

Service Manual

ViewSonic VX912

Model No. VS10162

19" Color TFT LCD Display

(VX912_SM_836 Rev. 1a Oct. 2004)

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Revision History

Revision	SM Editing Date	Documents Number		Description of Changes	Editor
		DCN Number	ECR Number		
1a	10/15/04	4460		Initial Release	A. Lu

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1. Precautions and Safety Notices

1. Appropriate Operation

- (1) Turn off the product before cleaning.
- (2) Use only a dry soft cloth when cleaning the LCD panel surface.
- (3) Use a soft cloth soaked with mild detergent to clean the display housing.
- (4) Use only high quality and safety approved AC/DC power cord.
- (5) Disconnect the power plug from AC outlet if the product is not used for a long period of time.
- (6) If smoke, abnormal noise, or strange odor is present, immediately switch the LCD display off.
- (7) Do not touch the LCD panel surface with sharp or hard objects.
- (8) Do not place heavy objects on the LCD display, video cable, or power cord.
- (9) Do not use abrasive cleaners, waxes or solvents for your cleaning.
- (10) Do not operate the product under the following conditions:
 - Extremely hot, cold or humid environment.
 - Areas susceptible to excessive dust and dirt.
 - Near any appliance generating a strong magnetic field.
 - Place in direct sunlight.

2. Caution

No modification of any circuit should be attempted. Service work should only be performed after you are thoroughly familiar with all of the following safety checks and servicing guidelines.

3. Safety Check

Care should be taken while servicing this LCD display. Because of the high voltage used in the inverter circuit, the voltage is exposed in such areas as the associated transformer circuits.

4. LCD Module Handling Precautions

4.1 Handling Precautions

- (1) Since front polarizer is easily damaged, pay attention not to scratch it.
- (2) Be sure to turn off power supply when inserting or disconnecting from input connector.
- (3) Wipe off water drop immediately. Long contact with water may cause discoloration or spots.
- (4) When the panel surface is soiled, wipe it with absorbent cotton or other soft cloth.
- (5) Since the panel is made of glass, it may break or crack if dropped or bumped on hard surface.
- (6) Since CMOS LSI is used in this module, take care of static electricity and insure human earth when handling.
- (7) Do not open nor modify the Module Assembly.
- (8) Do not press the reflector sheet at the back of the module to any directions.
- (9) In case if a Module has to be put back into the packing container slot after once it was taken out from the container, do not press the center of the CCFL Reflector edge. Instead, press at the far ends of the CFL Reflector edge softly. Otherwise the TFT Module may be damaged.
- (10) At the insertion or removal of the Signal Interface Connector, be sure not to rotate nor tilt the Interface Connector of the TFT Module.

- (11) After installation of the TFT Module into an enclosure (LCD monitor housing, for example), do not twist nor bend the TFT Module even momentarily. At designing the enclosure, it should be taken into consideration that no bending/twisting forces are applied to the TFT Module from outside. Otherwise the TFT Module may be damaged.
- (12) Cold cathode fluorescent lamp in LCD contains a small amount of mercury. Please follow local ordinances or regulations for disposal.
- (13) Small amount of materials having no flammability grade is used in the LCD module. The LCD module should be supplied by power complied with requirements of Limited Power Source (IEC60950 or UL1950), or be applied exemption.
- (14) The LCD module is designed so that the CFL in it is supplied by Limited Current Circuit (IEC60950 or UL1950). Do not connect the CFL in Hazardous Voltage Circuit.

Correct methods :	Incorrect Methods :
Only touch the metal-frame of the panel or the front cover of the monitor . Do not touch the surface of the polarizer .	Surface of the panel is pressed by fingers & this may cause “MURA “
	
	
Take out the monitor with cushion	Take out the monitor by grasping the LCD panel. That may cause “MURA“.
	

Correct Methods :	Incorrect Methods :
Place the monitor on a clean & soft foam pad .	Place the monitor on foreign objects . That could scratch the surface of panel
	

2. Specification

● GENERAL specification

Test Resolution & Frequency	1280x1024 @ 60Hz
Test Image Size	Full Size
Contrast and Brightness Controls	Factory Default: Contrast = 70%, Brightness = 100%

● VIDEO INTERFACE

Analog Input Connector	DB-15 (Analog), refer the appendix A
Digital Input Connector	DVI-I (Digital), refer the appendix B
Default Input Connector	Defaults to the first detected input
Video Cable Strain Relief	Equal to twice the weight of the monitor for five minutes
Video Cable Connector DB-15 Pin out	Compliant DDC 1/2B
Video Signals	1. Video RGB (Analog) Separate, Composite, and Sync on Green 2. TMDS (Digital)
Video Impedance	75 Ohms (Analog), 100 Ohms (Digital)
Maximum PC Video Signal	950 mV with no damage to monitor
Maximum Mac Video Signal	1250 mV with no damage to monitor
Sync Signals	LVDS
DDC 1/2B	Compliant with Revision 1.3
Sync Compatibility	Separate Sync, Composite Sync, SOG
Video Compatibility	Shall be compatible with all PC type computers, Macintosh computers, and after market video cards
Resolution Compatibility	640 x 350*, 640 x 480, 720 x 400* (640 x 400*), 800 x 600, 832 x 624, 1024 x 768, 1152 x 864, 1152 x 870, 1280 x 720, 1280 x 960, 1280 x 1024 * The image vertical size might not be full screen. But the image vertical position should be at the center.
Exclusions	Not compatible with interlaced video

● POWER SUPPLY

Internal Power Supply	Part Number: FSP035-1PI01
Input Voltage Range	90 TO 264 VAC
Input Frequency Range	47.5 TO 63 HERTZ
Short Circuit Protection	Output can be shorted without damage
Over Current Protection	3.5 A typical at 12.0 VDC (Protect when short circuit)
Leakage Current	0.75mA (Max) at 264VAC / 50Hz
EFFICIENCY	77 % typical at 115VAC Full Load
Fuse	Internal and not user replaceable
Power Dissipation	35 Watts (typ)
Max Input AC Current	1.2 Arms @ 90VAC, 0.7 Arms @265VAC

● ELECTRICAL REQUIREMENT

Horizontal / Vertical Frequency

Horizontal Frequency	24 – 82 KHZ
Vertical Refresh Rate	50 – 85* HZ. * FOR RESOLUTION 1280 X 1024, THE VERTICAL REFRESH RATE UP TO 75 HZ; FOR THE REST OF RESOLUTIONS, THE VERTICAL REFRESH RATE UP TO 85HZ
Maximum Pixel Clock	135 MHz
Sync Polarity	Independent of sync polarity.

● Timing Table

Item	Timing	Analog	Digital
1	640 x 350 @ 70Hz, 31.5kHz	Yes	Yes
2	640 x 400 @ 60Hz, 31.5kHz	Yes	Yes
3	640 x 400 @ 70Hz, 31.5kHz	Yes	Yes
4	640 x 480 @ 50Hz, 24.7kHz	Yes	Yes
5	640 x 480 @ 60Hz, 31.5kHz	Yes	Yes
6	640 x 480 @ 67Hz, 35.0kHz	Yes	Yes
7	640 x 480 @ 72Hz, 37.9kHz	Yes	Yes
8	640 x 480 @ 75Hz, 37.5kHz	Yes	Yes
9	640 x 480 @ 85Hz, 43.27kHz	Yes	Yes
10	720 x 400 @ 70Hz, 31.5kHz	Yes	Yes
11	800 x 600 @ 56Hz, 35.1kHz	Yes	Yes
12	800 x 600 @ 60Hz, 37.9kHz	Yes	Yes
13	800 x 600 @ 75Hz, 46.9kHz	Yes	Yes
14	800 x 600 @ 72Hz, 48.1kHz	Yes	Yes
15	800 x 600 @ 85Hz, 53.7kHz	Yes	Yes
16	832 x 624 @ 75Hz, 49.7kHz	Yes	Yes
17	1024 x 768 @ 60Hz, 48.4kHz	Yes	Yes
18	1024 x 768 @ 70Hz, 56.5kHz	Yes	Yes
19	1024 x 768 @ 72Hz, 58.1kHz	Yes	Yes
20	1024 x 768 @ 75Hz, 60.0kHz	Yes	Yes
21	1024 x 768 @ 85Hz, 68.67kHz	Yes	Yes
22	1152 x 864 @ 75Hz, 67.5kHz	Yes	Yes
23	1152 x 870 @ 75Hz, 68.7kHz	Yes	Yes
24	1280 x 1024 @ 60Hz, 63.4kHz	Yes	Yes
25	1280 x 1024 @ 75Hz, 79.97kHz	Yes	Yes
26	1280x 720 @ 60Hz, 45kHz (HDTV)	Yes	Yes

● **TFT LCD PANEL**

1st Source Panel

Model number	LPL LM190E03 B4N2/B4N4
Type	TN type with LVDS interface
Active Size	376.3 (H) x 301.1 (V)
Pixel Arrangement	RGB Vertical Stripe
Pixel Pitch	0.294 mm
GLASS TREATMENT	Anti Glare (Hard coating 3H)
# OF BACKLIGHTS	4 CCFL edge-light (2 top / 2 bottom)
BACKLIGHT LIFE	50,000 Hours (Min)
Luminance (5-point) – Condition: CT = 6500K, Contrast = Max, Brightness = Max	250 cd/m2 (Typ after 30 minute warm up) 200 cd/m2 (Min after 30 minute warm up)
Brightness Uniformity	≥77% % Entire Area
Contrast Ratio	500:1 (typ), 300:1 (min)
Color Depth	16.2 million colors (6 bits + 2 bits FRC)
Viewing Angle (Horizontal)	@ CR>10 Typical: 140° (±70°) Minimum: 120° (±60°) @ CR>5 Typical: 160° (±80°) Minimum: 140° (±70°)
VIEWING ANGLE (VERTICAL)	@ CR>10 Typical: 140° (±70°) Minimum: 120° (±60°) @ CR>5 Typical: 160° (±80°) MINIMUM: 140° (±70°)
Response Time 10%-90% @ Ta=25°C	12 ms (Tr= 2 ms, Tf = 10 ms) (typ) 25 ms (Tr= 5 ms, Tf = 20 ms) (max)
Panel Defects	Please see Panel Quality Specifications.

