

Fig. 15

Luminance (Y) :
Above 380 NITs in the center of the screen as shown in Fig. 15.

FACTORY :
- Select "HUDSON..." as shown in Fig. 16.
- Press OK button, bring up Fig. 18.

--> ***Factory Mode==>***

Fig. 16

ORIGINAL PANEL COLOR *:*

- Select "ORIGINAL PANEL COLOR" by OSD as shown in Fig. 17.
- Measure Luminance (Y) as shown in Fig. 15.

If the Luminance (Y) is below 380 Nits in the center of the screen, then adjust R,G,B Gain till the Luminance (Y) over 380Nits.

Panel color==>

Fig. 17

After that, check the 64 Gray Scale pattern, all the black and white scale should be visible on the screen as shown in Fig. 19.

9300K : As shown in Fig. 18 & 19.
- select 9300K R G B.
Value of 9300K R G B.
- select value of R or G or B
- decrease or increase the value of 9300K R G B.
- confirm/save the value change.
- Adjust the colour temperature of 9300K of R,G,B to x,y value as below.
R (as shown in Fig. 18), (for example, production value of R is 241)
G (as shown in Fig. 18), (for example, production value of G is 252)
B (as shown in Fig. 18), (for example, production value of B is 255)

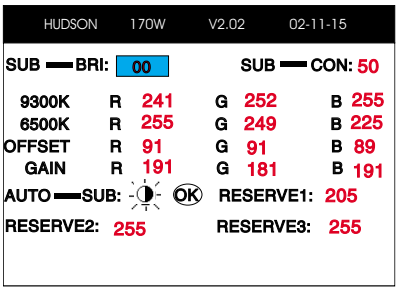


Fig. 18

x (center) = 0.281+/- 0.005
y (center) = 0.311 +/- 0.005

Fig. 19

Luminance (Y) : above 380 Nits in the center of the screen.
(experience: the value of "Y" too low, increase the value of "y" firstly.)

(experience: the value of "y" too high, decrease the value of "G".
the value of "x" too low, decrease the value of "R".)

CA110 Application (Continued)

6500K : As shown in Fig. 18 & 20.

- select 6500K R G B.

Value of 6500K R G B.

- select value of R or G or B
- decrease or increase the value of 6500K R G B.
- confirm/save the value change.
- Adjust the colour temperature of 6500K of R,G,B to x,y value as below.

R (as shown in Fig. 18), (for example, production value of R is 255)
G (as shown in Fig. 18), (for example, production value of G is 249)
B (as shown in Fig. 18), (for example, production value of B is 225)

x (center) = 0.312+/- 0.005
y (center) = 0.338 +/- 0.005

Fig. 20

Luminance (Y) : above 380 Nits in the center of the screen.
(experience: the value of "Y" too low, increase the value of "y" firstly.)

(experience: the value of "y" too high, decrease the value of "G".
the value of "x" too low, decrease the value of "R".)

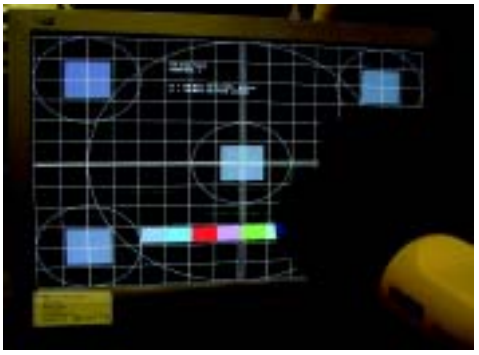


Fig. 21

Full white, Geometry, 64 ***Gray scale & Pixel on/off pattern check***

Full White pattern check by eye :

- Provides the full white pattern by Chroma 2250.
- Check the image of each timing (total: 29 timings) to see if there is any colour's difference on the screen.

For instance :
at timing 60K/64Hz 1024x768 --> as shown in Fig. 20.

Geometry check and setting by eye :

- Provides the cross-hatch pattern by Chroma 2250.
- Check the geometry of each timing (total: 29 timings) to adjust the geometry of image to optimal position.

For instance :
at timing 60K/64Hz 1024x768 --> as shown in Fig. 21.

Fig. 22

32 Gray Scale pattern check by eye :

- Provides the 64 gray scale pattern by Chroma 2250.
- Check the image of each timing (total: 29 timings) to see if all the black and white scale are visible on the screen or not.

For instance :
at timing 60K/64Hz 1024x768 --> as shown in Fig. 22.

Pixel on/off pattern check by eye :

- Provides the cross talk pattern by Chroma 2250.
- Check the image of each timing (total: 29 timings) to see if there is any Clock or/and Phase phenomenon on the screen.

For instance :
at timing 60K/64Hz 1024x768 --> as shown in Fig. 23.

Fig. 23

GENERAL PRODUCT SPECIFICATION

PHILIPS

HUDSON-3 170B4
GENERAL PRODUCT
SPECIFICATION

. ANALOG AND DIGITAL DUAL INPUT

. AUTO PICTURE ADJUSTMENT

. 16 FACTORY PRESET MODES AND 34 PRESET MODES WHICH CAN BE RECOVERED TO PRESET MODES

. USER FRIENDLY OSD DISPLAY FOR MODE IDENTIFICATION /ADJUSTMENT

. DDC 2B COMMUNICATION CAPABILITY

. MAX. RESOLUTION 1280*1024 NON-INTERLACED AT 75 HZ

. 17 COLOR TFT LCD FLAT PANEL

. EASY TILT & SWIVEL BASE

. FULL RANGE POWER SUPPLY 90 264 VAC

. CE ENVIRONMENTAL POLICY

. ANTI-GLARE TO REDUCE LIGHT REFLECTION

. POWER MANAGEMENT CAPABILITY

. SOG SUPPORT

. TCO 99

. AUDIO SUPPORT (OPTION)

. PROVIDE USB HUB (OPTION)

. WALL MOUNT KIT (OPTION)

. PROTECTIVE COVER (OPTION)

PHILIPS

CONTENTS

GENERAL PRODUCT SPECIFICATION

PHILIPS

1.0 FOREWORD

This specification describes a 17" SXGA multi-scan color TFT LCD monitor with max resolution up to 1280*1024 /76 Hz non-interlaced.

2.0 PRODUCT PROFILE

This display monitor unit is a color display monitor enclosed in PHILIPS global styling cabinet, which has an integrated tilt and swivel base.

2.1 LCD

2.1.1

Type NR.	:	M170ES05 (AU.)
Number of Pixels.	:	1280 (H) x1024 (V)
Physical Size	:	358.5(w)296.5(h)19(d) mm
Pixel Pitch.	:	0.264 (per one triad) x 0.264 mm
Color pixel arrangement	:	RGB vertical stripes
Support Color.	:	262k colors (RGB 6 bits data)
Display Mode	:	Normally White
Backlight	:	CCFL edge light system
Active area (WXH).	:	337.92 x 270.336mm (17□ diagonal)
Viewing Angle	:	Vertical 140 degree, Horizontal 140 degree (CR=10)
Contrast ratio	:	450:1
White luminance	:	260nits (Typ)

2.1.2

Type NR.	:	CLAA170EA03 (CPT.)
Number of Pixels	:	1280 (H) x 1024 (V)
Physical Size	:	358.5(w)296.5(h)17(d) mm
Pixel Pitch.	:	0.264 (per one triad) x 0.264 mm
Color pixel arrangement	:	RGB vertical stripes
Support Color	:	262k colors (RGB 6 bits data)
Display Mode	:	Normally White
Backlight	:	CCFL edge light system
Active area. (WXH)	:	337.92 x 270.336mm (17□ diagonal)
Viewing Angle	:	Vertical 130 degree, Horizontal 150 degree (CR=10)
Contrast ratio	:	400:1
Luminance	:	300 cd/m^2 (Typ)

2.1.3

Type NR.	:	QD17ER01 (QDI.)
Number of Pixels	:	1280 (H) x 1024 (V)
Physical Size	:	358.5(w)296.5(h)16.5(d) mm
Pixel Pitch	:	0.264 (per one triad) x 0.264 mm
Color pixel arrangement	:	RGB vertical stripes
Support Color	:	262k colors (RGB 6 bits data)
Display Mode	:	Normally White
Backlight	:	CCFL edge light system
Active area. (WXH)	:	337.92 x 270.336mm (17□ diagonal)
Viewing Angle	:	Vertical 130 degree, Horizontal 150 degree (CR=10)
Contrast ratio	:	400:1
Luminance	:	250 cd/m^2 (Typ)

GENERAL PRODUCT SPECIFICATION

PHILIPS

	Contrast ratio	: 400:1
	Luminance	: 250 cd/m^2 (Typ)
2.2	Scanning frequencies	
	H-Frequency	: 30 ~ 82 KHz
	V-Frequency	: 56 ~ 76 Hz
2.3	Video dot rate	: < 140 MHz
2.4	Power input	: 90-264 V AC, 50/60 2 Hz
2.5	Power consumption	: < 35 W maximum (without audio)
2.6	Dimensions	: 375(W) * 393(H) * 180(D) mm (Basic Base) : 375(W) * 413(H) * 184(D) mm (Multimedia Base)
2.7	Weight.	: 5 kg (Basic Base) : 6.3 kg (Multimedia Base)

2.8 Functions:

(1) D-Sub analog R/G/B separate inputs, H/V sync separated, Composite (H+V) TTL level, SOG sync.

(2) DVI-D digital Panel Link TMDS input

(Only for 170B4 Model)

2.9 Ambient temperature: 5 C - 35 C

2.10 Regulatory compliance:

Safety	B, CCIB / CCEE(China), CE(Europe), CSA(Canada), DEMKO(Nordic), EZU(Czech), FIMKO(Nordic), Gost(Russia), IEC 950 CB Report, NOM NYCE(Mexico), PSB(Singapore), SEMKO(Nordic),SISIR CPA(Singapore), TUV(Germany), UL(USA), UL2601-1(NAFTA), EN60601(EU) and IEC60601-1(WW)
EMI	C-tick, CE(Europe), FCC(USA), IC(Canada), VCCI(Japan),BSMI
Ergonomics	E2000, MPRII(Sweden), Nutek(Sweden), TCO99, TUV/GS
Compatibility	PC2001, Windows 2000, Windows 98/Me, Windows XP, NSTL

PHILIPS

3.0 Electrical characteristics

3.1 Interface signals

The input signals can be applied in two different modes:

1). D-shell Analog

Input signal: Video, H-sync, V-sync,

Video : 0.7 V p-p, input impedance, 75 ohm

Sync. : Separate sync TTL level, input impedance 2k2 ohm terminate

H-sync Positive/Negative

V-sync Positive/Negative

Composite sync TTL level, input impedance 2k2 ohm terminate

(Positive/Negative)

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

2). Intel DVI Digital

Input signal: Single channel TMDS signal

(Only for 170B4 Model)

3.2 Interface

3.2.1 D-Sub Cable

Length : 1.8 M +/- 50 mm (fixed)

Connector type : D-sub male with DDC-2B pin assignments.

Blue connector thumb-operated jack screws

Pin Assignment:

PIN No.	SIGNAL
1	Red video input
2	Green video input / sync on green
3	Blue video input
4	GND
5	GND
6	Red video GND
7	Green video GND
8	Blue video GND
9	DDC +3.3V or +5V
10	Logic GND - Cable detect
11	GND
12	Serial data line (SDA)
13	H-sync / H+V
14	V-sync
15	Data clock line (SCL)

PHILIPS

3.2.2 DVI Cable

The input signals are applied to the display through DVI-D cable.

Length : 1.8 M +/- 50 mm (fixed)

Connector type : DVI-D male with DDC-2B pin assignments

White connector thumb-operated jack screws

Pin Assignment:

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

3.2.3 Software control functions via OSD/control

OSD (On Screen Display) function

(1) Analog interface OSD:

Adjustable functions:

MAIN CONTROLS
LANGUAGE
ADJUST POSITION
BRIGHTNESS & CONTRAST
VIDEO NOISE
ADJUST COLOR
OSD SETTINGS
PRODUCT INFORMATION
RESET TO FACTORY SETTINGS
INPUT SELECTION
EXIT MAIN CONTROLS
MOVE SELECTION THEN ok

Language : English , Espanol , Francais , Deutsch, Italiano, simple Chinese,

Adjust Position : Horiizontal / Vertical

Brightness & Contrast : Brightness and Contrast adjustment

Video Noise : Phase and Clock adjustment

Adjust Color : Origino panel colorR 9300K for CAD/CAM , 6500K for Imagine management sRGB, user preset RGB adjustment

OSD Setting : OSD H-position, OSD V-position

GENERAL PRODUCT SPECIFICATION

Product Information : Show Serial No./ Resolution / Video input.

Reset to Factory Setting : Recall to factory preset settings.

Input Selection : Select Analog D-sub, Digital DVI-D.

(2) Digital interface OSD :

Table of adjust functions

MAIN CONTROLS
LANGUAGE
BRIGHTNESS & CONTRAST
ADJUST COLOR
OSD SETTINGS
PRODUCT INFORMATION
RESET TO FACTORY SETTINGS
INPUT SELECTION
EXIT MAIN CONTROLS
MOVE SELECTION THEN ok

Language : English , Espanol , Francais , Deutsch, Italiano, Simple Chinese.

Brightness & Contrast : Brightness and contrast adjustment.

Adjust Color : Original panel color , 9300K for CAD/CAM , 6500K for image management, sRGB, User Preset: Red Green Blue adjust.

OSD Setting : OSD H-position, OSD V-position

Product Information : Show Serial No./ Resolution / Video input.

Reset to Factory Setting : Return to factory preset timings and settings.

Input Selection : Select Analog D-sub, Digital DVI-D.

PHILIPS

3.3 Timing requirement

3.3.1 Mode storing capacity

(1) Factory preset modes : 16
(2) Preset modes : 34

3.3.2 Factory preset timings

The factory settings of size and centering are according to the reference timing charts (See fig-4, fig-5)

Mode No.	1	2	3	4
Resolution	640 x 350	720 x 400	640 x 480	640 x 480
Dot clock(MHz)	25.175	28.321	25.175	30.240
Fh (KHz)	31.469	31.468	31.500	35.000
A(us/dot)	31.778/800	31.78/900	31.778/800	28.571/864
B(us/dot)	3.813/96	3.813/108	3.813/96	2.116/64
C(us/dot)	1.907/48	1.907/54	1.907/48	3.175/96
D(us/dot)	25.422/640	25.42/720	25.422/640	21.164/640
E (us)	0.636/16	0.636/18	0.636/16	2.116/64
Fv (Hz)	70.090	70.085	60.000	67.000
O(ms/line)	14.27/449	14.27/449	16.683/525	15/525
P(ms/line)	0.064/2	0.064/2	0.064/2	0.086/3
Q(ms/line)	1.907/60	1.112/34	1.049/33	1.114/39
R(ms/line)	11.12/350	12.71/400	15.253/480	13.714/480
S(ms/line)	1.175/37	0.381/13	0.317/10	0.086/3
Sync H/V Polarity	+/-	-/+	- / -	- / -
Sep. Sync	Y	Y	Y	Y

GENERAL PRODUCT SPECIFICATION

Mode No.	5	6	7	8
Resolution	640 x 480	640 x 480	640x480	800 x 600
Dot clock(MHz)	31.500	31.501	36.000	36.000
Fh (MKz)	37.861	37.500	36.000	35.200
A (us/dot)	26.413/832	26.667/840	23.111 /832	28.444/1024
B (us/dot)	1.270/40	2.032/54	1.556/56	2.000/72
C (us/dot)	3.810/120	3.81/120	2.222/80	3.556/128
D (us/dot)	20.317/640	20.317/640	17.778/640	22.222/800
E (us/dot)	1.016/32	0.508/26	1.555/56	0.666/24
Fv (Hz)	72.809	75.000	85.000	56.000
O (ms/line)	13.735/520	13.333/500	11.763/509	17.778/625
P (ms/line)	0.079/3	0.08/3	0.069/3	0.057/2
Q (ms/line)	0.528/20	0.427/16	0.578/25	0.626/ 22
R (ms/line)	12.678/480	12.8/480	11.093/480	17.066/600
S (ms/line)	0.45/17	0.026/1	0.023/1	0.029/1
Sync H/V Polarity	-/-	- / -	-/-	+ / +
Sep. Sync	Y	Y	Y	Y

Mode No.	9	10	11	12
Resolution	800 x 600	800 x 600	800 x 600	800 x 600
Dot clock(MHz)	40.000	50.000	49.498	56.251
Fh (KHz)	37.900	48.077	46.900	53.00
A (us/dot)	26.4/1056	20.80/1040	21.333/1056	18.631/1048
B (us/dot)	3.2/128	2.400/120	1.616/80	1.138/64
C (us/dot)	2.2/88	1.280/64	3.232/160	2.702/152
D (us/dot)	20/800	16.00/800	16.162/800	14.222/800
E (us/dot)	1/40	1.120/56	0.323/16	0.569/32
Fv (Hz)	60.000	72.0 / 72.188	75.000	85.000
O (ms/line)	16.579/628	13.85/666	13.333/625	11.756/631
P (ms/line)	0.106/4	0.125/6	0.064/3	0.056/3
Q (ms/line)	0.607/23	0.478/23	0.448/21	0.503/27
R (ms/line)	15.84/600	12.48/600	12.8/600	11.179/600
S (ms/line)	0.026/1	0.770/37	0.021/1	0.018/1
Sync H/V Polarity	+ / +	+ / +	+ / +	+ / +
Sep. Sync	Y	Y	Y	Y

CLASS NO.

02-11-27

17" TFT LCD MONITOR
TYPE : 170B4BB/00C
BRAND : PHILIPS

8639 000 13815

NAME **Sophia Hsia** | SUPERS. | 24 | 590 — 11 | **10** | A4

TY | CHECK | DATE 02-11-27 | Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.

2838 100 05424

Mode No.	13	14	15	16
Resolution	832 x 624	1024 x 768	1024 x 768	1024 x 768
Dot clock(MHz)	57.280	65.000	75.000	78.750
Fh (KHz)	49.700	48.363	56.500	60.000
A (us/dot)	20.11/1152	20.677/1344	17.707/1328	16.66/1312
B (us/dot)	1.117/64	2.092/136	1.813/136	1.219/96
C (us/dot)	3.91/224	2.462/160	1.920/144	2.235/176
D (us/dot)	14.52/832	15.754/1024	13.653/1024	13.003/1024
E (us/dot)	0.563/32	0.369/24	0.321/24	0.203/16
Hv (Hz)	75.000	60.004Hz	70.004	75.000
O (ms/line)	13.41/667	16.666/806	14.272/806	13.328/800
P (ms/line)	0.06/3	0.124/6	0.106/6	0.05/3
Q (ms/line)	0.784/39	0.600/29	0.514/29	0.446/28
R (ms/line)	12.55/624	15.880/768	13.599/768	12.80/768
S (ms/line)	0.016/1	0.062/3	0.053/3	0.017/1
Sync. H/V Polarity	+/+	- / -	-/-	+ / +
Sep. SYNC	Y	Y	Y	Y

Mode No.	17	18	19	20
Resolution	1024 x 768	1024 x 768	1152 x 864	1152 x 864
Dot clock(MHz)	83.096	94.500	79.900	94.500
Fh (KHz)	61.100	68.700	54.000	63.900
A(us/dot)	16.367/1360	14.561/1376	18.523/1480	15.661/1480
B(us/dot)	1.348/112	1.016/96	1.952/156	1.016/96
C(us/dot)	2.022/168	2.201/208	1.352/108	1.116/105
D(us/dot)	12.323/1024	10.836/1024	14.418/1152	12.19/1152
E(us/dot)	0.674/56	0.508/48	0.801/64	1.339/127
f v	76.000	85.000	60.000	70.000
O(ms/line)	13.142/803	11.765/808	16.671/900	14.283/912
P(ms/line)	0.049/3	0.044/3	0.148/8	0.047/3
Q(ms/line)	0.507/31	0.524/36	0.445/24	0.689/44
R(ms/line)	12.57/768	11.183/768	16.004/864	13.531/864
S(ms/line)	0.016/1	0.014/1	0.074/4	0.016/1
Sync H/V Pplarity	+ / +	+ / +	+/+	+/+
Sep.Sync	Y	Y	Y	Y

CLASS NO.

02-11-27

17" TFT LCD MONITOR

TYPE : 170B4BB/00C

BRAND : PHILIPS

8639 000 13815

NAME **Sophia Hsia** | SUPERS. | 24 | 590 — 12 | **10** | **A4**

TY | CHECK | DATE 02-11-27 | Property of **PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.**

2838 100 05424

GENERAL PRODUCT SPECIFICATION

Mode No.	21	22	23	24
Resolution	1152 x 864	1152 x 870	1152 x 900	1152 x 900
Dot clock(MHz)	108.000	100.000	94.500	108.000
Fh (KHz)	67.500	68.000	61.800	71.800
A(us/dot)	14.815/1600	14.56/1456	16.169/1528	13.926/1054
B(us/dot)	1.185/128	1.28/128	1.354/128	1.185/128
C(us/dot)	2.37/256	1.44/144	2.201/208	1.778/192
D(us/dot)	10.667/1152	11.52/1152	12.19/1152	10.667/1152
E(us/dot)	0.593/64	0.32/32	0.424/40	0.296/32
Fv (Hz)	75.000	75.000	66.000	76.000
O(ms/line)	13.333/900	13.333/916	15.151/937	13.132/943
P(ms/line)	0.044/3	0.044/3	0.065/4	0.111 /8
Q(ms/line)	0.474/32	0.568/39	0.501/ 31	0.46/33
R(ms/line)	12.8/864	12.678/870	14.552/900	12.533/900
S(ms/line)	0.015/1	0.043/4	0.033/2	0.028/2
Sync H/V Polarity	- / -	- / -	Serration	+ / +
Sep. Sync	Y	Y	Y	Y

Mode No.	25	26	27	28
Resolution	1280 x 960	1280 x 960	1280 x 1024	1280 x 1024
Dot clock(MHz)	108.000	129.895	108.000	117.000
Fh (KHz)	60.000	75.000	64.000	71.700
A (us)	16.667/1800	13.307/1728	15.63/1688	13.949/1632
B (us)	1.037/112	1.047/136	1.037/112	0.957/112
C (us)	2.889/312	1.725/224	2.296/248	1.915/224
D (us)	11.852/1280	9.857/1280	11.852/1280	10.94/1280
E (us)	0.889/96	0.678/88	0.445/48	0.137/16
Fv (Hz)	60.000	75.000	60.000	67.000
O (ms)	16.667/1000	13.333/1002	16.661/1066	14.883/1067
P (ms)	0.05/3	0.039/3	0.047/3	0.112/8
Q (ms)	0.600/36	0.48/36	0.594/38	0.46/33
R (ms)	16/960	12.774/960	16.005/1024	14.283/1024
S (ms)	0.017/1	0.04/3	0.015/1	0.028/2
Sync H/V Polarity	+/+	+ / +	+ / +	+ / +
Sep. Sync	Y	Y	Y	Y

CLASS NO.

02-11-27

17" TFT LCD MONITOR
TYPE : 170B4BB/00C
BRAND : PHILIPS

8639 000 13815

NAME Sophia Hsia | SUPERS. | 24 | 590 — 13 | 10 | A4
TY | CHECK | DATE 02-11-27 | Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.

Mode No.	29	30	31	32
Resolution	1280 x 1024	1280 x 1024	1280 x 1024	688 x 556
Dot clock(MHz)	130.223	135.000	138.008	27.000
Fh (KHz)	76.000	80.000	81.100	31.250
A(us/dot)	13.158/1712	12.504/1688	12.326/1664	32/864
B(us/dot)	1.024/133	1.067/144	0.474/64	3.852/104
C(us/dot)	1.905/248	1.837/248	2.133/288	1.778/48
D(us/dot)	9.83/1280	9.481/1280	9.481/1280	25.481/688
E(us/dot)	0.399/51	0.119/16	0.238/32	0.889/24
Fv (Hz)	72.000	75.000	76.000	50.000
O(ms/line)	14/1064	13.329/1066	13.139/1066	20/625
P(ms/line)	0.02/2	0.038/3	0.099/8	0.128/4
Q(ms/line)	0.5/38	0.475/38	0.394/32	1.408/44
R(ms/line)	13.468/1024	12.804/1024	12.622/1024	17.972/556
S(ms/line)	0.012/0	0.012/1	0.024/2	0.672/ 21
Sync H/V Polarity	+ / +	+/+	- / -	-/ +
Sep. Sync	Y	Y	Y	Y

Mode No.	33	34		
Resolution	960X720	960X720		
Dot clock(MHz)	57.580	72.420		
Fh (KHz)	44.760	56.400		
A(us/dot)	22.34/1286	17.73/1284		
B(us/dot)	1.72/99	1.44/104		
C(us/dot)	2.58/148	2.21/160		
D(us/dot)	16.67/960	13.256/960		
E(us/dot)	0.856/49	0.780/56		
Fv (Hz)	60.000	75.000		
O(ms/line)	16.667/746	13.333/752		
P(ms/line)	0.067/2.9	0.053/3		
Q(ms/line)	0.495/22	0.5/28		
R(ms/line)	16.081/720	12.766/720		
S(ms/line)	0.0228/1	0.0184/1		
Sync H/V Polarity	-/ +	-/ +		
Sep. Sync	Y	Y		

A	: H-Total	O	: V-Total
B	: H- Sync width	P	: V- Sync width
C	: H- Back porch	Q	: V- Back porch
D	: H- Video width	R	: V- Video width
E	: H- Front porch	S	: V- Front porch

3.3.3 Horizontal scanning

Sync polarity : Positive or Negative
Scanning frequency : 30 - 82 K Hz

3.3.4 Vertical scanning

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

3.4 Power input connection

Power cord length : 1.8 M
Power cord type : 3 leads power cord with protective earth plug.

3.5 Power management

The power consumption and the status indication of the set with power management function are as follows,

STATUS	Horizontal	Vertical	Power Spec	LED
Power On	Pulse	Pulse	< 35 W	Green
H-off V-on	No Pulse	ulse	< 1 W	Amber
H-on V-off	Pulse	No Pulse	< 1 W	Amber
Off	No Pulse	No Pulse	< 1 W	Amber

According to VESA power saving signal. TCO99 power saving requirement
EPA energy star requirement

(Power Switch Off)

For digital input power consumption is less 1W

(In non-DMPM recoverable off mode)

3.6 Display identification

3.6.1 In accordance with VESA Display Channel Standard V1.0 and having DDC-2B capability.

3.6.2 In accordance with DVI requirement (DDWG digital Visual Interface revision 1.0) use DDC-2B and EDID 3.0 structure 2.0

4.0 Visual characteristics

4.1 Test conditions

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

(1) Input signal: As defined in 3.3, 1280 x 1024 non-interlaced mode (80K/75Hz), signal sources must have 75 ohm output impedance.