● **MECHANICAL**

Dimension (Desktop)

Width	431 mm (17 inch)
Height	468 mm (18.4 inch)
Depth	201 mm (7.9 inch)
Monitor Weight	6.7 Kg (14.8 lbs)

Dimension (Head Only / Wall Mount)

Width	431 mm (17 inch)
Height	370 mm (14.6 inch)
Depth	66 mm (2.6 inch)
Monitor Weight	5.3 Kg (11.7 lbs)

Ergonomics

Tilt Up	From 0° up to $\geq 20^\circ$
Tilt Down	From 0° down to $-3^\circ \sim -5^\circ$

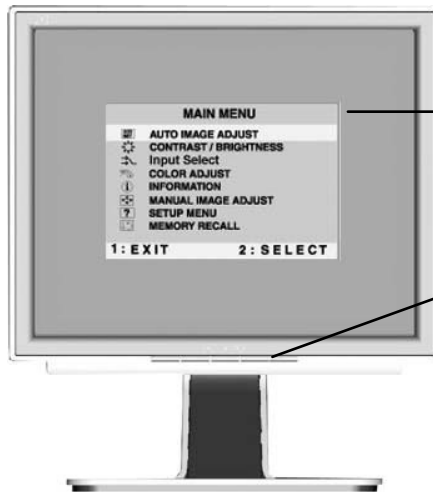
● **ENVIRONMENTAL**

- Operating Temperature : 0°C to +40°C
- Storage Temperature : -20°C to +60°C
- Operating Relative Humidity : 20% to 90% RH Non-Condensing
- Storage Relative Humidity : 5% to 90% RH Non-Condensing
- Operating Altitude : 0 to +3,000 meters
- Storage Altitude : 0 to +12,000 meters

3. Front Panel Function Control Description

Adjusting the Screen Image

Use the buttons on the front control panel to display and adjust the OnView® controls which display on the screen. The OnView controls are explained at the top of the next page.



Main Menu
With OnView controls

**Front Control Panel
shown below in detail**

Displays the Main Menu
or exits the control screen
and saves adjustments

Scrolls through menu options and
adjusts the displayed control.

Also a shortcut to display the
Contrast adjustment control
screen.

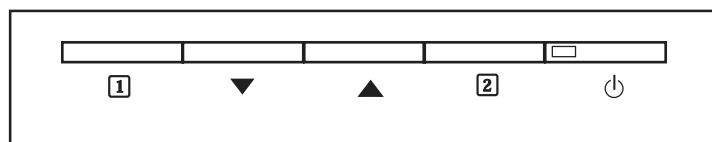
Displays the control
screen for the highlighted
control.

Also toggles between two
controls on some
screens.

Also a shortcut to toggle
between analog and
digital connections.

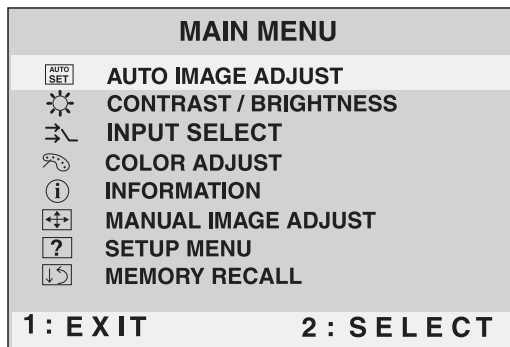
Power light
Green = ON
Orange = Power
Saving

Power
On/Off



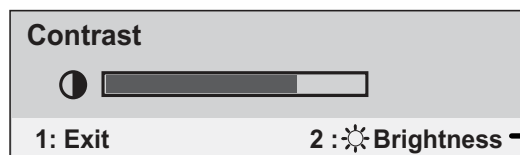
Do the following to adjust the screen image:

- 1 To display the Main Menu, press button [1].



NOTE: All OnView menus and adjustment screens disappear automatically after about 30 seconds.

- 2 To select a control you want to adjust, press ▲ or ▼ to scroll up or down the Main Menu.
- 3 After the control is selected, press button [2]. A control screen like the one shown below appears.



The line at the bottom of the screen tells you what you can do next: Exit or select the Brightness control.

- 4 To adjust the control, press the up ▲ or down ▼ buttons.
- 5 To save the adjustments and exit the menu, press button [1] *twice*.

The following tips may help you optimize your display:

- Adjust your computer's graphic card so that it outputs a video signal 1280 x 1024 @ 60 Hz to the LCD display. (Look for instructions on “changing the refresh rate” in your graphic card's user guide.)
- If necessary, make small adjustments using H POSITION and V POSITION until the screen image is completely visible. (The black border around the edge of the screen should barely touch the illuminated “active area” of the LCD display.)

Main Menu Controls

Adjust the menu items shown below by using the up ▲ and down ▼ buttons.

Control	Explanation
---------	-------------



Auto Image Adjust automatically sizes, centers, and fine tunes the video signal to eliminate waviness and distortion.

Press the [2] button to obtain a sharper image.

NOTE:

1. Auto Image Adjust works with most common video cards. If this function does not work on your LCD display, then lower the video refresh rate to 60 Hz and set the resolution to its pre-set value.
2. The Auto Image Adjust and most Manual Image Adjust functions are not available for DVI input.



Contrast adjusts the difference between the image background (black level) and the foreground (white level).



Brightness adjusts background black level of the screen image.



Input Select allows you to toggle between an analog and a digital signal.

Control Explanation



Color Adjust provides several color adjustment modes: preset color temperatures and **RGB** which allows you to adjust red (**R**), green (**G**), and blue (**B**) separately. The factory setting for this product is 6500K (6500 Kelvin).

Color Adjust	
sRGB	
9300K	
• 6500K	
5400K	
User Color	
1 : EXIT	2 : SELECT

sRGB — sRGB is quickly becoming the industry standard for color management, with support being included in many of the latest applications. Enabling this setting allows the LCD display to more accurately display colors the way they were originally intended. Enabling the sRGB setting will cause the Contrast and Brightness adjustments to be disabled.

9300K — Adds blue to the screen image for cooler white (used in most office settings with fluorescent lighting).

6500K — Adds red to the screen image for warmer white and richer red.

5400K — Adds green to the screen image for a darker color.

User Color — Individual adjustments for red (R), green (G), and blue (B).

1 To select color (R, G or B) press button [2].

2 To adjust selected color, press ▲ or ▼.

Important: If you select RECALL from the Main Menu when the product is set to a Preset Timing Mode, colors return to the 6500K factory preset.

Control Explanation



Information displays the timing mode (video signal input) coming from the graphics card in your computer. See your graphic card's user guide for instructions on changing the resolution and refresh rate (vertical frequency).

NOTE: VESA 1280 x 1024 @ 60 Hz (recommended) means that the resolution is 1280 x 1024 and the refresh rate is 60 Hertz.

Information		
H. Frequency:	31.47	KHz
V. Frequency:	31.47	Hz
Pixel Clock:	24.80	MHz
Resolution:	640 x 480	
Model No. :		
Serial No. :		
www.viewsonic.com		
1: Exit		



Manual Image Adjust displays the Manual Image Adjust menu.

Manual Image Adjust	
	H . / V . Position
	H . Size
	Fine Tune
	Sharpness
1: Exit 2 : Select	

The **Manual Image Adjust** controls are explained below:

Horizontal Position moves the screen image left or right.

Vertical Position moves the screen image up or down.

Horizontal Size adjusts the width of the screen image.

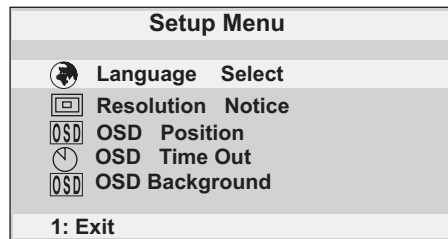
Fine Tune sharpens focus by aligning the illuminated text and/or graphic characters.

Sharpness adjusts the clarity and focus of the screen image.

Control Explanation



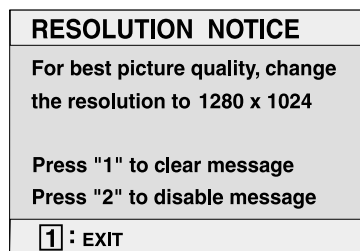
Setup Menu displays the menu shown below.



The **Setup Menu** controls are explained below:

Language allows you to choose the language used in the menus and control screens.

Resolution Notice displays the Resolution Notice menu shown below.



Resolution Notice advises the optimal resolution to use.

OSD Position allows you to move the on-screen display menus and control screens.

OSD Timeout sets the length of time an on-screen display screen is displayed. For example, with a “15 second” setting, if a control is not pushed within 15 seconds, the display screen disappears.

OSD Background allows you to turn the On-Screen-Display background on or off.



Memory Recall returns adjustments to the original factory settings if the display is operating in a factory Preset Timing Mode listed in this user guide.

Exception: This control does not affect changes made with the User Color control, Language and Power Lock setting.

3. ELECTRICAL SPECIFICATIONS

3.1 Standard conditions

Display Area	338 x 270 mm
Video Signal	0.7 Vpp
Contrast	70%
Brightness	Max.
Ambient	20 +/- 5 °C
Input	AC
Warming up	> 30 min
Display	1280 x 1024

3.2 POWER

3.2.1 Power supply

Input Voltage	90 -240 ~Volts
Power Frequency	50/ 60 Hz +/-3Hz
Input current	<1.5Arms @ 90Vac <0.75Arms@240Vac
Inrush current	90A(max.) at 230Vac
Power consumption	50Watt
Output Voltage	@0-3.0A load 12Vdc +/-5%

3.2.2 Power Management

State	Power	Indicator
On	40Watt	Green
Standby	<1Watt	Amber
Off	<1Watt	

3.3 Acceptable timing

If your timing is within following specification, this LCD display can automatically function with a certain position.

Horizontal: Sync frequency : 30~81 kHz

Vertical: Sync frequency : 56~85Hz(1280x1024,75Hz)

3.4 Signal level and input impedance

3.4.1 Video Signal level This LCD display is adjusted at the factory using 0,7 Vp-p Video signal.

3.4.2 Sync Signal level

H/V Separate : TTL level

3.4.3 Input impedance

Video input : 75 ohms

Sync input : > 1 k ohms

4. **SIGNAL CABLE** : Signal cable with Mini D-Sub 15P connectors at both ends. Length : 1.8 meter.

5. EDID data

Analog EDID

VIEWSONIC CORPORATION
EDID Version # 1, Revision # 3
DDCTest For: ViewSonic VX912

128 BYTES OF EDID CODE:

	0	1	2	3	4	5	6	7	8	9
0		00	FF	FF	FF	FF	FF	00	5A	63
10		1A	8D	01	01	01	01	0E	01	03
20		0E	26	1E	78	2E	A2	65	A3	57
30		9D	25	11	50	54	BF	EF	80	81
40		71	4F	61	59	45	59	31	59	01
50		01	01	01	01	30	2A	00	98	51
60		2A	40	30	70	13	00	78	2D	11
70		00	1E	00	00	00	FF	00	50	43
80		30	34	30	31	30	30	30	31	0A
90		00	00	00	FD	00	32	55	1E	52
100		00	0A	20	20	20	20	20	00	00
110		00	FC	00	56	58	39	31	32	0A
120		20	20	20	20	20	00	28		

- (08-09) ID Manufacturer Name = VSC
(11-10) Product ID Code = 8D1A
(12-15) Last 5 Digits of Serial Number = Not Used
(16) Week of Manufacture = 01
(17) Year of Manufacture = 2004
(10-17) Complete Serial Number = See Descriptor Block
(18) EDID Version Number = 1
(19) EDID Revision Number = 3
(20) VIDEO INPUT DEFINITION:
Analog Signal
0.700, 0.300 (1.000 Vp-p)
Separate Syncs, Composite Sync, Sync on Green
(21) Maximum Horizontal Image Size = 380 mm
(22) Maximum Vertical Image Size = 300 mm
(23) Display Gamma = 2.20
(24) Power Management and Supported Feature(s):
Active Off/Very Low Power, Standard Default Color Space,
Preferred Timing Mode
Display Type = R/G/B Color

- (25-34) CHROMA INFO:
 Red X - 0.639 Green X - 0.297 Blue X - 0.146 White X - 0.313
 Red Y - 0.342 Green Y - 0.615 Blue Y - 0.068 White Y - 0.329
- (35) ESTABLISHED TIMING 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)
- (36) ESTABLISHED TIMING 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)
- (37) Manufacturer's Reserved Timing:
 1152 X 870 @ 75Hz (Apple,Mac II)
- (38-53) Standard Timing Identification:
 1280 X 1024 @60Hz
 1152 X 864 @75Hz
 1024 X 768 @85Hz
 800 X 600 @85Hz
 640 X 480 @85Hz
 Not Used
 Not Used
 Not Used

(54-71) Detailed Timing / Descriptor Block 1:
 1280x1024 Pixel Clock: 108.00 MHz

Horizontal Image Size: 376 mm Vertical Image Size: 301 mm
 Refreshed Mode: Non-Interlaced Normal Display - No Stereo

Horizontal:	Active Time: 1280 pixels	Blanking Time: 408 pixels
	Sync Offset: 48 pixels	Sync Pulse Width: 112 pixels
	Border: 0 pixels	Frequency: 63.98 KHz
Vertical:	Active Time: 1024 lines	Blanking Time: 42 lines
	Sync Offset: 1 lines	Sync Pulse Width: 3 lines
	Border: 0 lines	Frequency: 60.02 Hz

Digital Separate, Horizontal Polarity (+) Vertical Polarity (+)

(72-89) Detailed Timing / Descriptor Block 2:

Monitor Serial Number:

PCN040100001

(90-107) Detailed Timing / Descriptor Block 3:

Monitor Range Limits:

Min Vertical Freq - 50 Hz

Max Vertical Freq - 85 Hz

Min Horiz. Freq - 30 KHz

Max Horiz. Freq - 82 KHz

Pixel Clock - 140 MHz

Secondary GTF - Not Supported

(108-125) Detailed Timing / Descriptor Block 4:

Monitor Name:

VX912

(126) No Extension EDID Block(s)

(127) CheckSum OK

Digital EDID

Time: 08:18:48

Date: Tue Jun 29, 2004

VIEWSONIC CORPORATION

EDID Version # 1, Revision # 3

DDCTest For: ViewSonic VX912

128 BYTES OF EDID CODE:

	0	1	2	3	4	5	6	7	8	9
0		00	FF	FF	FF	FF	FF	FF	00	5A 63
10		1A	8D	01	01	01	01	0E	01	03
20		80	26	1E	78	2E	A2	65	A3	57 4C
30		9D	25	11	50	54	BF	EF	80	81 80
40		71	4F	61	59	45	59	31	59	31 0A
50		01	01	01	01	30	2A	00	98	51 00
60		2A	40	30	70	13	00	78	2D	11 00
70		00	1E	00	00	00	FF	00	50	43 4E
80		30	34	30	31	30	30	30	30	31 0A
90		00	00	00	FD	00	32	55	1E	52 0E
100		00	0A	20	20	20	20	20	20	00 00
110		00	FC	00	56	58	39	31	32	0A 20
120		20	20	20	20	20	20	00	7D	

-
- (08-09) ID Manufacturer Name = VSC
(11-10) Product ID Code = 8D1A
(12-15) Last 5 Digits of Serial Number = Not Used
(16) Week of Manufacture = 01
(17) Year of Manufacture = 2004
(10-17) Complete Serial Number = See Descriptor Block
(18) EDID Version Number = 1
(19) EDID Revision Number = 3
(20) VIDEO INPUT DEFINITION:
Digital Signal
Non - VESA DFP 1.x Compatible
(21) Maximum Horizontal Image Size = 380 mm
(22) Maximum Vertical Image Size = 300 mm
(23) Display Gamma = 2.20
(24) Power Management and Supported Feature(s):
Active Off/Very Low Power, Standard Default Color Space,
Preferred Timing Mode
Display Type = R/G/B Color

(25-34) CHROMA INFO:
Red X - 0.639 Green X - 0.297 Blue X - 0.146 White X - 0.313
Red Y - 0.342 Green Y - 0.615 Blue Y - 0.068 White Y - 0.329

(35) ESTABLISHED TIMING 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)

(36) ESTABLISHED TIMING 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)

(37) Manufacturer's Reserved Timing:
1152 X 870 @ 75Hz (Apple,Mac II)

(38-53) Standard Timing Identification:
1280 X 1024 @60Hz
1152 X 864 @75Hz
1024 X 768 @85Hz
800 X 600 @85Hz
640 X 480 @85Hz
640 X 400 @70Hz
Not Used
Not Used

(54-71) Detailed Timing / Descriptor Block 1:
1280x1024 Pixel Clock: 108.00 MHz

Horizontal Image Size: 376 mm Vertical Image Size: 301 mm
Refreshed Mode: Non-Interlaced Normal Display - No Stereo

Horizontal: Active Time: 1280 pixels Blanking Time: 408 pixels
Sync Offset: 48 pixels Sync Pulse Width: 112 pixels
Border: 0 pixels Frequency: 63.98 KHz

Vertical: Active Time: 1024 lines Blanking Time: 42 lines
Sync Offset: 1 lines Sync Pulse Width: 3 lines
Border: 0 lines Frequency: 60.02 Hz

Digital Separate, Horizontal Polarity (+) Vertical Polarity (+)

(72-89) Detailed Timing / Descriptor Block 2:

Monitor Serial Number:

PCN040100001

(90-107) Detailed Timing / Descriptor Block 3:

Monitor Range Limits:

Min Vertical Freq - 50 Hz

Max Vertical Freq - 85 Hz

Min Horiz. Freq - 30 KHz

Max Horiz. Freq - 82 KHz

Pixel Clock - 140 MHz

Secondary GTF - Not Supported

(108-125) Detailed Timing / Descriptor Block 4:

Monitor Name:

VX912

(126) No Extension EDID Block(s)

(127) CheckSum OK

6. THEORY OF OPERATION

This section describes the function of the LCD monitor per functional block.

This monitor includes MB board, power board and button board.

6.1 MB BOARD

The MB board is a two-layer, single-landed design with ground and internal planes provided. DC power from the power board enter the board through a 6P connector. Other connector on the board is for button board .The VGA cable is a signal cable that contains video signal, sync signal and DDC signal from PC VGA adapter. This system board consists of 4 functional areas : flat panel controller, MCU with flash ROM , power regulator .

6.1.1 Flat panel controller... MST8131A(U3)

The heart of the system board is MStart MST8131A. The MST8131A is a graphics processing IC for LCD monitor. It provides all key IC functions required for LCD panel. On-chip functions include a high-speed triple-ADC , PLL, high scaling engine, OSD controller.

a) Clock Generation :

Crystal Input Clock (TCLK and XTAL). This is the input pair to an internal crystal oscillator and corresponding logic. A 14.318 MHz crystal is recommended.

b) Analog to Digital Converter:

The MST8131A chip has three ADC's (analog-to-digital converters), one for each color (red, green and blue) .The analog RGB signals are connected to MST8131A as described below

Pin Name	Pin Number
Red +	63
Red -	62
Green +	60
Green -	59
Blue +	58
Blue -	57

c) OSD : The MST8131A has a fully programmable ,high-quality OSD controller. The on-chip static RAM(4096 words by 24 bits) stores the cell map and the cell definitions.

d) MTV312 Micro controller: The MTV312 micro controller(MCU) serves as the system micro controller. It's programs the MST8131A and manages other devices in the system such as the keypad, the backlight, LED, audio and non-volatile RAM. using general purpose input/output (GPIO) pins.

Pin number	Pin Name	Pin Number Usage
21	P1.3	Key / Power on ,off
13	P3.4	NV_RAM (U4) SDA
14	P3.5	NV_RAM (U4) SCL
25	P1.7	Key_down
9	P6.3	Key_right
24	P1.6	Key_up
16	P6.2	Key_left
37	P4.1	Key_mute
34	P5.6	VGA connector
23	P1.5	Key_select
42	P5.3	LED_red
41	P5.4	LED_green
32	P6.6	LCD panel power1 on / off control

3	P5.0	LCD panel power2 on / off control
36	P4.0	Backlight on / off control

- e) Panel Power Sequencing (VDDCTRL1, 2) (Pin 32, 3) : The MTV312 has two dedicated outputs VDDCTRL1 and 2 (Pin32 and Pin3) to control LCD power sequencing once data and control signals are stable.
- f) Panel interface (Pin 1~25, Pin75~128) : The MTV312 driver interface is highly programmable. It supports dual bus / dual port for SXGA drivers.

6.1.2 Power Regulator MC34063A (U6),AIC1739 (Q4) : The MC34063A is a monolithic control IC containing the primary functions required for DC to DC converters. The device consists of an internal temperature compensated reference, comparator, controlled duty cycle.

Oscillator with an active current sense circuit. Desired output voltage are determined by the equation,

$Volt = 1.25 (1 + R67 / R66)$, In this case, the output voltage are 3.3 Volts

The AIC1739 is a low dropout positive adjustable regulator with minimum of 300mA output current capability. So it is well suited for 3.3 V and 2.5 V Regulator.

6.1.3 Power Regulator MC34063A (U7) : The MC34063A is a monolithic control IC containing the primary functions required for DC to DC converters. The device consists of an internal temperature compensated reference, comparator, controlled duty cycle.

Oscillator with an active current sense circuit. Desired output voltage are determined by the equation,

$Volt = 1.25 (1 + R85 / R86)$, In this case, the output voltage are 5.0 Volts for panel power.

6.2 Power(Inverter) Board

This is a specific power(inverter) power board for VE912 monitor 40W 12V 3.5A output power and backlight which converts 12 Vdc to drive four cold cathode fluorescence tubes.