(2) Luminance setting: controls to be set to 200 nits with full screen 70 % duty cycle white signal

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

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

(5) Ambient temperature: 20 □ 5 C

4.2 Resolution

Factory preset modes (16 modes)

#	Resolution	Frequency	Pixel rate	Sync	Comment
1	640X350	31.5K/70HZ	25.175	(+/-)	IBM VGA 10h
2	720X400	31.5K/70HZ	28.322	(-/+)	IBM VGA 3h
3	640X480	37.5K/75HZ	31.501	(-/-)	
4	640X480	31.5K/60HZ	25.175	(-/-)	
5	800X600	35.2K/56HZ	36	(+/+)	
6	800X600	46.9K/75HZ	49.498	(+/+)	
7	800X600	37.9K/60HZ	40	(+/+)	
8	832X624	49.7K/75HZ	57.28	(+/+)	MAC

#	Resolution	Frequency	Pixel rate	Sync	Comment
9	1024X768	48.4K/60HZ	65	(-/-)	
10	1024X768	56.5K/70HZ	75	(-/-)	
11	1152X870	68.7K/75HZ	100	(-/-)	MAC
12	1152X900	71.8K/76HZ	108	(+/+)	SUN Mode II
13	1280X1024	64.0K/60HZ	108	(+/+)	
14	1280X1024	80.0K/75HZ	135	(+/+)	
15	1280X1024	81.1K/76HZ	135.008	(-/-)	SUN Mode I
16	688X556	31.25K/50HZ	27	(-/+)	TV-PAL

Note :

1. Screen displays perfect picture at 16 factory preset modes.
2. Screen displays visible picture with OSD warning when input modes are other then 34 preset modes

4.3 Brightness: 200 nits (at panel color temperature, Screen center point, Fig. 1)

4.4 Image size

4.4.1 Actual display size 338 x 270mm

4.5 Brightness uniformity

Set contrast at 50% and turn the brightness to get average above 200 nits at center of the screen.
Apply the Fig 1. It should comply with the following formula :

$$\frac{\text{Minimum luminance of nine points (brightness)}}{\text{Maximum luminance of nine points (brightness)}} >= 0.75 \text{ (Min)}$$

4.6 Check Cross talk (S)

Apply Pattern 2. Set contrast at 50 % and brightness at 100 %. Measure A.
Then output Pattern 3 and measure A' .
The cross talk value :

$$\frac{ABS\ (A - A')}{A} \times 100\ \% < 1.5\ \% \text{ (Max)}$$

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4.7 White color adjustment

There are two factory preset white color 9300K, 6500K.

Apply full white pattern, with brightness in 100 % position and the contrast control at 50 % position. The 1931 CIE Chromaticity (color triangle) diagram (x,y) coordinate for the screen center should be:

9300K CIE coordinates X = 0.283 □ 0.020
Y = 0.297 □ 0.020

6500K CIE coordinates X = 0.313 □ 0.020
Y = 0.329 □ 0.020

5.0 Mechanical characteristics

5.1 Controls

Front side :

DC power switch
OSD function key
UP/DOWN (Brightness key)
LEFT/RIGHT (Input Select)
Auto key

Rear :

Video signal cable
DVI signal cable
Power cord socket
DC 12 V socket

5.2 Unit dimension / Weight

Basic Base :

Set dimension (incl. Pedestal) : 375(W) * 393(H) * 180(D) mm
Net weight : 5.0 kg

Multimedia Base :

Set dimension (incl. Pedestal) : 375(W) * 413(H) * 184(D) mm
Net weight. : 6.3 kg

5.3 Tilt and swivel base

Basic base:

tilt angle : -5 to +35 degree C
swivel rotation : □ 175 degree

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5.4 Transportation packages

5.4.1 Shipping dimension/Weight

Basic Base :
Carton dimension : 443(W) * 450(H) * 232(H) mm
Gross weight : 6.1 Kg

Multimedia Base :
Carton dimension : 443(W) *517 (D) * 234(H) mm
Gross weight : 7.4 Kg

5.4.2 Block unit / Palletization

Basic Base:

layers / block	sets/layer	sets/block unit
9	6	54

blocks/container

20 feet	40 feet
12	21

Multimedia Base:

layers / block	sets/layer	sets/block unit
9	4	36

blocks/container

20 feet	40 feet
12	26

6.0 Environmental characteristics

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

6.1 Susceptibility of display to external environment

Operating
- Temperature : 5 to 35 degree C
- Humidity : 80% max
- Altitude : 0 to 12,000 feet

Storage
- Temperature : -20 to 60 degree C
- Humidity : 100% max (< 40□J)
- Altitude : 0 to 30,000 feet

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

6.2 Transportation tests

Standard		Philips UAN-D1400	NSTA
Drop Test	Height	70 cm	61 cm
	Sequence	1 corner 3 faces	1 corner 3 edge 6 face
	Test Result	Electrical function ok Mechanical function ok No serious damage on set appearance (Room temp./-10□c, humidity 70 %)	
Vibration Test	Sequence	5-200 Hz 0.73 G 30 min. for Each axis	10-50-10 Hz 0.35 mm 30 min. for Each axis
	Test Result	Electrical function ok Mechanical function ok No serious damage on set appearance	
Bump Test	For design evaluation only Operating 10 G, 11 msec, 1000 cycles Temperature. : 23□C Humidity. : 60 % Air pressure. : 100 kpa (According to DSD draft standard UAN-D636)		

6.3 Display disturbances from external environment
According to IEC 801-2 for ESD disturbances

6.4 Display disturbances to external environment

6.4.1 EMI
EMI: FCC, VCCI, CE, C-Tick, MPRIII, BCIQ,

7.0 Reliability

7.1. Mean Time Between Failures
System MTBF (Excluding the LCD panel and CCFL): 50,000 hrs
CCFL MTBF: 30,000 hrs (50% of original brightness)

8.0 Quality assurance requirements

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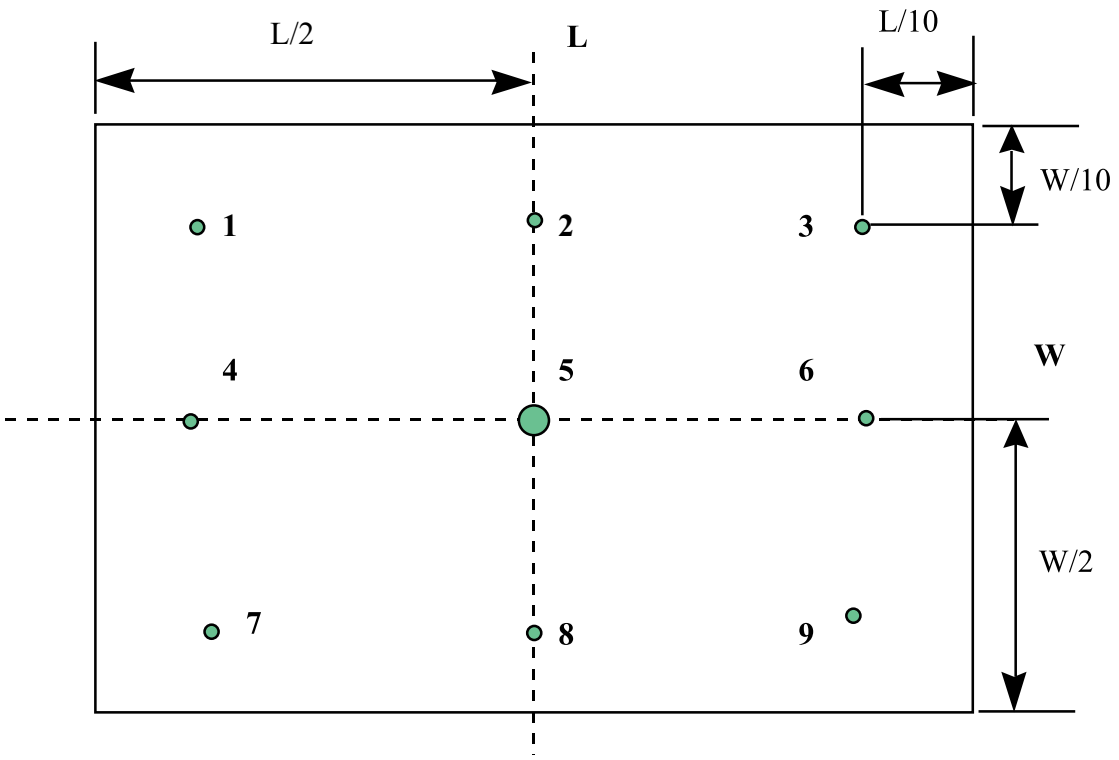
8.1 Acceptance test
According to MIL-STD-105D Control II level

AQL : 0.65 (major)
2.50 (minor)

(Please also refer to annual quality agreement)
Customer acceptance criteria: UAW0377/00

9.0 Serviceability
The serviceability of this monitor should fulfill the requirements, which are prescribed in UAW-0346 and must be checked with the check list UAT-0361.

Fig 1: Brightness and Uniformity



Position 5 = Screen center point

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Fig 2: Cross talk pattern

Gray level 184 (256 Gray level)

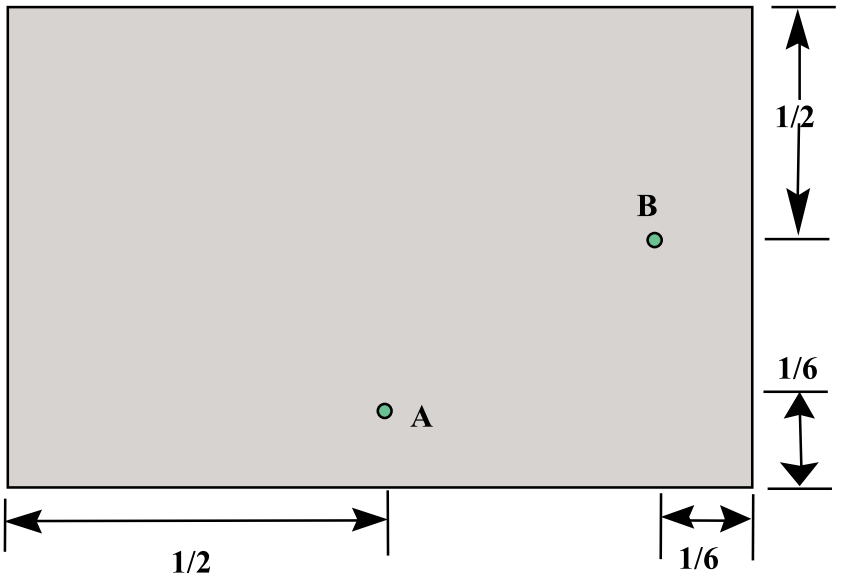
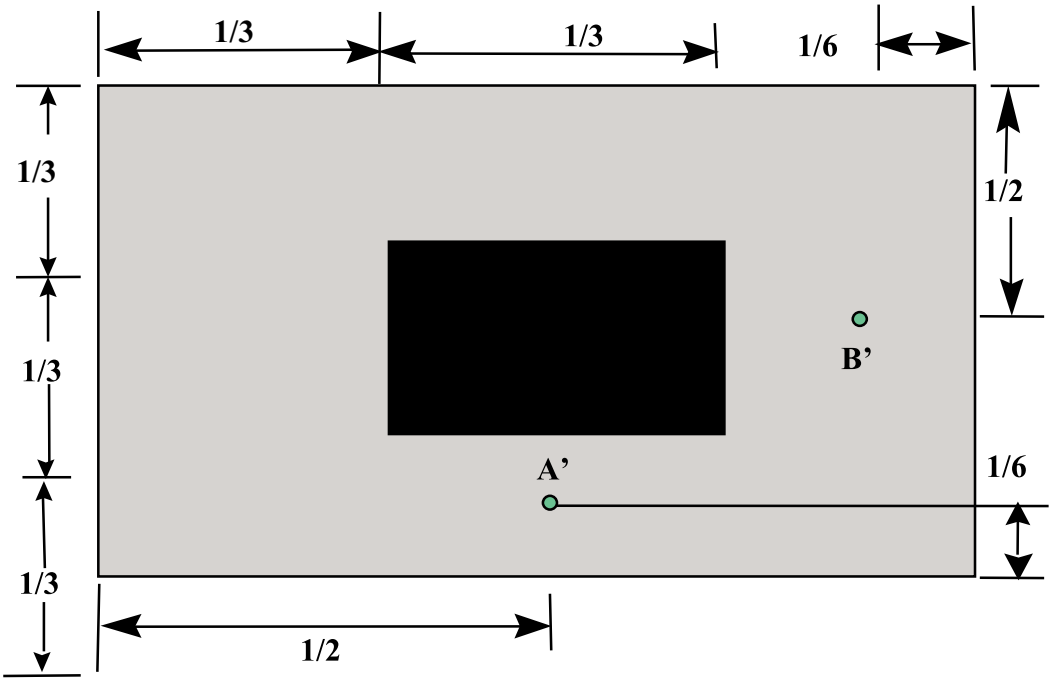


Fig 3: Cross talk pattern

Center at Gray level 0 (Black)



CLASS NO.	17" TFT LCD MONITOR TYPE : 170B4BB/00C BRAND : PHILIPS		8639 000 13815					
02-11-27								
NAME Sophia Hsia	SUPERS.	24	590 — 22	10		A4		
TY / CHECK	DATE 02-11-27	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.						

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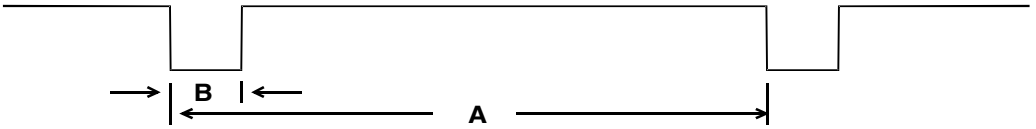
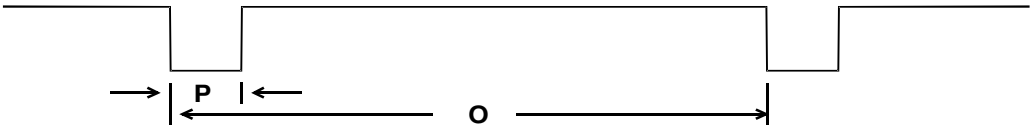
SEPARATE SYNC.

HORIZONTAL



VERTICAL



COMPOSITE SYNC.