6.2.1 Inverter Electrical specification described as below.

Input	Rated Input Voltage	12Vdc
	Input Voltage Range	11.4 ~ 12.6 Vdc
	Input Current	<2A
	On / Off control Voltage	2~3.3 for on , 0~1 for off
Output	Rated Output Strike-on Voltage	1500Vrms
	Rated Output Voltage	912Vrms at 7mA
	Rate Output Frequency	40~50KHz
	Rated Ourput Current	7~8 mA

6.2.2 power

This is a general purpose AC / DC adapter which converter 90~240 Vac to a stabilized DC voltage 12 V with rated output current of 4.16A . Electrical specification described as below.

	Rated Input Voltage	90~240 Vac , 50 / 60Hz
	Operation Input Voltage	90~260 Vac , 47 ~ 63Hz
	Input Current	<1.5A
	Inrush Current	<100A@120Vac
	Standby Input Voltage	12Vdc
	Output Voltage Regulation	+/-5%
	Output Ripple & Noise	120mVp-p
	Rate Output Current	<3.5A
	Turn-on delay	<3secs

5. Adjusting Procedure

OSD Function Menu

1. Main Menu

Press “1” Button (Menu Button) to enter Main Menu:

Press Up Button to the previous page or Down Button to the next page .

Press “1” Button to exit Main Menu.

(1) Auto Image Adjust Page:

Press “2” Button to do auto image adjust function.

Press “1” Button to exit the page.

(2) Contrast/Brightness Page:

Press “2” Button to enter Contrast Item.

Press “1” Button to exit the page.

1) Contrast Item

Press Up Button to make contrast high.

Press Down Button to make contrast low.

Press “2” Button to enter Brightness Item.

Press “1” Button to exit the item.

2) Brightness Item

Press Up Button to make brightness high.

Press Down Button to make brightness low.

Press “2” Button to enter Contrast Item.

Press “1” Button to exit the item.

(3) Color Adjust Page:

Press “2” Button to enter Color Adjust page.

Press “1” Button to exit the page.

Press Up Button to the previous item or Down Button to the next item.

1) sRGB Item

2) 9300K Item

3) 6500K Item

4) 5400K Item

Press “2” Button to select current Item.

Press “1” Button to exit current item.

5) User Color Item

Press “2” Button to enter User Color item.

Press “1” Button to exit User Color item.

Red,Green,Blue Options:

Press “2” Button to switch among the options.

Press “1” Button to exit the options.

Press Up Button to make current option high.

Press Down Button to make current option low.

(4) Information Page:

Press “2” Button to show the information

Press “1” Button to exit Information page.

(5) Manual Image Adjust Page:

Press “2” Button to enter Manual Image Adjust page.

Press “1” Button to exit Manual Image Adjust page.

Press Up Button to the previous item or Down Botton to the next item.

1) H./V. Position Item

Press “2” Button to enter H./V. Position item.

Press “1” Button to exit H./V. Position item.

a) Horizontal Position Option:

Press “2” Button to enter the Vertical Position option.

Press “1” Button to exit Horizontal Position option.

Press Up Button to make current option high.

Press Down Button to make current option low

b) Vertical Position Option:

Press “2” Button to enter the Horizontal Position option.

Press “1” Button to exit Vertical Position option.

Press Up Button to make current option high.

Press Down Button to make current option low

2) Horizontal Size Item

Press “2” Button to enter Horizontal Size item.

Press “1” Button to exit Horizontal Size item.

Press Up Button to make current item high.

Press Down Button to make current item low.

3) Fine tune Item

Press “2” Button to enter Fine tune item.

Press “1” Button to exit Fine tune item.

Press Up Button to make current item high.

Press Down Button to make current item low.

4) Sharpness Item

Press “2” Button to enter Sharpness item.

Press “1” Button to exit Sharpness item.

Press Up Button to make current item high.

Press Down Button to make current item low.

(6) Setup Menu Page:

Press “2” Button to enter Setup Menu page.

Press “1” Button to exit Setup Menu page.

Press Up Button to the previous item or Down Botton to the next item.

1) Language Select Item

Press “2” Button to enter Language Select item.

Press “1” Button to exit Language Select item.

Press Up Button to the previous option or Down Botton to the next option.

English,French... ..Option

Press “2” Button to select the language.

Press “1” Button to exit the option.

2) Resolution Notice Item

Press “2” Button to enter Resolution Notice item.

Press “1” Button to exit Resolution Notice item.

Enable, Disable Option

Press “2” Button to select the option.

Press “1” Button to exit the option

Press Up Button to the previous option or Down Button to the next option.

3) OSD Position Item

Press “2” Button to enter OSD Position item.

Press “1” Button to exit OSD Position item.

a) Horizontal Position Option

Press “2” Button to enter the Vertical Position option.

Press “1” Button to exit Horizontal Position option.

Press Up Button to make current option high.

Press Down Button to make current option low

b) Vertical Position Option:

Press “2” Button to enter the Horizontal Position option.

Press “1” Button to exit Vertical Position option.

Press Up Button to make current option high.

Press Down Button to make current option low

4) OSD Time Out Item

Press “2” Button to enter OSD Time Out item.

Press “1” Button to exit OSD Time Out item.

Press Up Button to make OSD time out long.

Press Down Button to make OSD time out short.

5) OSD Background Item

Press “2” Button to enter OSD Background item.

Press “1” Button to exit OSD Background item.

Enable, Disable Option

Press “2” Button to select the option.

Press “1” Button to exit the option.

Press Up Button to the previous option or Down Button to the next option.

(7) Memory Recall Page

Press “2” Button to do the memory recall function.

Press “1” Button to exit the page.

2. Other Menu:

(1) Contrast Dialog

Press Down Button to enter the Contrast Dialog.

Press “1” Button to exit the Contrast Dialog.

Press “2” Button to enter the Brightness Dialog.

Press Up Button to make contrast high.

Press Down Button to make contrast low.

(2) Auto Image Adjust Dialog

Press “2” Button to do the auto image adjust function.

3. Function test

(1) Test equipment

Color video Signal & pattern generator (or PC with SXGV resolution)

(2) Test condition

Warm-up at least 30mins is necessary under following condition before function test & alignment :

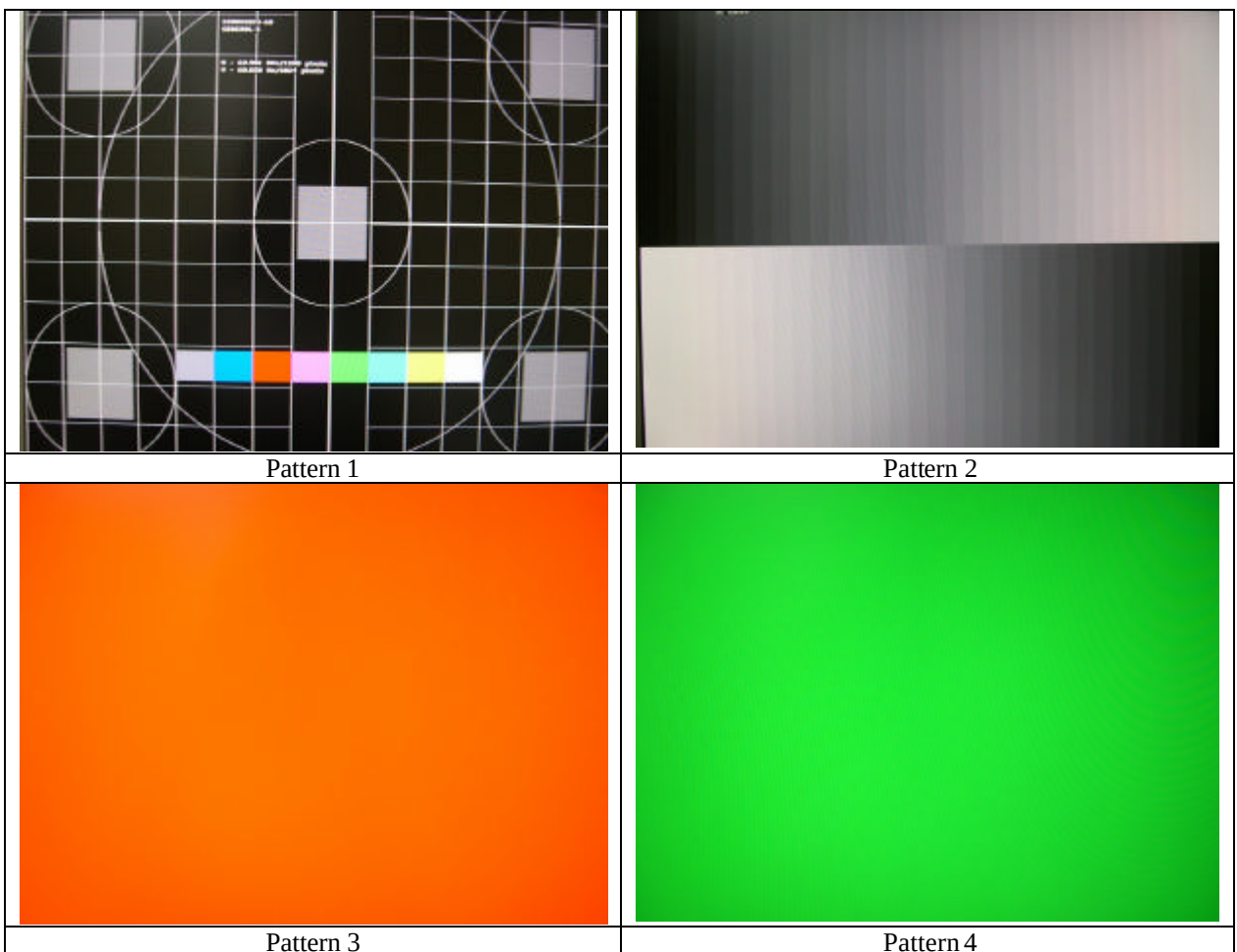
1. room temperature
2. With full-white screen , RGB , black pattern
3. with cycled display modes.