HORIZONTAL

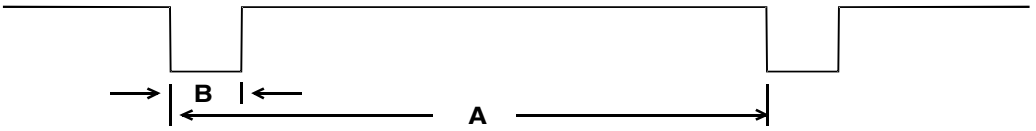


FIG-4 TIMING CHART -1

CLASS NO.	17" TFT LCD MONITOR	8639 000 13815
02-11-27	TYPE : 170B4BB/00C BRAND : PHILIPS	

NAME Sophia Hsia	SUPERS.	24	590 — 23	10	A4
TY / CHECK	DATE 02-11-27	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.			

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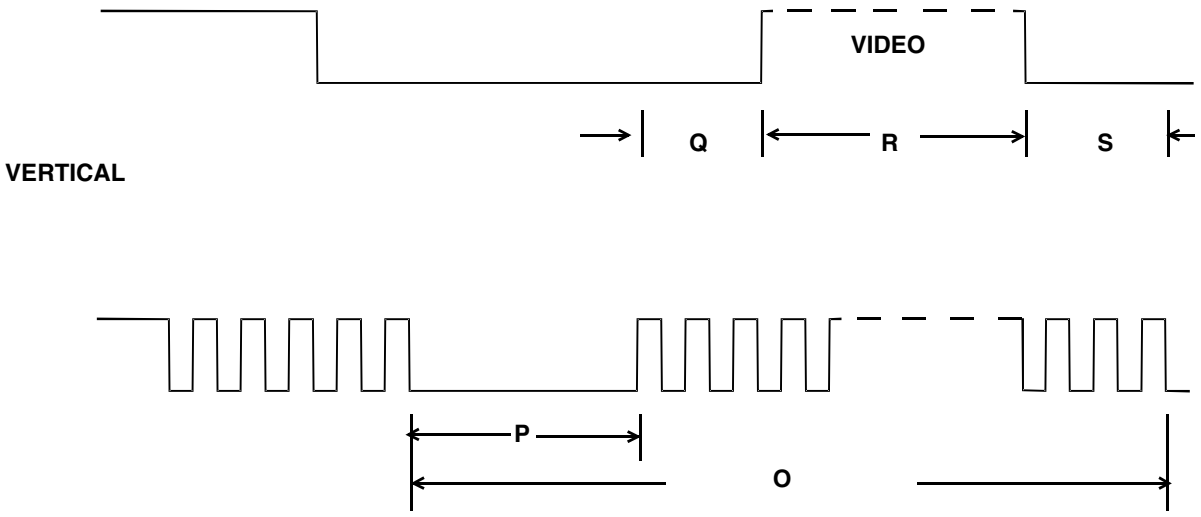
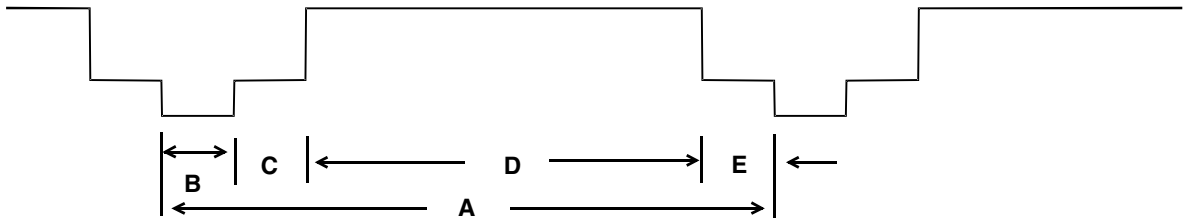


COMPOSITE SYNC. & VIDEO

(SYNC. ON GREEN)

HORIZONTAL



VERTICAL

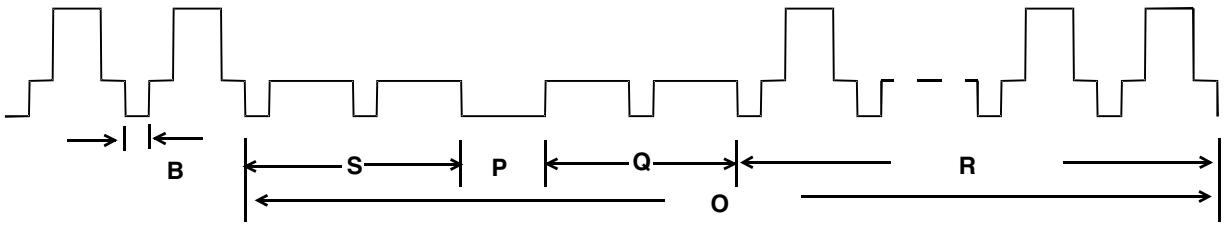


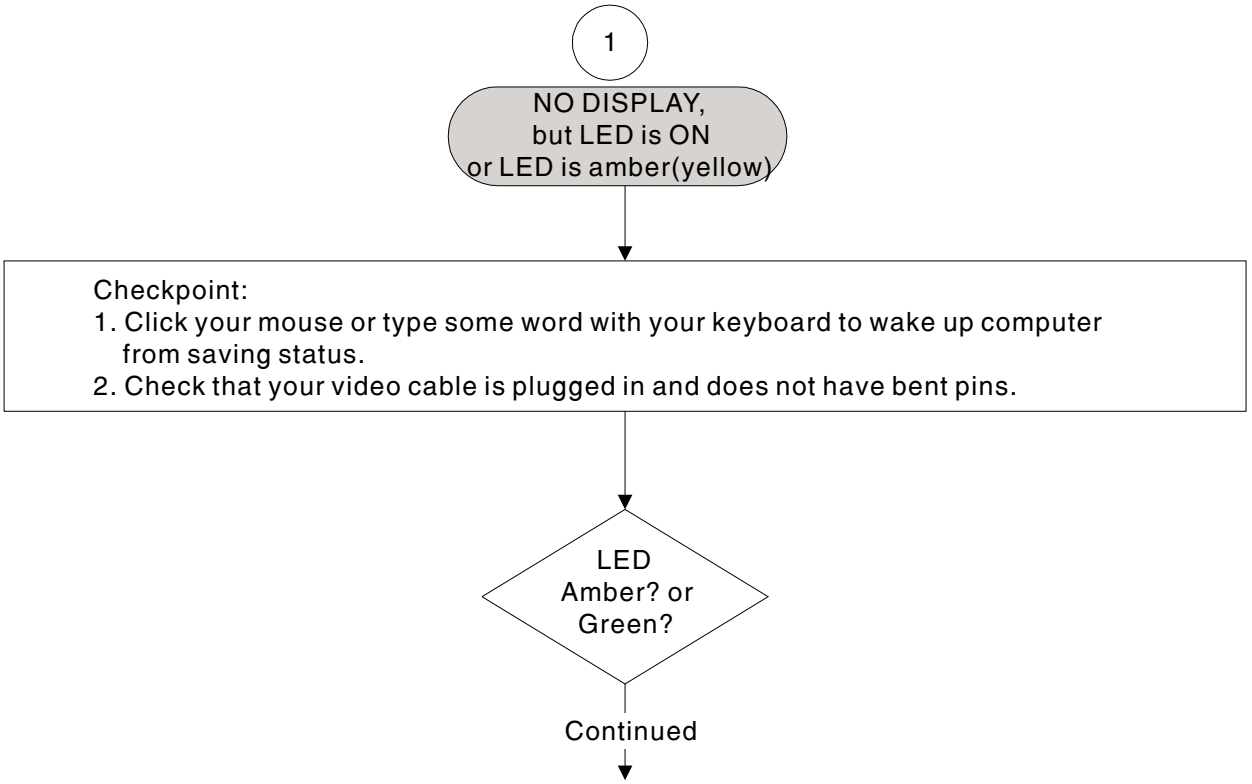
FIG-5 TIMING CHART -2

CLASS NO.	17" TFT LCD MONITOR TYPE : 170B4BB/00C BRAND : PHILIPS			8639 000 13815				
02-11-27								
NAME Sophia Hsia	SUPERS.	24	590 — 24	10		A4		
TY / CHECK	DATE 02-11-27	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.						

General Troubleshooting Guide

1. No display, but LED is ON or LED is amber (yellow)
2. Monitor drivers (inf file)
3. Screen size not correct
4. Picture too large or small
5. USB
6. Unstable picture/ Picture flickers
7. Out of H/ V Sync.
8. Picture too bright
9. Picture too dim
10. No power/ LED is off

11. Missing color
12. OSD main menu locked
13. Jitter/Video Noise
14. Power management function is not active

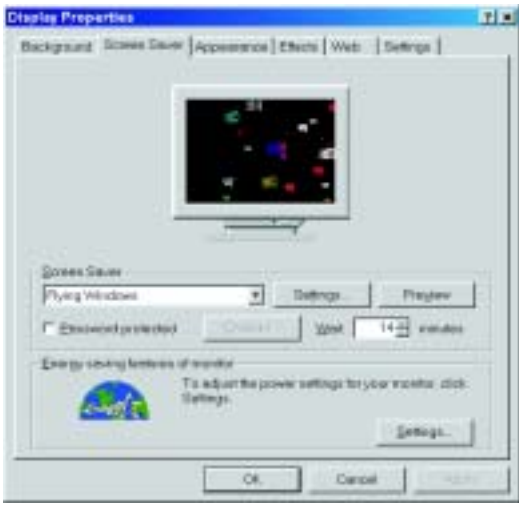


If your PC in MS Win 98 and with lots of application software.

Do not set screen saver ->Wait -> at "14" minutes.

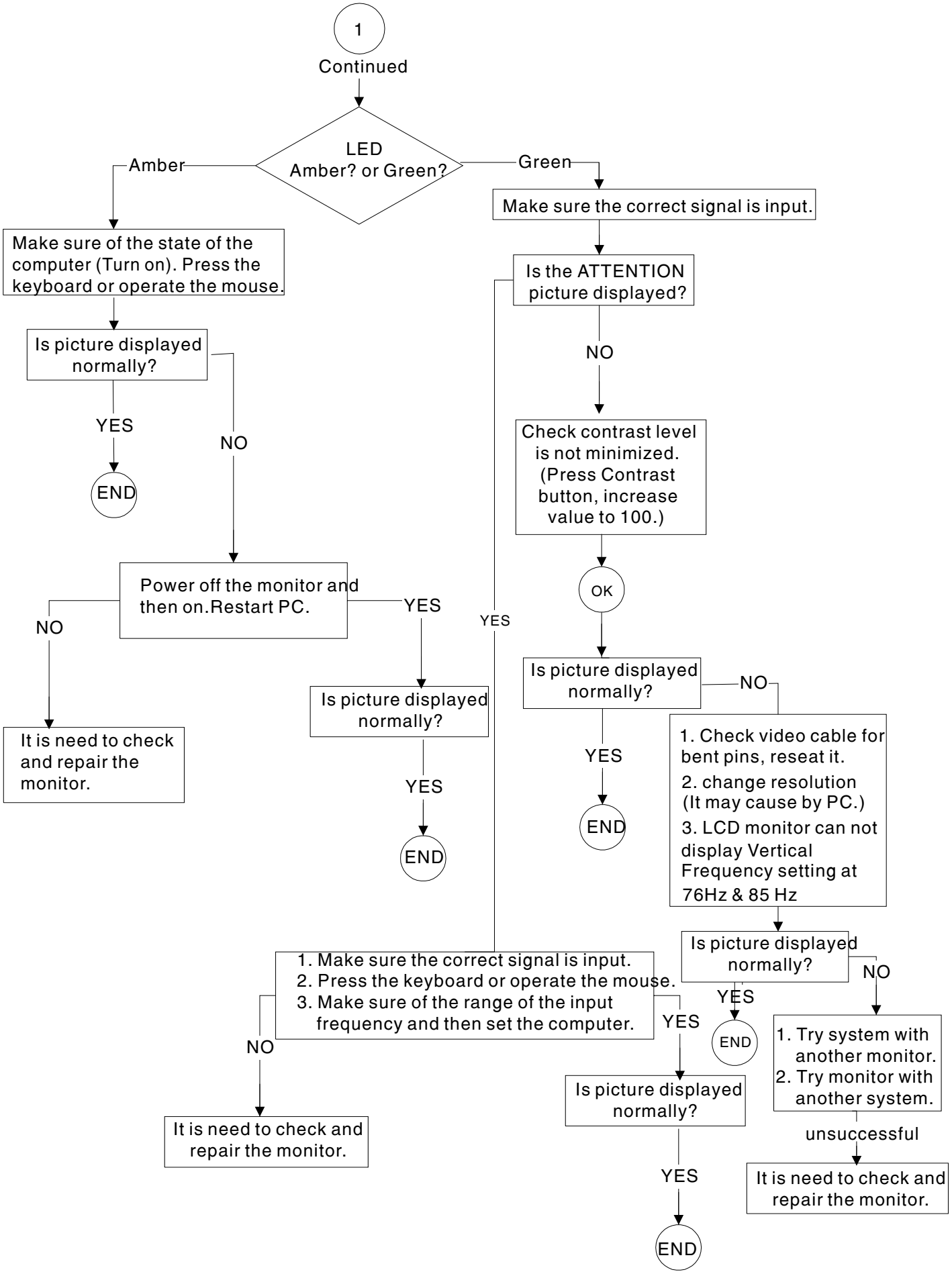
It will cause "no dispaly" problem as above mentioned.

Action : Restart PC and change timer setting of screen saver.



General Troubleshooting Guide (Continued)

Go to cover page



2

Monitor drivers (inf file)

for Windows 95/98/2000/Me or later

Philips' monitors build in VESA DDC2B feature to support Plug & Play requirement for Windows 95/98/2000/Me . You can install the information file (.inf) in order to select your Philips monitor from "Monitor" dialog box in Windows 95/98/2000/Me to activate Plug & Play application. The installation procedure based on Windows '95 OEM Release 2 , 98 , Me and 2000 is specified as follows, (In case of connecting the monitor to the PC compliant with VESA standard with the designated signal cable, the PC reads display pixels, frequency, and color feature of this monitor to optimise the picture for the monitor automatically.)
DDC : Abbreviation for Display Data Channel

**** Windows NT 4.0 does not require driver (inf file) for monitors.****

For Windows 95

For Windows95 drivers , your monitor is listed under manufacture name "Philips Business Electronics Co.".

1. Start Windows '95
2. Click the 'Start' button, point to 'Setting', and then click 'Control Panel'.
3. Double Click the 'Display' Icon.
4. Choose the 'Settings' tab then click 'Advanced...'.
5. Choose 'Monitor' button, point to 'Change...' then click 'Have Disk...'.
6. Click 'Browse...' button then choose the appropriate drive F: (CD-ROM Drive) then click 'OK' button.
7. Click the 'OK' button then choose your monitor model and click the 'OK'.
8. Click 'Close' button.

For Windows 98

For Windows98 drivers, our monitors are listed under 2 manufactures name "Philips", and "Philips Consumer Electronics Co". Please select "Philips" when you would like to set up your monitor in Windows setting , if you can not find the right model name just as the label indication on the back of set. For those set that have been issued since the release of Win98 , drivers can be found in CDROM under the directory path of " \ pc\ driver \" or it may be downloaded at "http: \www.philips.com". Once you have installed the new driver , Windows will add a new manufacture name "Philips Business Electronics" in your system.

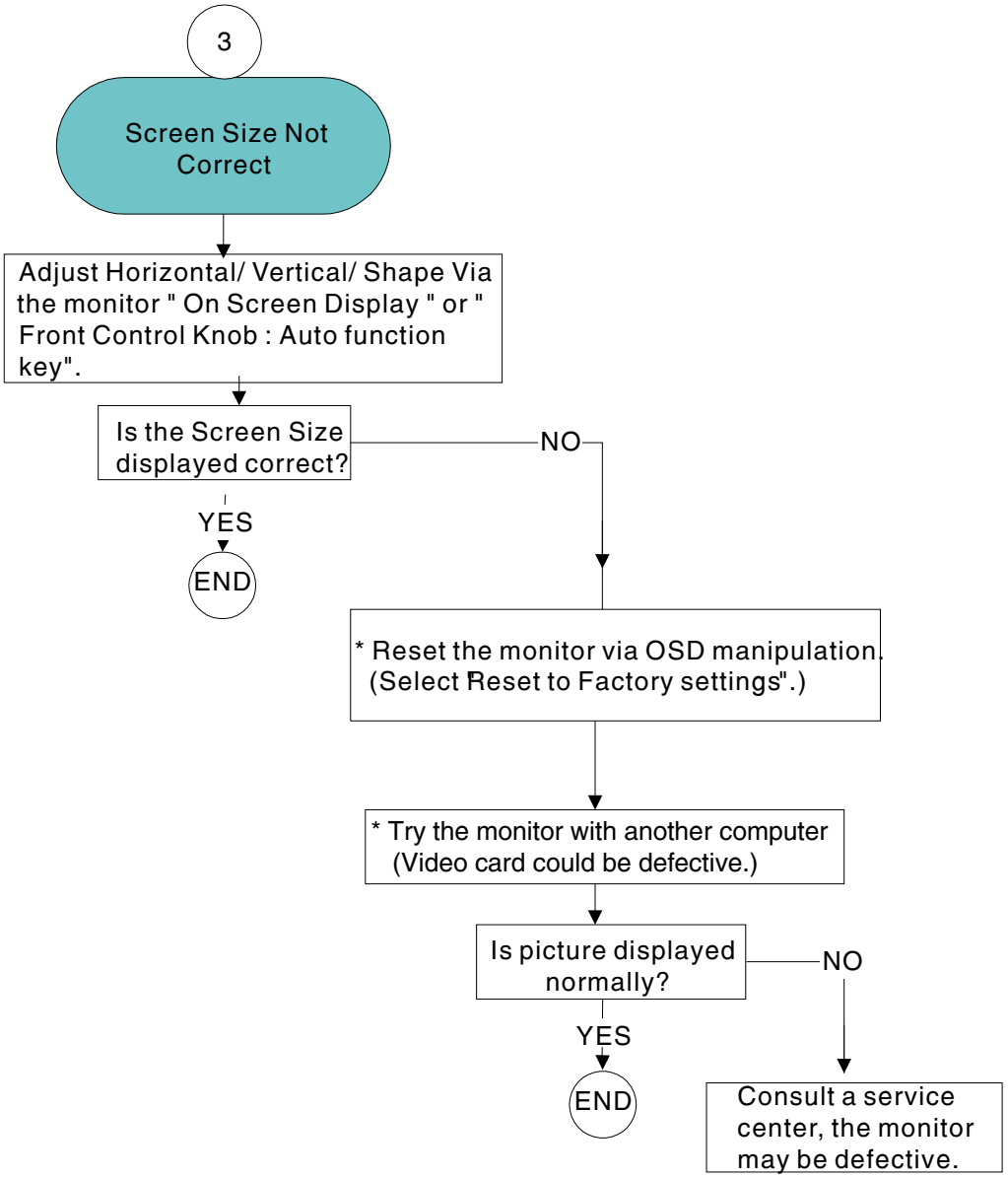
1. Start Windows 98
2. Click the 'Start' button, point to 'Setting', and then click 'Control Panel'.
3. Double Click the 'Display' Icon.
4. Choose the 'Settings' tab then click 'Advanced...'.
5. Choose 'Monitor' button, point to 'Change...' then click 'Next'
6. Choose "Display a list of all the drivers in a specific location, so you can elect the driver you want. " then click 'Next' and then click 'Have Disk...'.
7. Click 'Browse...' button then choose the appropriate drive F: (CD-ROM Drive) then click 'OK' button.
8. Click the 'OK' button then choose your monitor model and click the 'Next' button then click 'Next' button.
9. Click 'Finish' button then the 'Close' button.

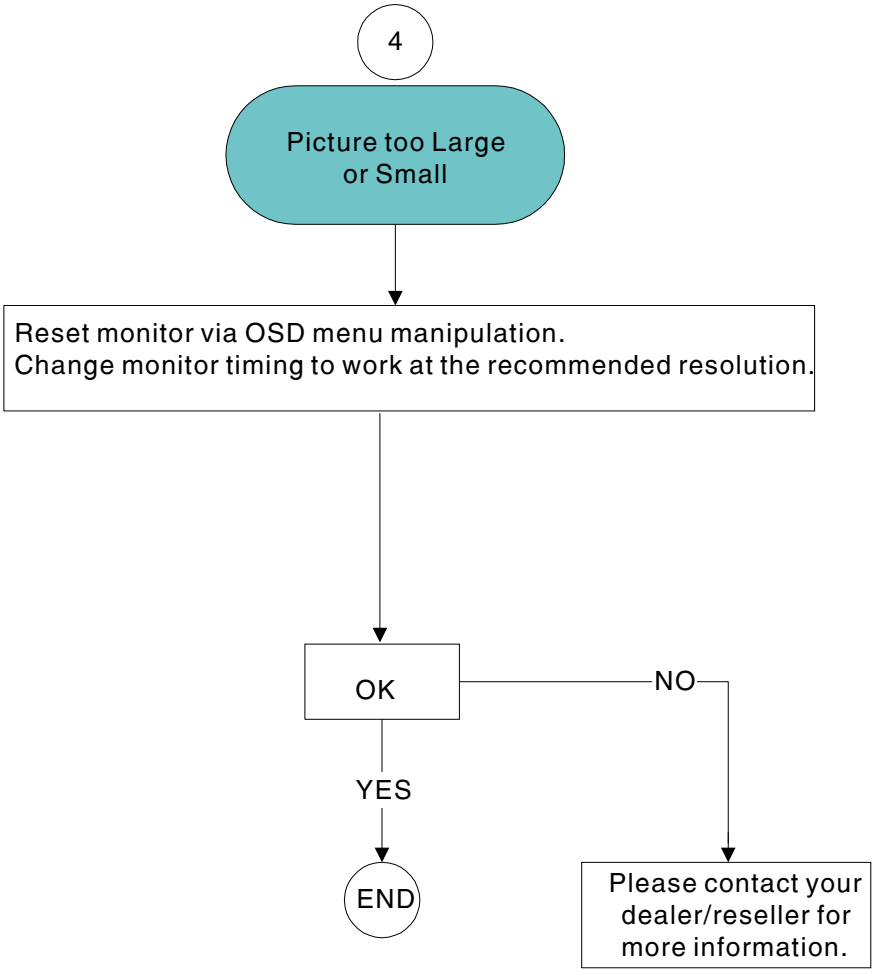
For Windows Me

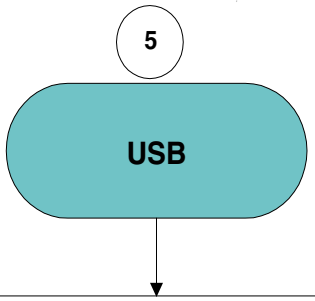
1. Start Windows Me
2. Click the 'Start' button, point to 'Setting', and then click 'Control Panel'.
3. Double Click the 'Display' Icon.
4. Choose the 'Settings' tab then click 'Advanced...'.
5. Choose 'Monitor' button, then click 'Change...' button.
6. Choose "Specify the location of the driver (Advanced)" and click the 'Next' button.
7. Choose "Display a list of all the drivers in a specific location, so you can select the driver you want." then click 'Next' and then click 'Have Disk...'.
8. Click 'Browse...' button then choose the appropriate drive F: (CD-ROM Drive) then click 'OK' button.
9. Click the 'OK' button then choose your monitor model and click the 'Next' button then click 'Next' button.
10. Click 'Finish' button then the 'Close' button.

For Windows 2000

1. Start Windows 2000
2. Click the 'Start' button, point to 'Setting', and then click 'Control Panel'.
3. Double Click the 'Display' Icon.
4. Choose the 'Settings' tab then click 'Advanced...'.
5. Choose 'Monitor'
   - If the 'Properties' button is inactive, it means your monitor is properly configured. Please stop installation.
   - If the 'Properties' button is active. Click 'Properties' button. Please follow next step continually.
6. Click 'Driver' and then click on 'Update Driver...' then click on the 'Next' button.
7. Choose "Display a list of the known drivers for this device so that I can choose a specific driver" then click 'Next' and then click 'Have disk...'.
8. Click 'Browse...' button then choose the appropriate drive F: (CD-ROM Drive).
9. Click the 'Open' button, then click the 'OK' button.
10. Choose your monitor model and click the 'Next' button then click 'Next' button.
11. Click 'Finish' button then the 'Close' button. If you can see the "Digital Signature Not Found" window then click the 'Yes' button.


3
Screen Size Not Correct
Adjust Horizontal/ Vertical/ Shape Via the monitor " On Screen Display " or " Front Control Knob : Auto function key".
Is the Screen Size displayed correct?
NO
YES
END
* Reset the monitor via OSD manipulation. (Select Reset to Factory settings".)
* Try the monitor with another computer (Video card could be defective.)
Is picture displayed normally?
NO
YES
END
Consult a service center, the monitor may be defective.


4
Picture too Large or Small
Reset monitor via OSD menu manipulation.
Change monitor timing to work at the recommended resolution.
OK
NO
YES
END
Please contact your dealer/reseller for more information.



USB = Universal Serial Bus

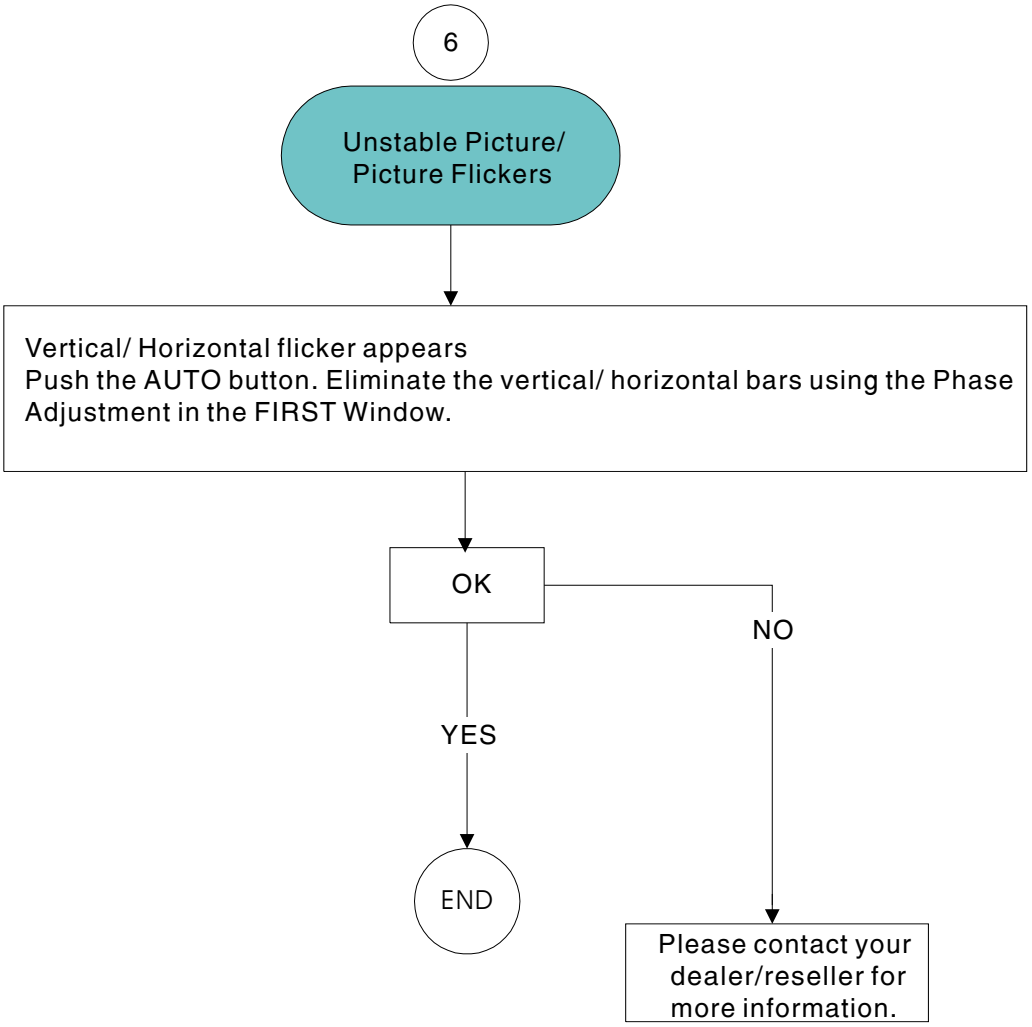
USB is the simple way to connect peripherals to your computer. It can be used to attach a wide variety of devices like scanners, cameras, keyboards, mice, speakers,printer ..etc.