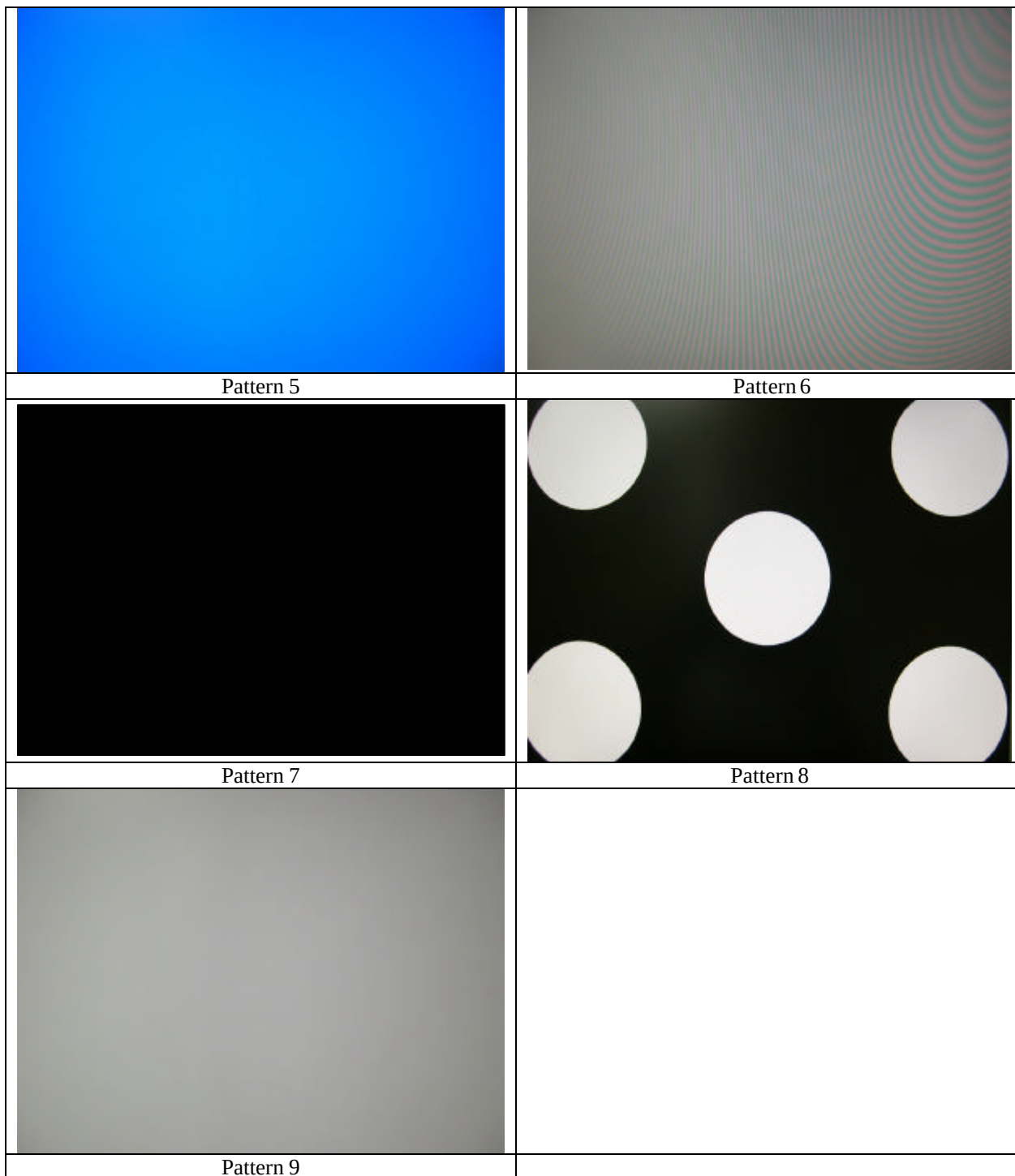
4. Test display modes

Item	Timing	Analog
1	640 x 350 @ 70Hz, 31.5kHz	Yes
2	640 x 400 @ 60Hz, 31.5kHz	Yes
3	640 x 400 @ 70Hz, 31.5kHz	Yes
4	640 x 480 @ 50Hz, 24.7kHz	Yes
5	640 x 480 @ 60Hz, 31.5kHz	Yes
6	640 x 480 @ 67Hz, 35.0kHz	Yes
7	640 x 480 @ 72Hz, 37.9kHz	Yes
8	640 x 480 @ 75Hz, 37.5kHz	Yes
9	640 x 480 @ 85Hz, 43.27kHz	Yes
10	720 x 400 @ 70Hz, 31.5kHz	Yes
11	800 x 600 @ 56Hz, 35.1kHz	Yes
12	800 x 600 @ 60Hz, 37.9kHz	Yes
13	800 x 600 @ 75Hz, 46.9kHz	Yes
14	800 x 600 @ 72Hz, 48.1kHz	Yes
15	800 x 600 @ 85Hz, 53.7kHz	Yes
16	832 x 624 @ 75Hz, 49.7kHz	Yes
17	1024 x 768 @ 60Hz, 48.4kHz	Yes
18	1024 x 768 @ 70Hz, 56.5kHz	Yes
19	1024 x 768 @ 72Hz, 58.1kHz	Yes
20	1024 x 768 @ 75Hz, 60.0kHz	Yes
21	1024 x 768 @ 85Hz, 68.67kHz	Yes
22	1152 x 864 @ 75Hz, 67.5kHz	Yes
23	1152 x 870 @ 75Hz, 68.7kHz	Yes
24	1280 x 1024 @ 60Hz, 63.4kHz	Yes
25	1280 x 1024 @ 75Hz, 79.97kHz	Yes
26	1280x 720 @ 60Hz, 45kHz (HDTV)	Yes

5. Test pattern

Item	Test condition	Pattern	Specification	Remark
1	Frequency & performance	Cross-hatch pattern	No noise is allow & all color is clear	Pattern 1
2	Monitor saturation	16-gray scale pattern	3~4 level need to saturated when brightness & contrast is 100%	Pattern 2
3	RGB color performance	RGB color	Check the color temperature of RGB signal color	Pattern 3, 4, 5
4	Sub-pixel defect	RGB color	Check the sub-pixel defect	Pattern 3, 4, 5
5	Full white	Full white	Check the brightness ,CR & bright pixel defect	Pattern 6
6	Full black	Full black		Pattern 7
7.	5-cycle pattern	5-cycle pattern	Check the BU	Pattern 8
8.	1-dot pattern	1-dot pattern	Check the flicker	Pattern 9





6. Firmware update procedure :

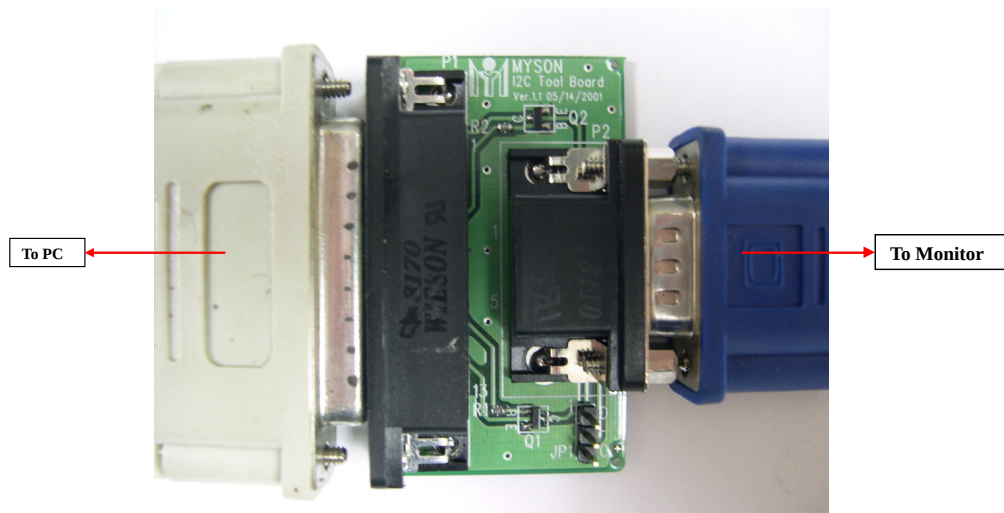
When you received a received monitor , please check whether the firmware version. If not , please following procedure to upgrade to the latest version .

1. Equipment needed :

- VX912
- PC (Personal computer)
- LPT cable
- Fixture (LM5ISP)
- Firmware upgrade program



2. Connection :



Appendix A : How to install the software for ISP :

1. To setup ISP environment :

Hardware: PC or notebook, parallel(printer) cable, ISP tooling.

Software: If OS was Win2000 or WinXP , please install “PORT95NT.exe”

In order to ensure can execute ISP program, please set BIOS in PC or Notebook as Fig 0.0