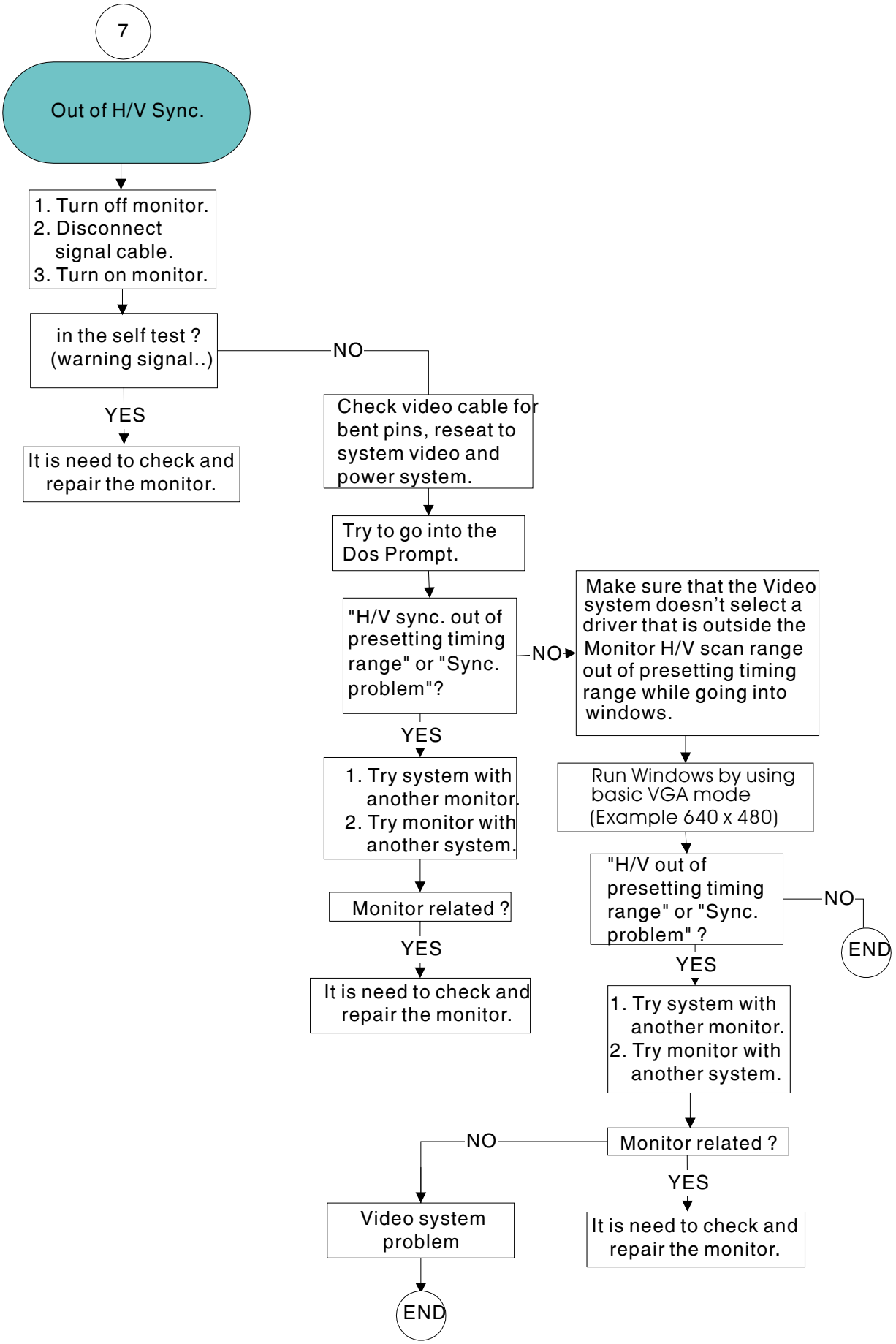
Useing USB devices (Operating Systems support USB) :
It depends on two things: hardware and software.
Hardware : You need a USB port in your computer. This can either be built in (most PC's build in 1999 and Apple's iMac) or from a plug in card. A number of venders sell PCI and CardBus USB adapters which can add USB capabilities to your older computer.
Software-wise for Wintel computers, you need either **Windows 98, Windows 95 OSR 2.1** (although Windows 98 has better USB support than Windows 95), **Windows 2000**. For Apple Macintosh computers you need **MacOS 8.1 or later**.

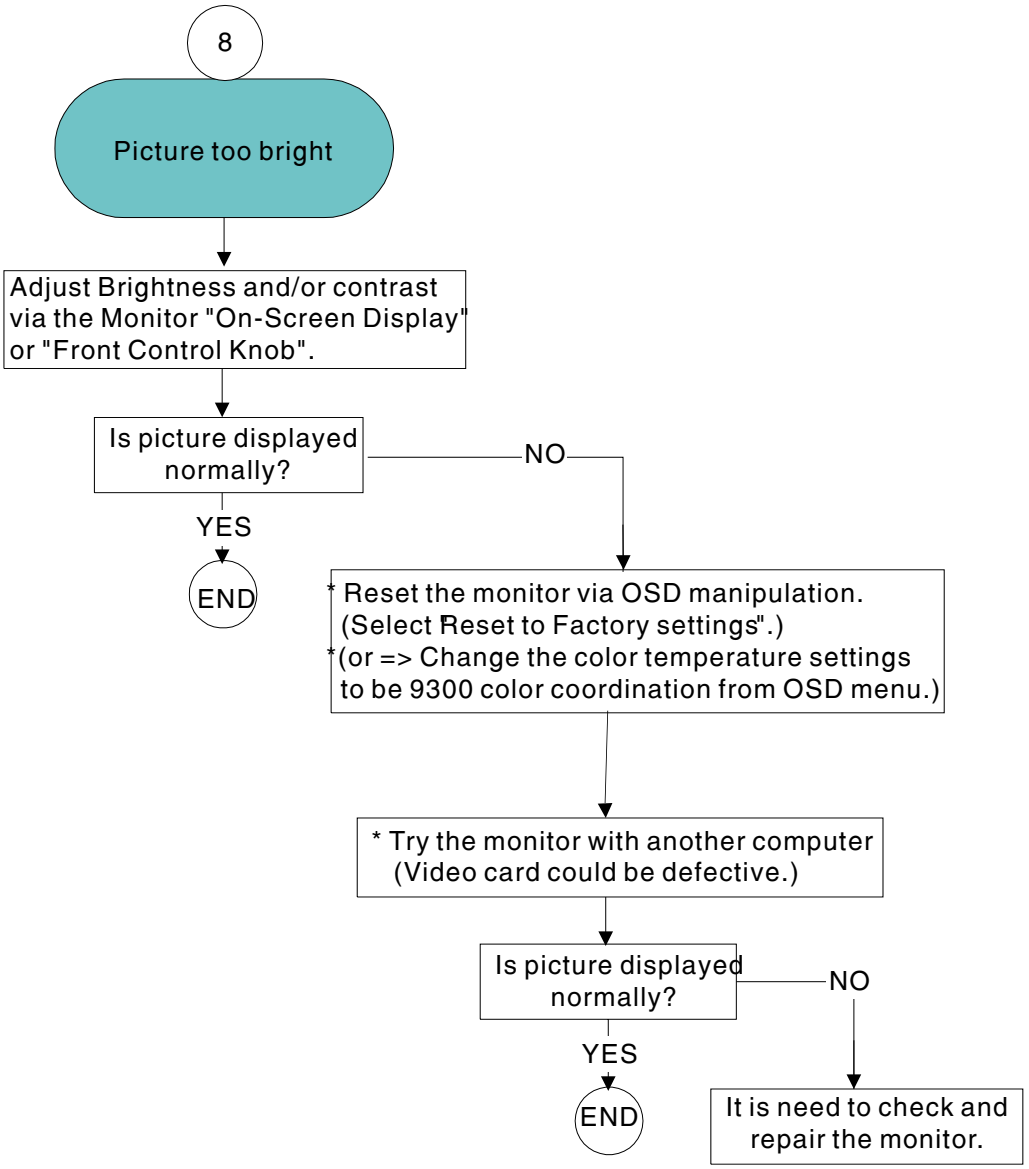
USB automatically determines resources (like driver software and bus bandwidth) required by peripherals.
USB makes necessary resources available without user intervention.
It is designed to meet Microsoft Plug and Play (PnP) specification, meaning users can install, and hot-swap devices without long installation procedures and reboots.
It allows 127 devices to run at the same time on the bus.

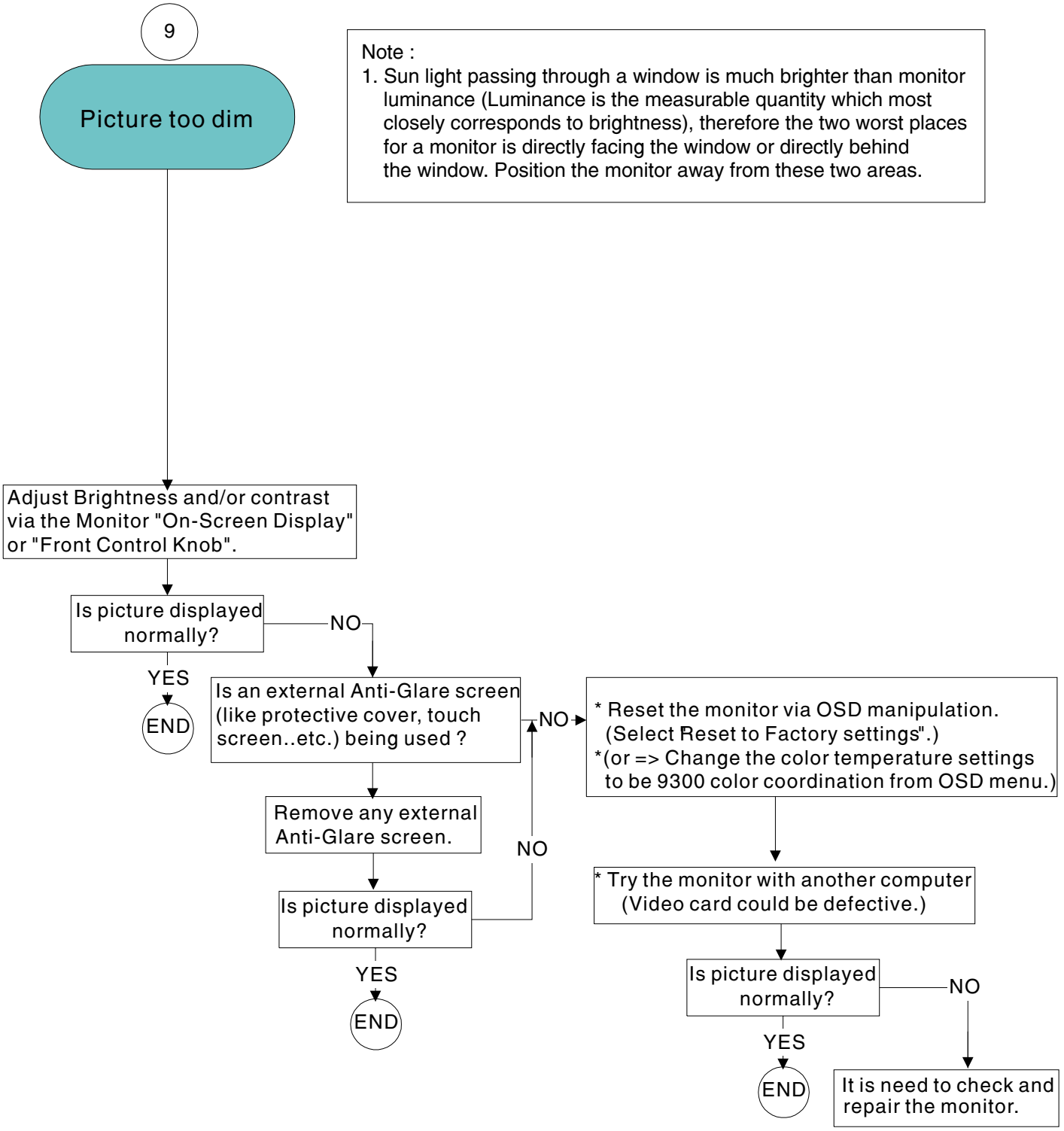
USB bus provides two types of data transfer speed -- 1.5Mbps and 12Mbps
and it can provide a maximum of 500mA of current to devices attached on the bus.
Universal means all peripherals share the same connector.
Serial simply defines devices can daisy chain together.
Universal Serial Bus 1.1, the de facto external connectivity standard for Mac and PC, has picked up the speed after its slow adoption by peripheral manufacturers, users and PC OEMs.