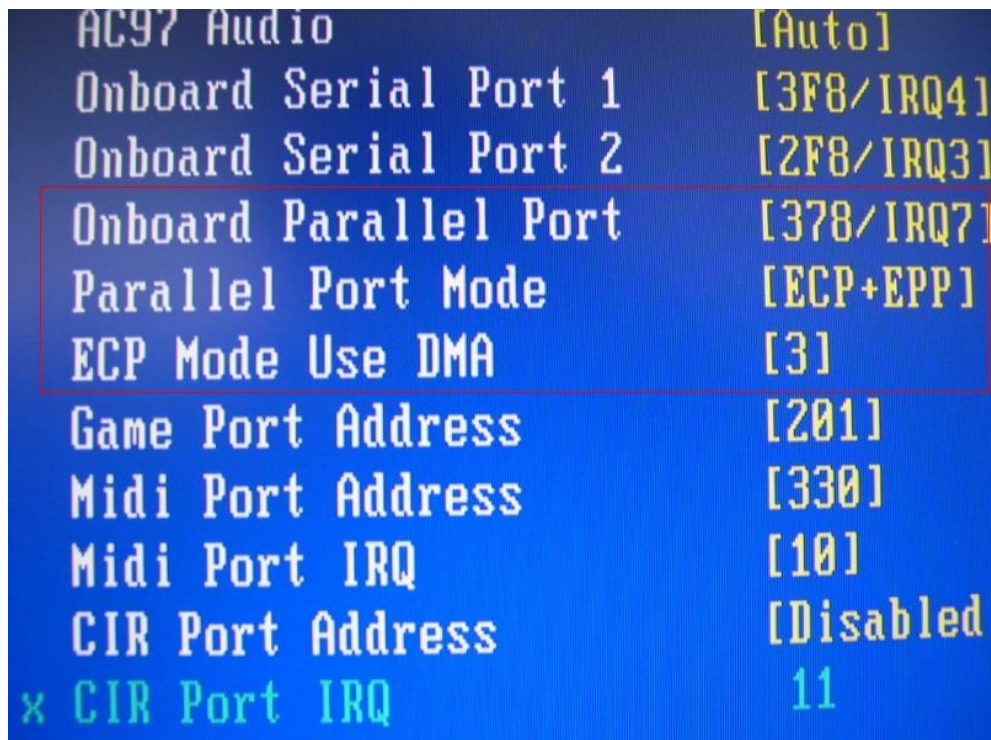


Fig 0.0

2. Double-click the “ PORT95NT.exe” in Windows & install the program. , see Fig 0.1

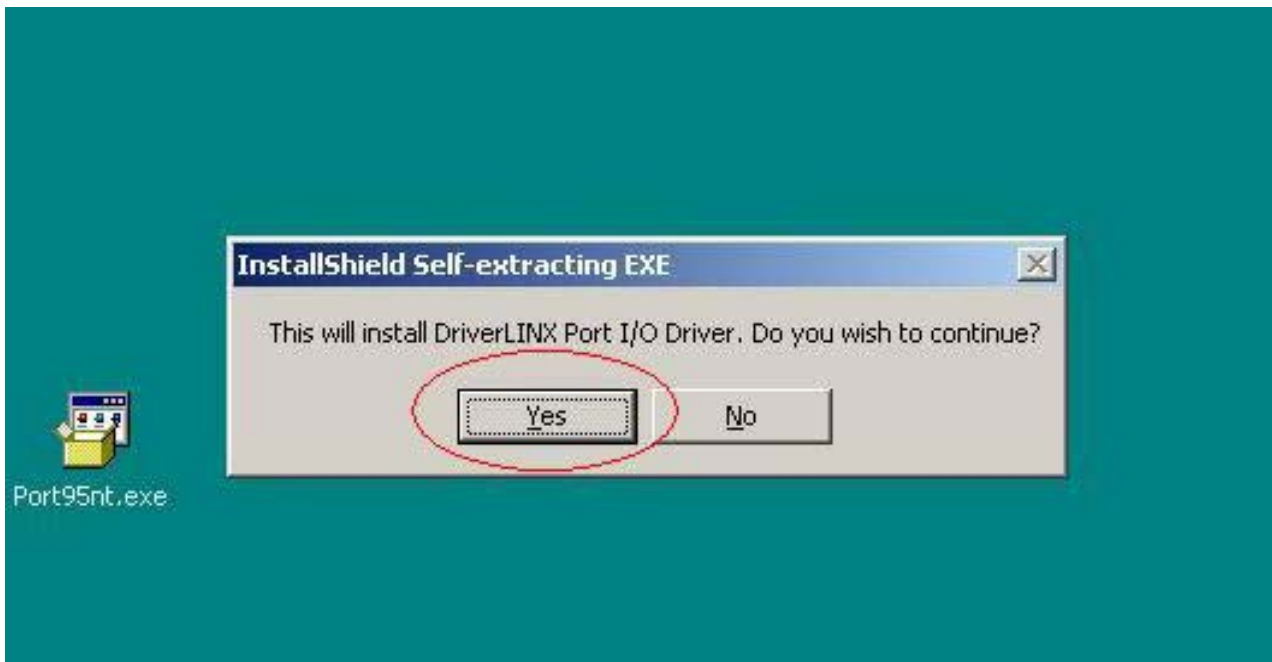


Fig 0.1

3. Keep on press “ Next “ 4 times to go through the installation processes, see Fig. 0.2

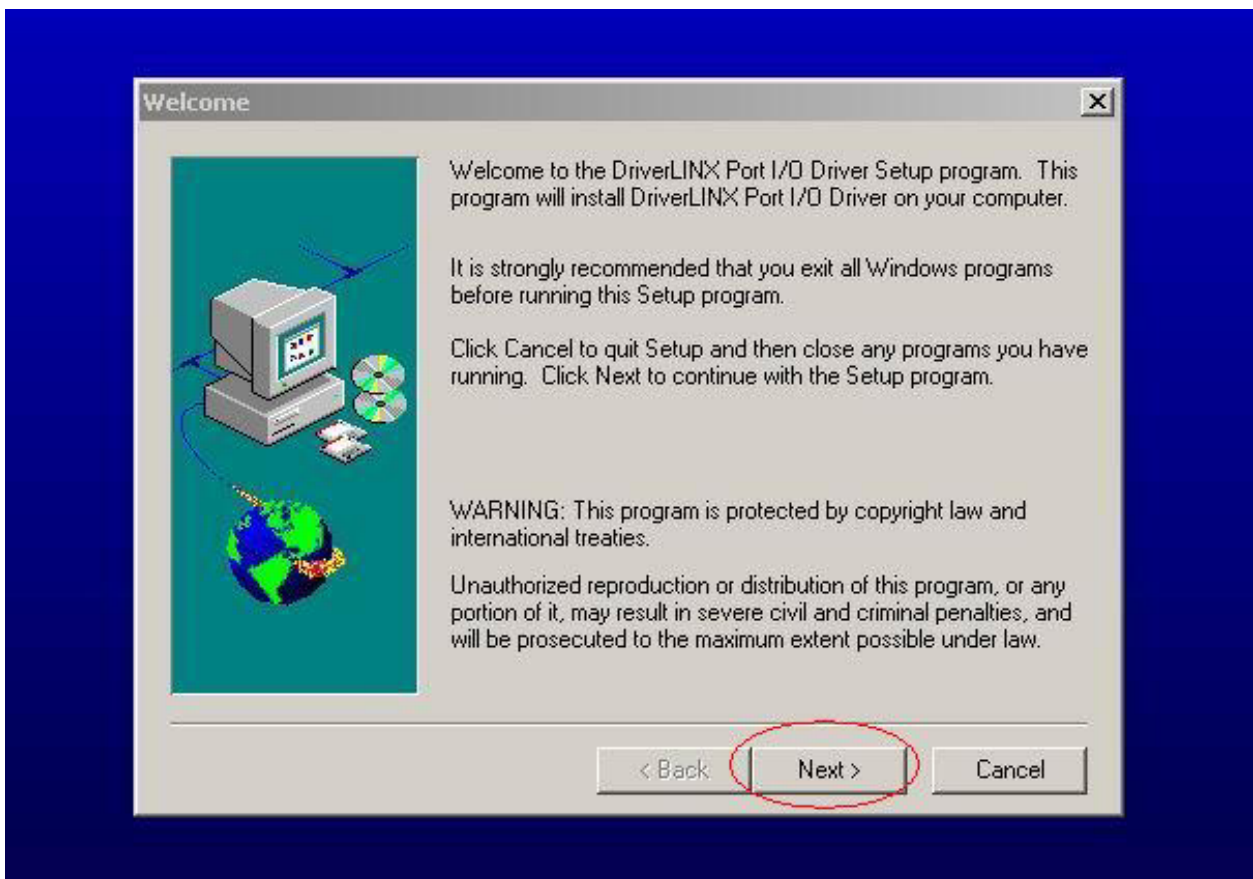


Fig. 0.2

4. Choose “Typical “ then press “ Next “ , see Fig. 0.3

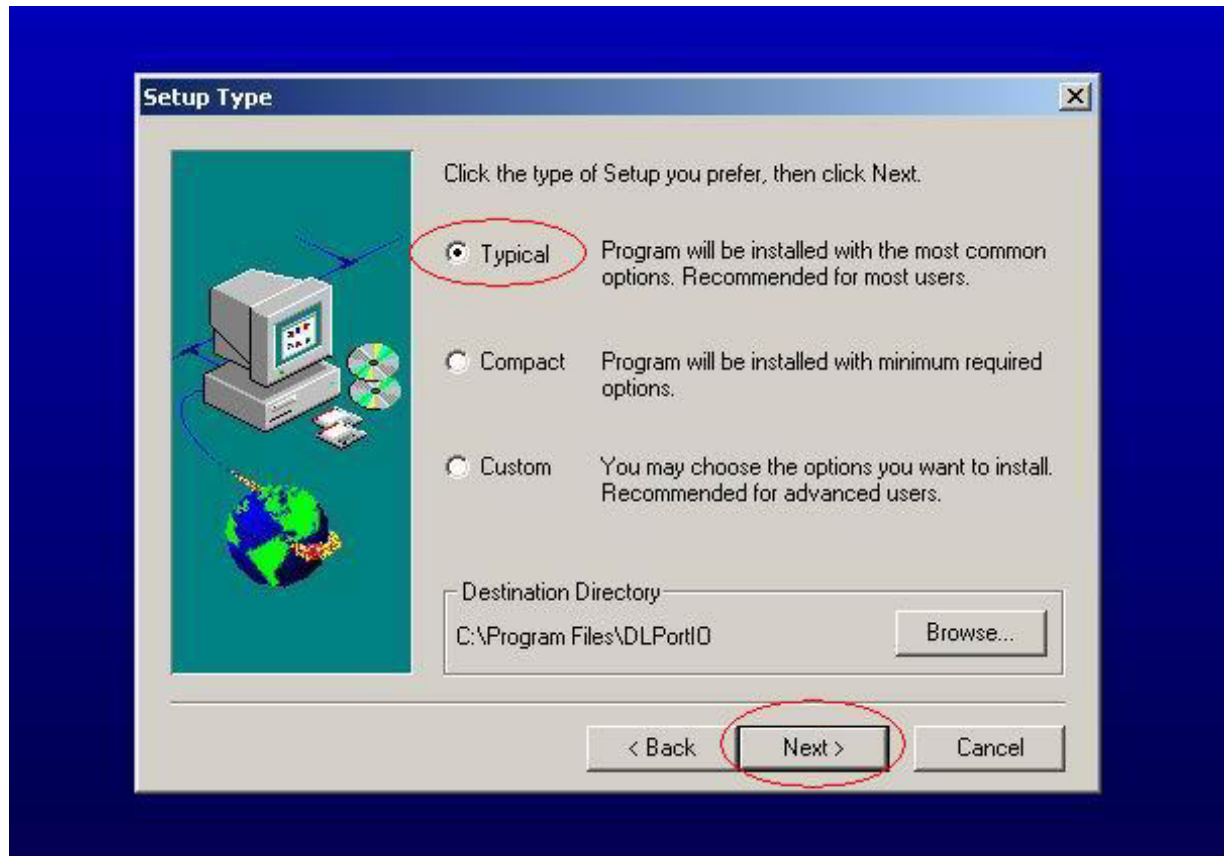


Fig. 0.3

5. Keep on press “ Next “ 4 times to go through the installation processes, see Fig. 0.4

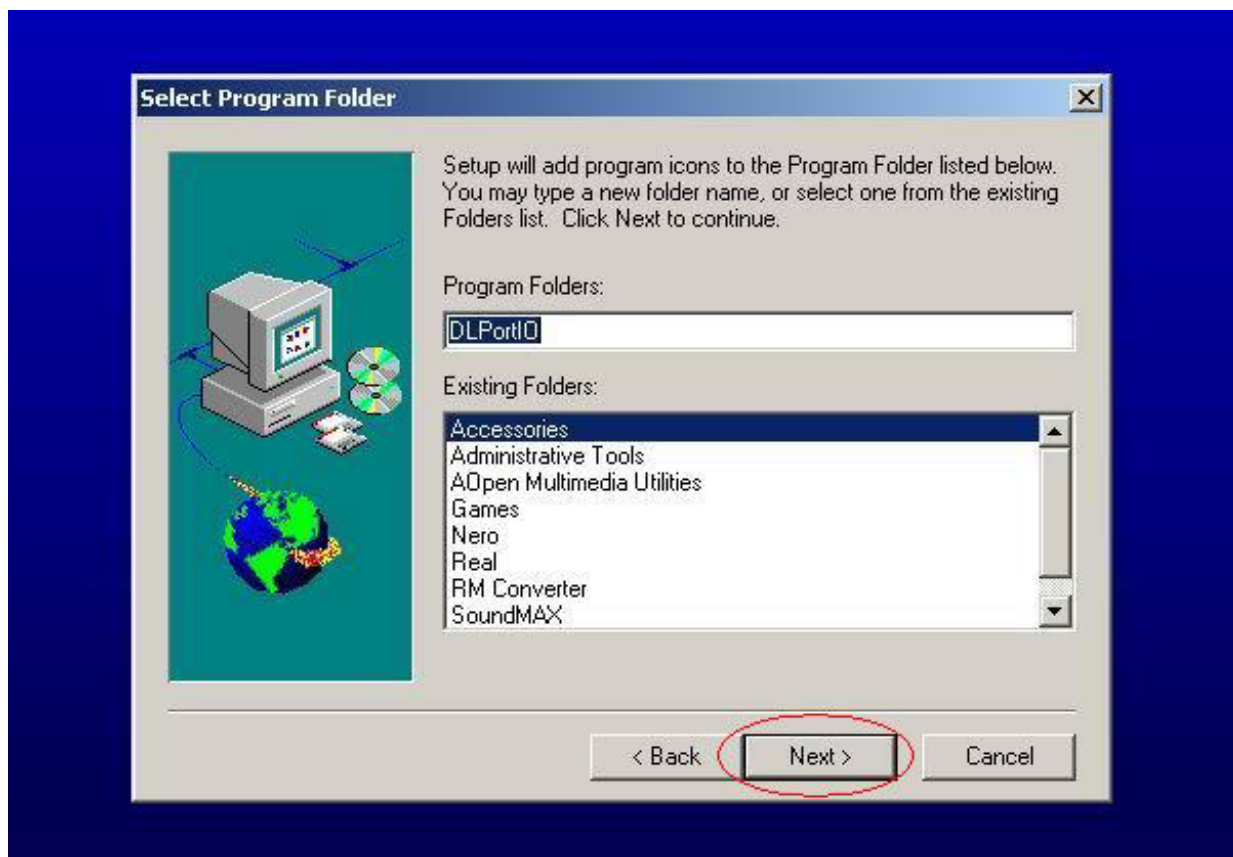


Fig. 0.4

6. Install completed , restart the PC or notebook. See Fig 0.5

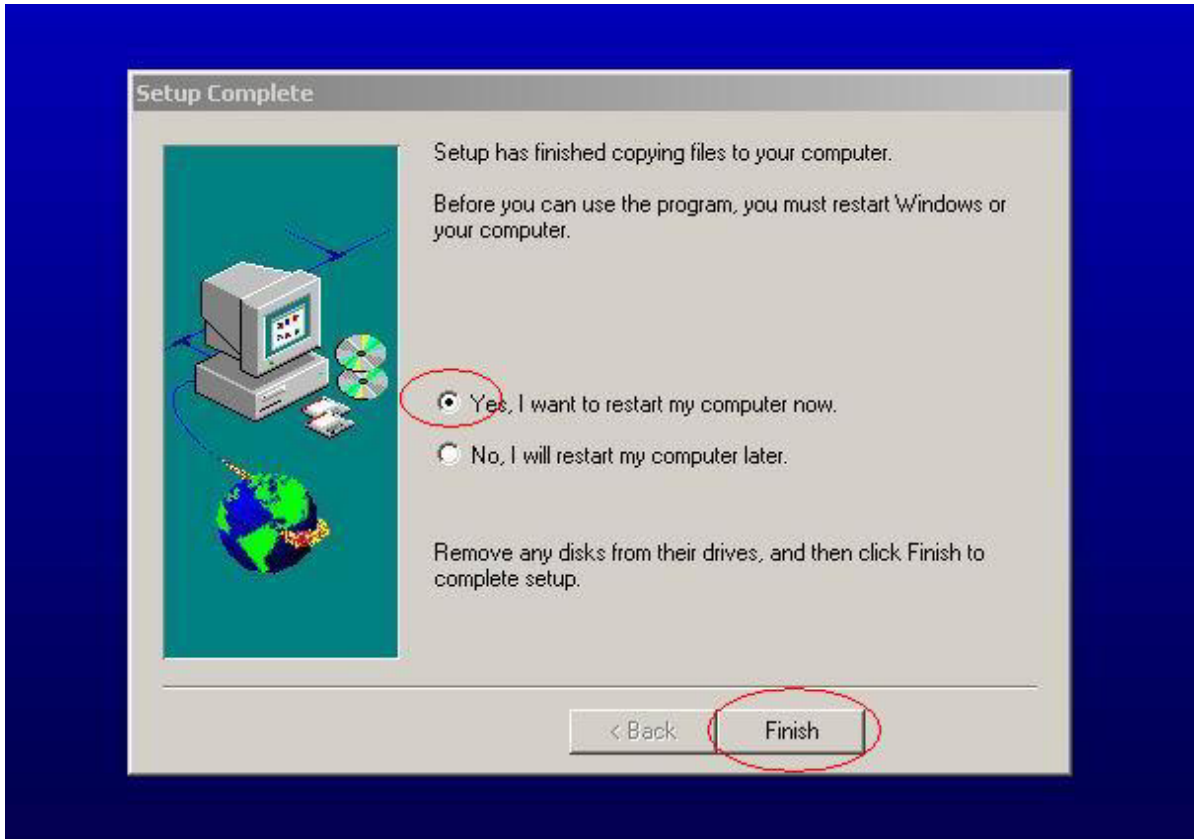


Fig. 0.5

Install ISP

- 1. User could download ISP driver and PORT95NT install from Myson Century website (www.myson.com.tw)
- 2. After extracting the ZIP file , the total files list as Fig 1.0 , and double click the file of setup.exe to install.

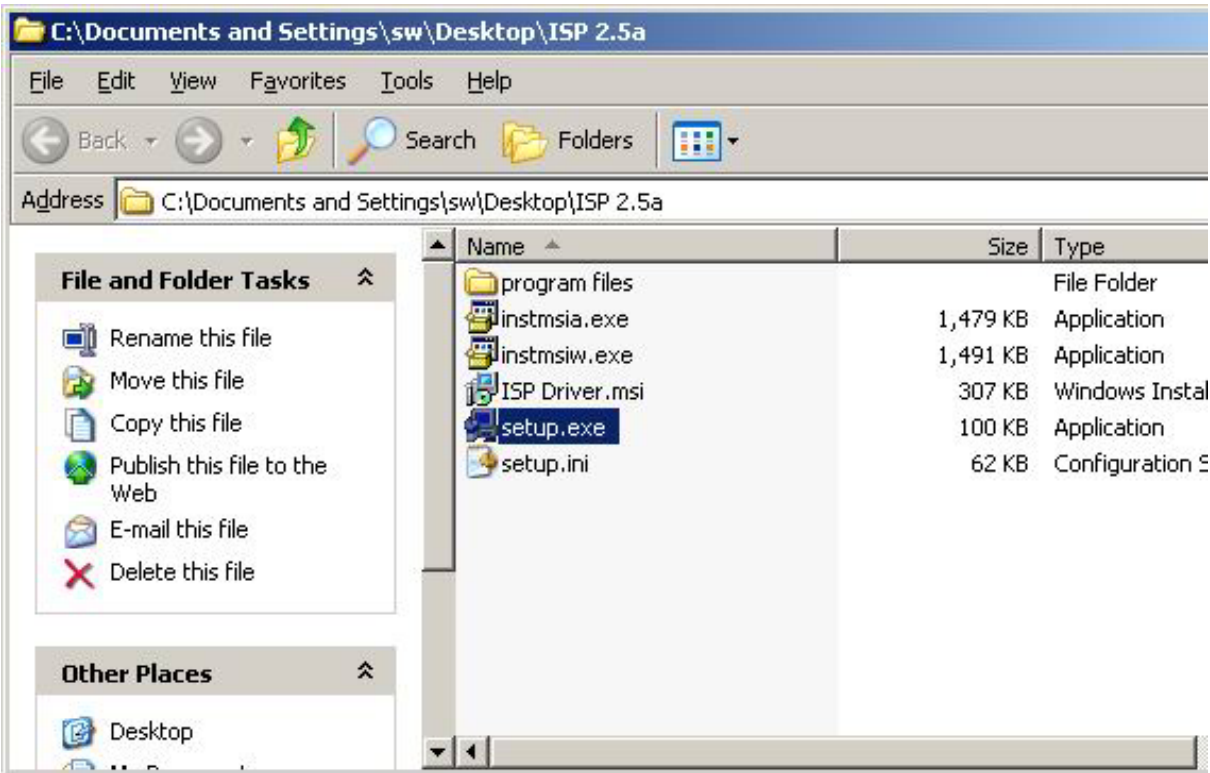


Fig 1.0

3. Press “ Next “ button to continue., see Fig 1.1



Fig 1.1

4. Keep default setting or press “ Change “ button for selecting the path that you want , and then press “ Next “ button to continue , see Fig 1.2