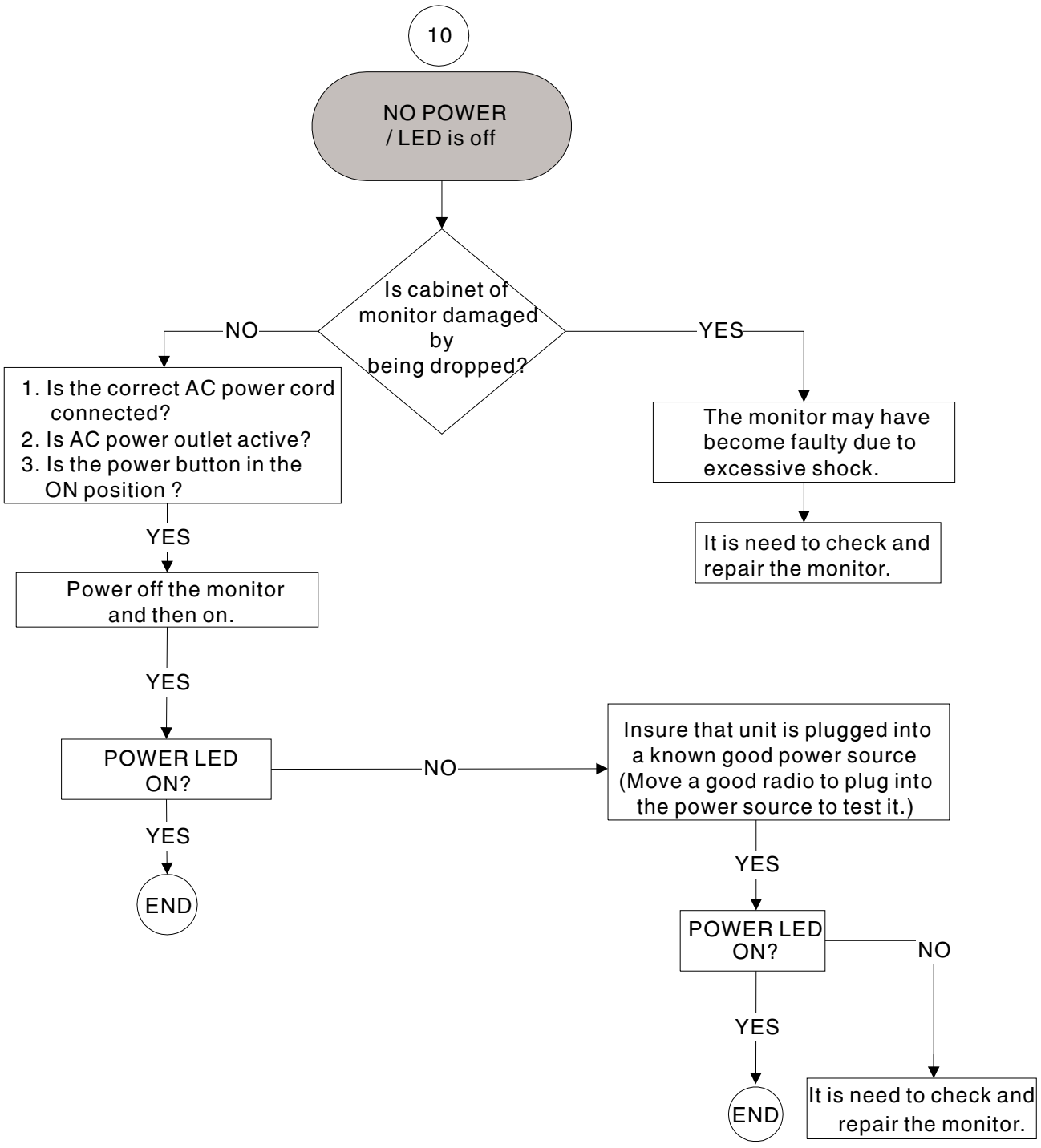
USB 2.0 :
Drafted by Compaq, Hewlett Packard, Intel, Lucent, Microsoft, NEC and Philips,
USB Specification version 2.0 will increase device data throughout up to 480Mbps, 40 times faster than USB 1.1 devices.

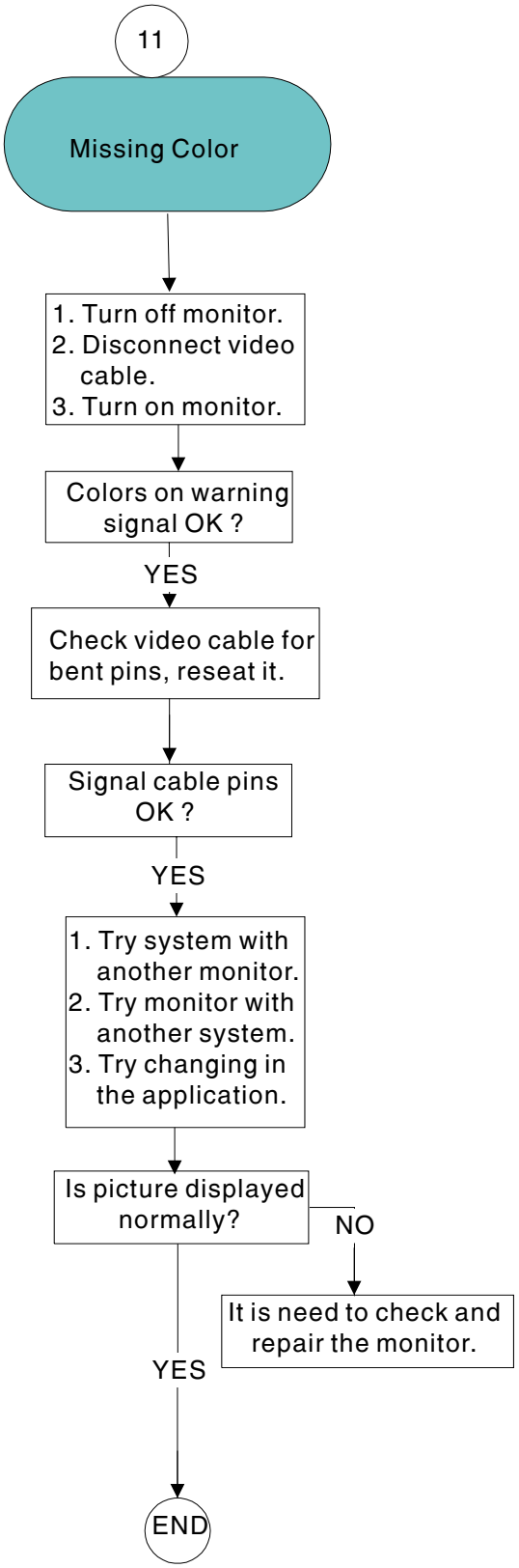

6
Unstable Picture/
Picture Flickers
Vertical/ Horizontal flicker appears
Push the AUTO button. Eliminate the vertical/ horizontal bars using the Phase Adjustment in the FIRST Window.
OK
NO
YES
END
Please contact your dealer/reseller for more information.


7
Out of H/V Sync.
1. Turn off monitor.
2. Disconnect signal cable.
3. Turn on monitor.
in the self test ? (warning signal..)
NO
YES
It is need to check and repair the monitor.
Check video cable for bent pins, reseat to system video and power system.
Try to go into the Dos Prompt.
"H/V sync. out of presetting timing range" or "Sync. problem"?
NO
YES
Make sure that the Video system doesn't select a driver that is outside the Monitor H/V scan range out of presetting timing range while going into windows.
Run Windows by using basic VGA mode (Example 640 x 480)
"H/V out of presetting timing range" or "Sync. problem" ?
NO
END
YES
1. Try system with another monitor.
2. Try monitor with another system.
Monitor related ?
YES
It is need to check and repair the monitor.
1. Try system with another monitor.
2. Try monitor with another system.
Monitor related ?
NO
YES
Video system problem
END
It is need to check and repair the monitor.


8
Picture too bright
Adjust Brightness and/or contrast via the Monitor "On-Screen Display" or "Front Control Knob".
Is picture displayed normally?
NO
YES
END
* Reset the monitor via OSD manipulation. (Select "Reset to Factory settings".)
*(or => Change the color temperature settings to be 9300 color coordination from OSD menu.)
* Try the monitor with another computer (Video card could be defective.)
Is picture displayed normally?
NO
YES
END
It is need to check and repair the monitor.

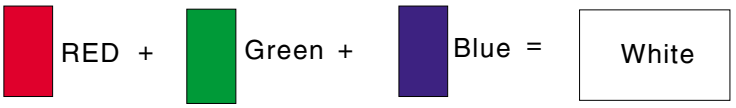

9
Picture too dim
Note :
1. Sun light passing through a window is much brighter than monitor luminance (Luminance is the measurable quantity which most closely corresponds to brightness), therefore the two worst places for a monitor is directly facing the window or directly behind the window. Position the monitor away from these two areas.
Adjust Brightness and/or contrast via the Monitor "On-Screen Display" or "Front Control Knob".
Is picture displayed normally?
NO
YES
END
Is an external Anti-Glare screen (like protective cover, touch screen..etc.) being used ?
NO
Remove any external Anti-Glare screen.
Is picture displayed normally?
NO
YES
END
* Reset the monitor via OSD manipulation.
(Select "Reset to Factory settings".)
*(or => Change the color temperature settings to be 9300 color coordination from OSD menu.)
* Try the monitor with another computer
(Video card could be defective.)
Is picture displayed normally?
NO
YES
END
It is need to check and repair the monitor.


10
NO POWER
/ LED is off
Is cabinet of monitor damaged by being dropped?
NO
YES
1. Is the correct AC power cord connected?
2. Is AC power outlet active?
3. Is the power button in the ON position ?
The monitor may have become faulty due to excessive shock.
It is need to check and repair the monitor.
YES
Power off the monitor and then on.
YES
POWER LED ON?
NO
Insure that unit is plugged into a known good power source (Move a good radio to plug into the power source to test it.)
YES
END
YES
POWER LED ON?
NO
YES
END
It is need to check and repair the monitor.

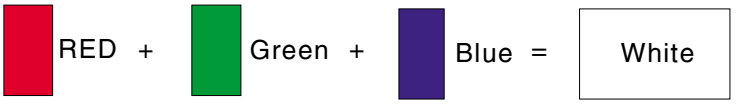


There are 2 easy ways to determine the Missing color problem.

1. View an image that is supposed to be "White".
   If one of the colors (RGB) is not functioning.
   White can not be produced.
2. View an image that supposed to contain Red, Green and Blue.
   Color problems will be apparent when one or more of these colors can not be displayed.

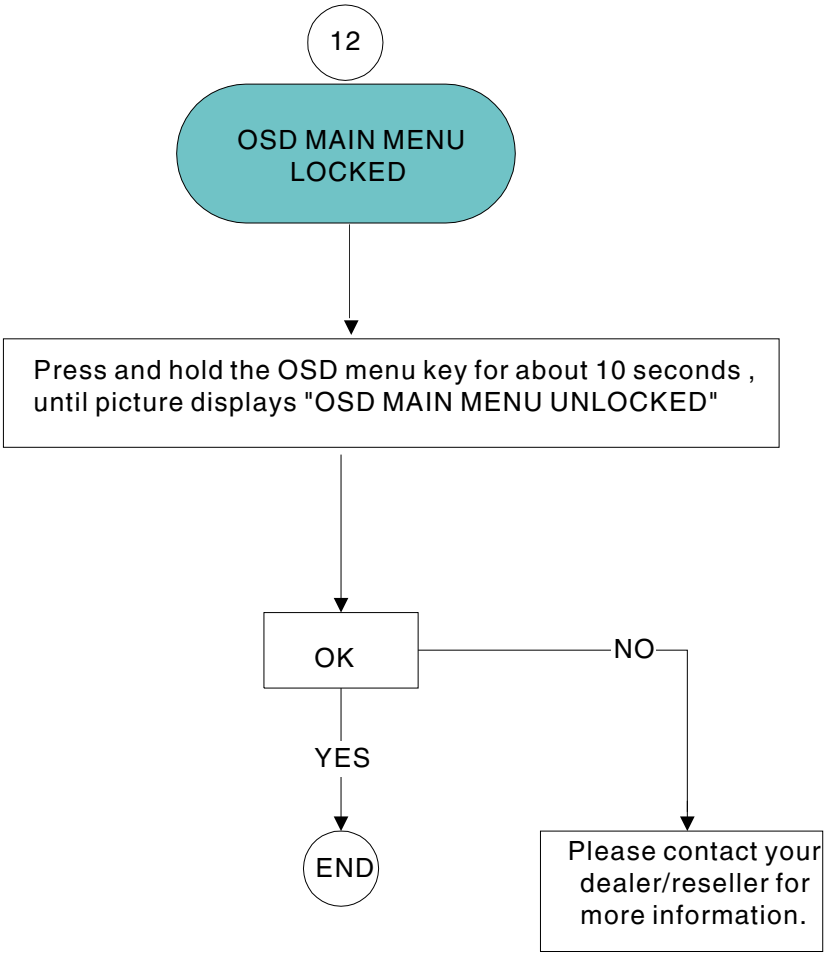


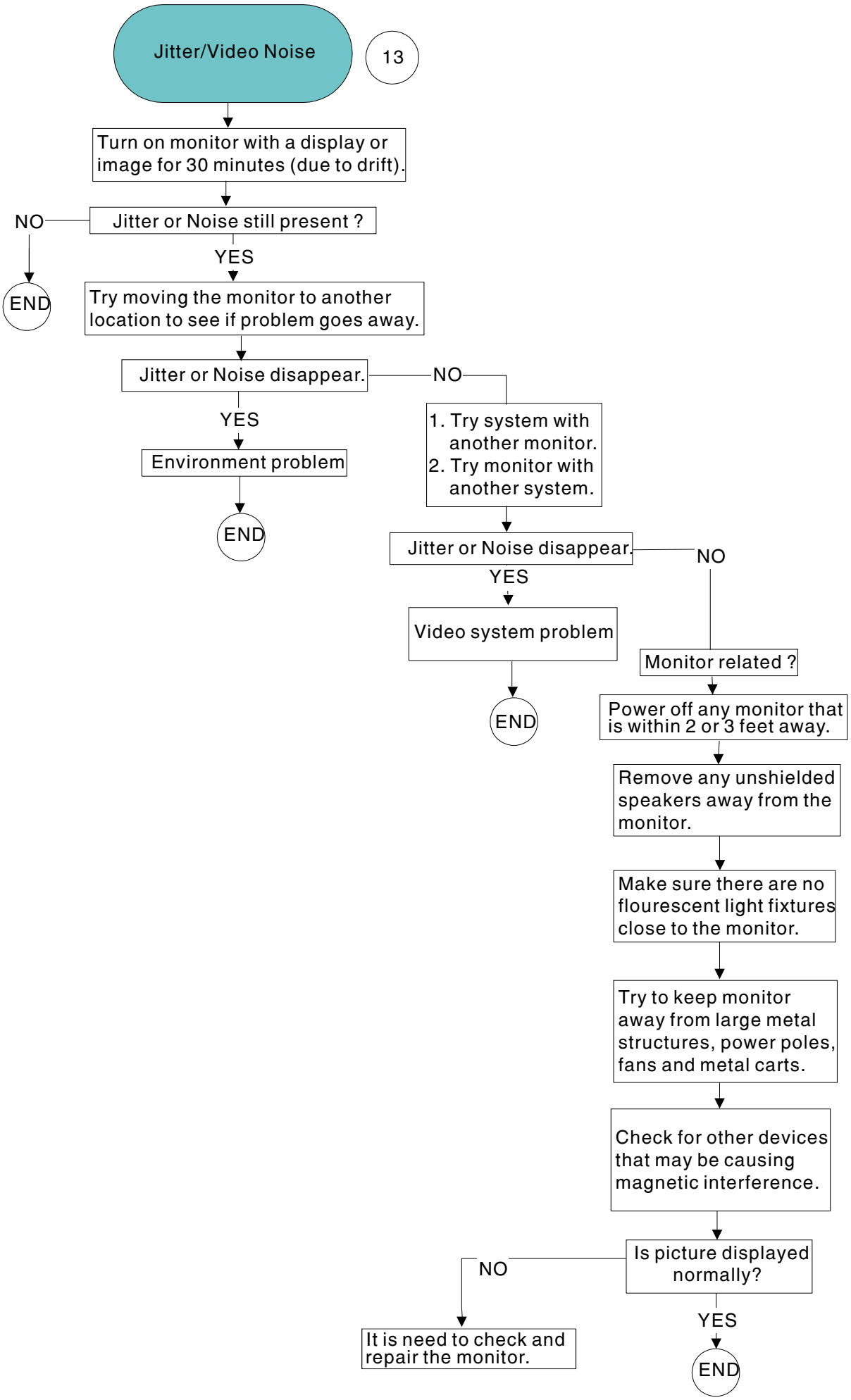
Cyan Color means that the red subpixel is missing.

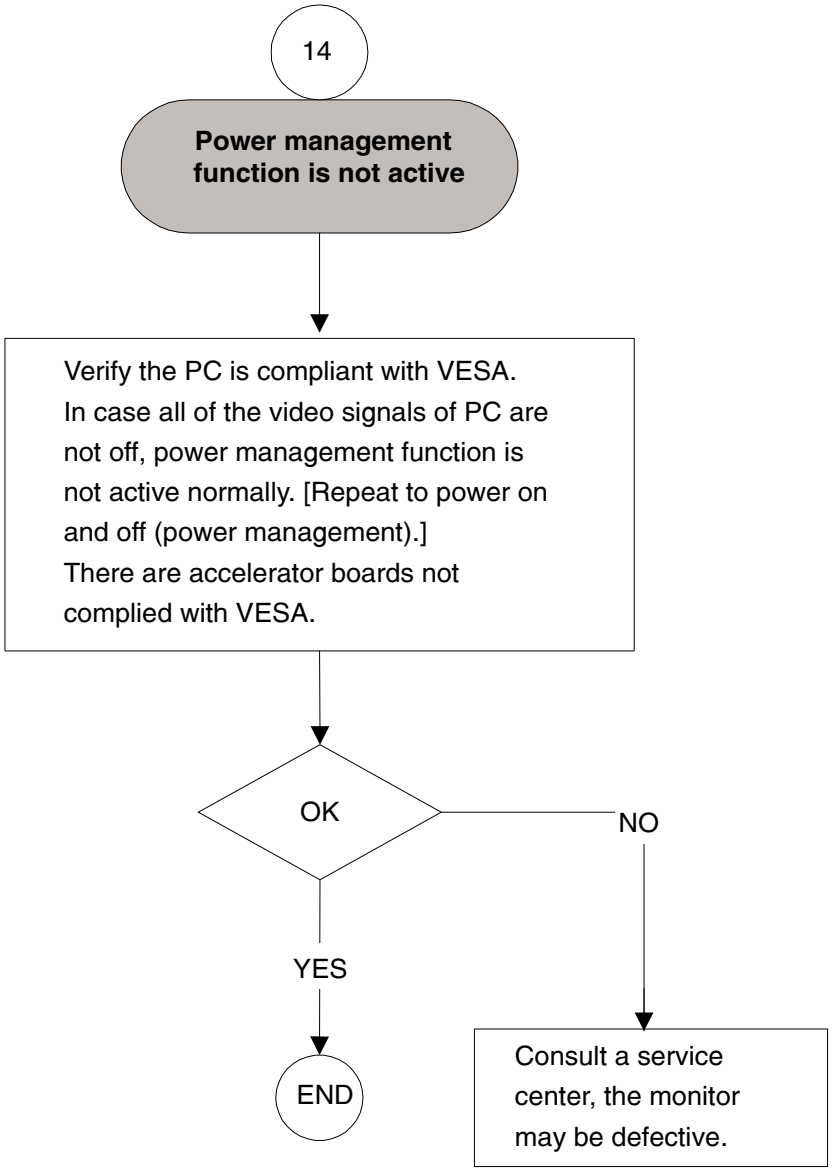


Magenta or Purple Color means that the green subpixel is missing.

Yellow Color means that the blue subpixel is missing.


12
OSD MAIN MENU LOCKED
Press and hold the OSD menu key for about 10 seconds , until picture displays "OSD MAIN MENU UNLOCKED"
OK
NO
YES
END
Please contact your dealer/reseller for more information.


Jitter/Video Noise
13
Turn on monitor with a display or image for 30 minutes (due to drift).
Jitter or Noise still present ?
NO
YES
END
Try moving the monitor to another location to see if problem goes away.
Jitter or Noise disappear.
NO
YES
Environment problem
END
1. Try system with another monitor.
2. Try monitor with another system.
Jitter or Noise disappear.
NO
YES
Video system problem
END
Monitor related ?
Power off any monitor that is within 2 or 3 feet away.
Remove any unshielded speakers away from the monitor.
Make sure there are no flourescent light fixtures close to the monitor.
Try to keep monitor away from large metal structures, power poles, fans and metal carts.
Check for other devices that may be causing magnetic interference.
Is picture displayed normally?
NO
YES
It is need to check and repair the monitor.
END


14
Power management function is not active
Verify the PC is compliant with VESA.
In case all of the video signals of PC are not off, power management function is not active normally. [Repeat to power on and off (power management).]
There are accelerator boards not complied with VESA.
OK
NO
YES
END
Consult a service center, the monitor may be defective.

Safety Test Requirements

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All units that are returned for service or repair must pass the original manufactures safety tests. Safety testing requires both *Hipot* and *Ground Continuity* testing.

HI-POT TEST INSTRUCTION

1. Application requirements

1.1 All mains operated products must pass the Hi-Pot test as described in this instruction.

1.2 This test must be performed again after the covers have been refitted following the repair, inspection or modification of the product.

2. Test method

2.1 Connecting conditions

2.1.1 The test specified must be applied between the parallel-blade plug of the mainscord and all accessible metal parts of the product.

2.1.2 Before carrying out the test, reliable conductive connections must be ensured and thereafter be maintained throughout the test period.

2.1.3 The mains switch(es) must be in the "ON" position.

2.2 Test Requirements

All products should be HiPot and Ground Continuity tested as follows:

Condition	HiPot Test for products where the mains input range is Full range(or 220V AC)	HiPot Test for products where the mains input is 110V AC(USA type)	Ground Continuity Test requirement
Test voltage	2820VDC (2000VAC)	1700VDC (1200VAC)	Test current: 25A,AC Test time: 3 seconds(min.) Resistance required: <=0.09+R ohm, R is the resistance of the mains cord.
Test time (min.)	3 seconds	1 second	
Trip current (Tester)	set at 100 uA for Max. limitation; set at 0.1 uA for Min. limitation	5 mA	
Ramp time	set at 2 seconds		

2.2.1 The test with AC voltage is only for production purpose, **Service center shall use DC voltage.**

2.2.2 The minimum test duration for Quality Control Inspector must be 1 minute. No breakdown during the test.

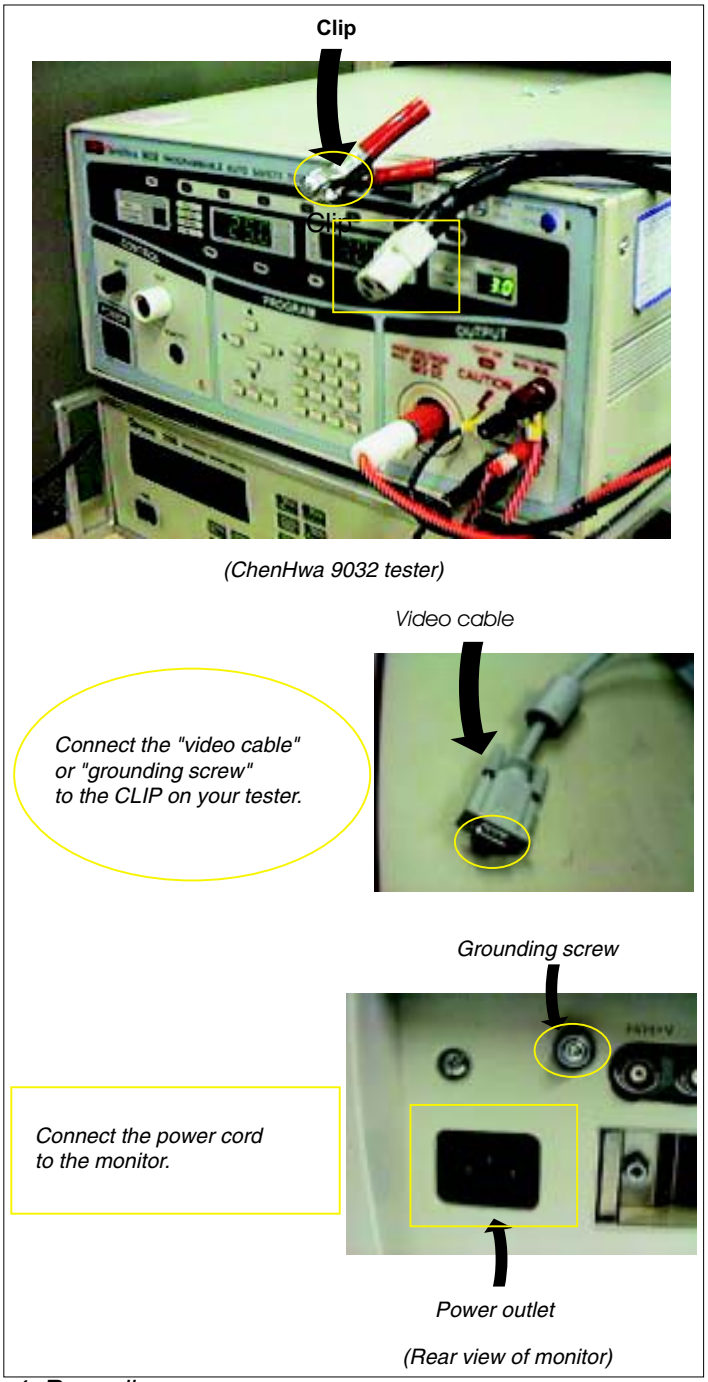
2.2.3 The test voltage must be maintained within the specified voltage + 5%.

2.2.4 The grounding blade or pin of mains plug must be conducted with accessible metal parts.

3. Equipments and Connection

3.1. Equipments
For example :
- ChenHwa 9032 PROGRAMMABLE AUTO SAFETY TESTER
- ChenHwa 510B Digital Grounding Continuity Tester
- ChenHwa 901 (AC Hi-pot test), 902 (AC, DC Hi-pot test) Withstanding Tester

3.2. Connection
* Turn on the power switch of monitor before Hipot and Ground Continuity testing.



4. Recording

Hipot and Ground Continuity testing records have to be kept for a period of 10 years.

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TELEVISION/MONITOR SAFETY GUIDELINES FOR THE PROFESSIONAL SERVICE TECHNICIAN

Safety Checks

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

Fire and Shock Hazard

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

* Broken line

Implosion

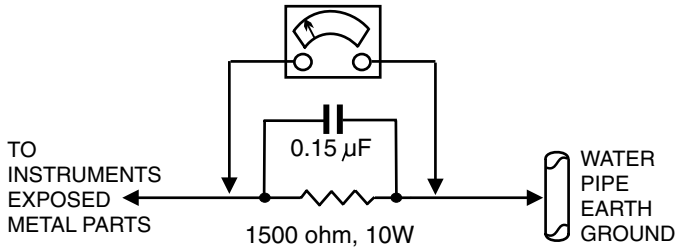
1. All picture tubes used in current model receivers are equipped with an integral implosion system. Care should always be used, and safety glasses worn,whenever handling any picture tube. Avoid scratching or otherwise damaging the picture tube during installation.
2. Use only replacement tubes specified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

X-radiation

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

Leakage Current Cold Check

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



Leakage Current Hot Check

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

Picture Tube Replacement

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

Parts Replacement

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

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