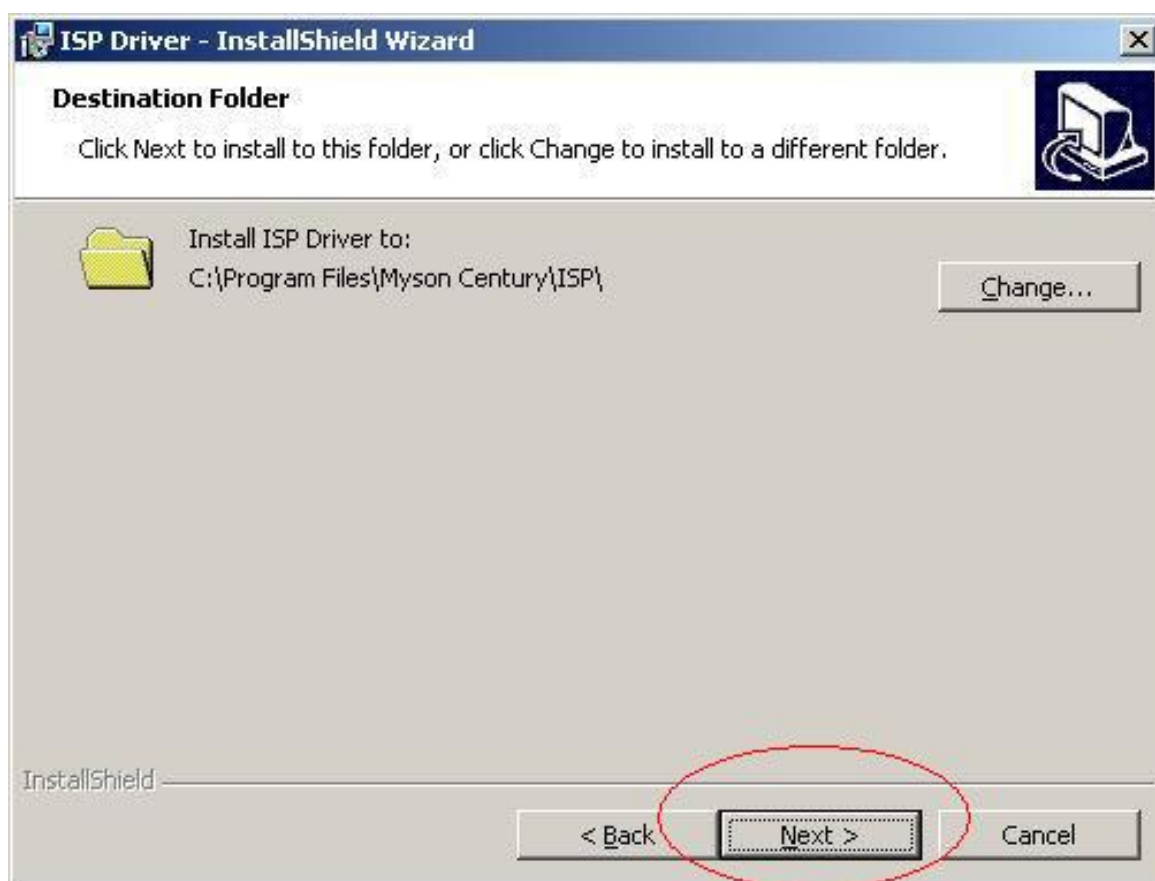


Fig 1.2

5. Press “ Install “ button to continue , see Fig 1.3

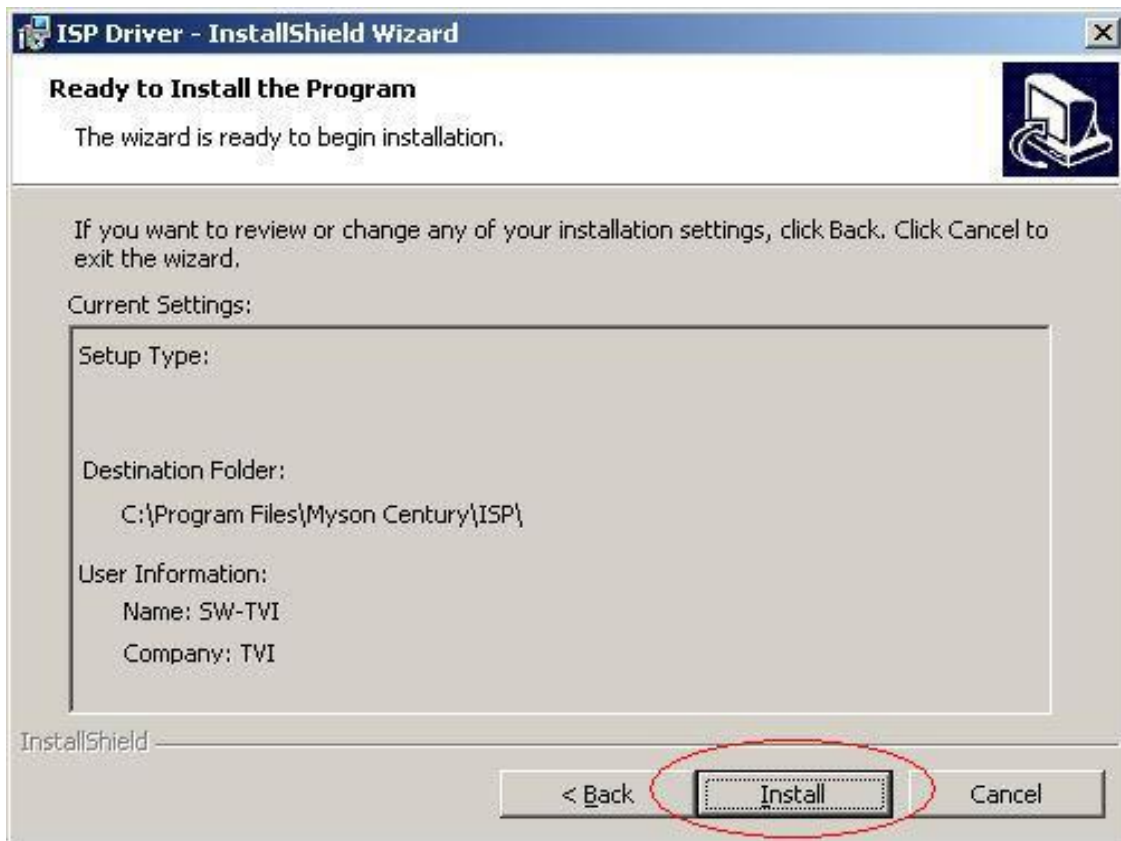


Fig. 1.3

6. Installation has finished , press “ Finish “ button , see Fig 1.4

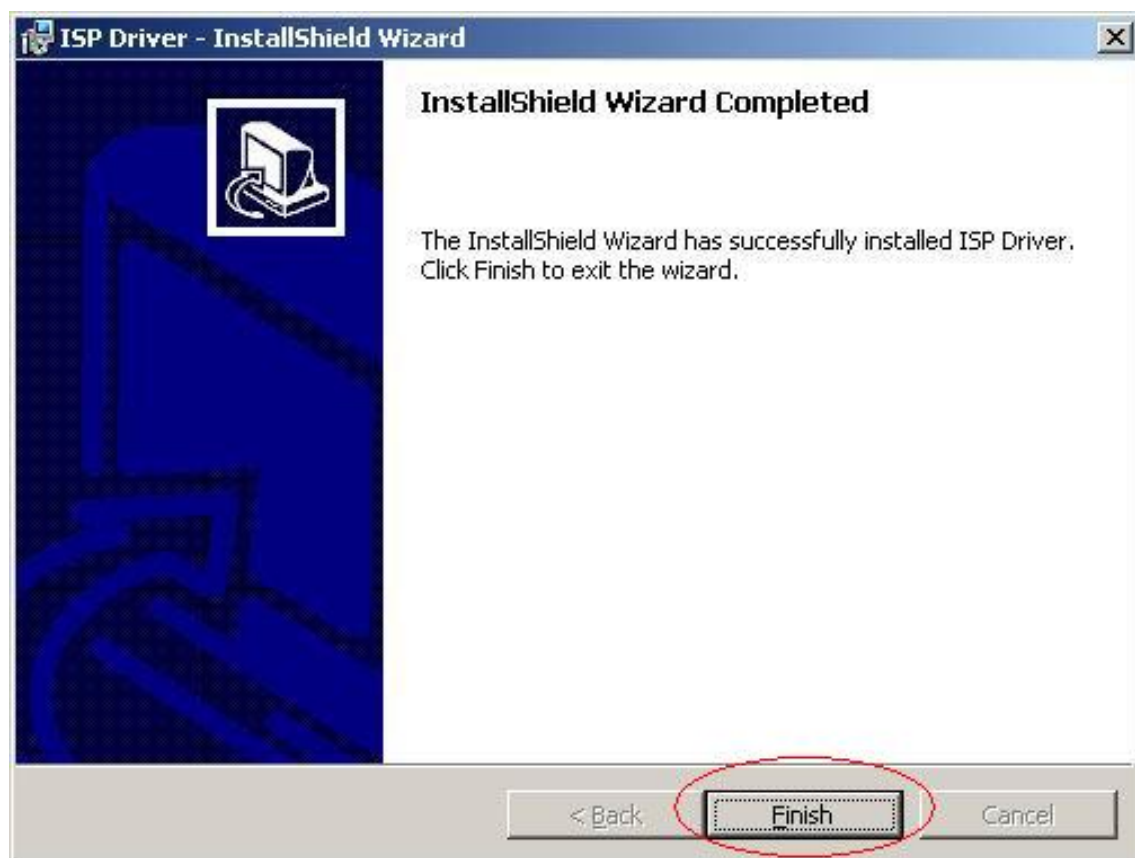


Fig. 1.4

Appendix B : How to use software to upgrade the BIOS :

1. After installation , we could find the shortcut in the setting path or the program bar (default setting) , see Fig 2.1

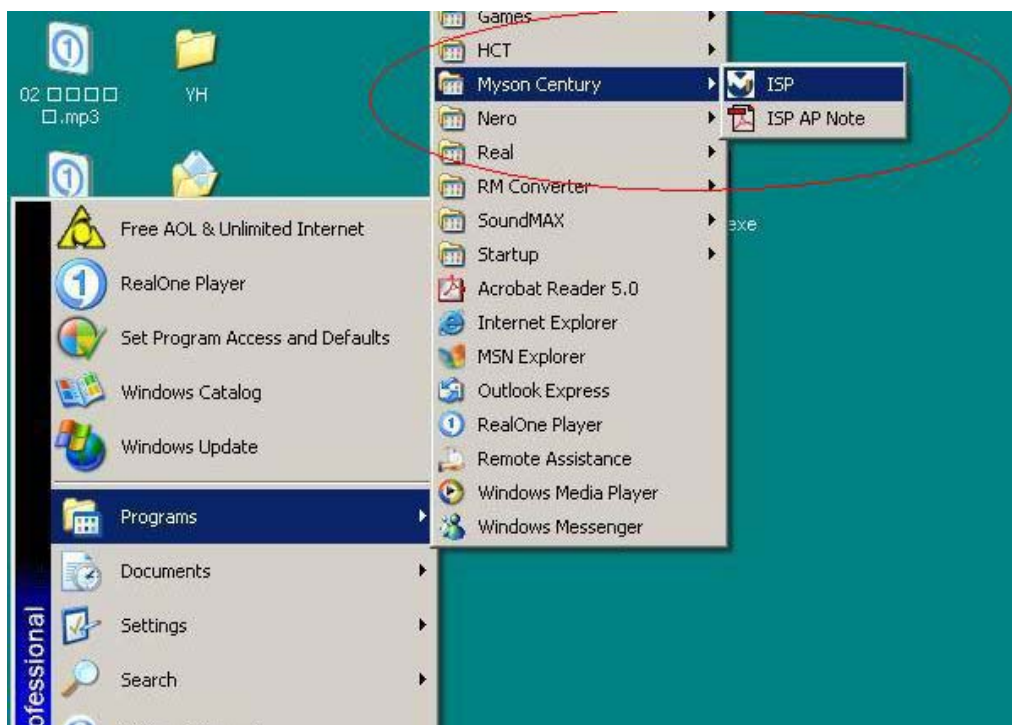


Fig. 2.1

2. Security file is a key to use ISP function , press “ OK “ button , see Fig 2.2



Fig. 2.2

3. The warning is used to remind user of that different CPU rate may cause ISP function fail.
(it's limited by IIC protocol) , press “ OK “ button , see Fig 2.3



Fig. 2.3

4. Press “ Create Security File “ button to key in Security code . Adjusting bar to decrease speed of IIC bus , See Fig. 2.4 .

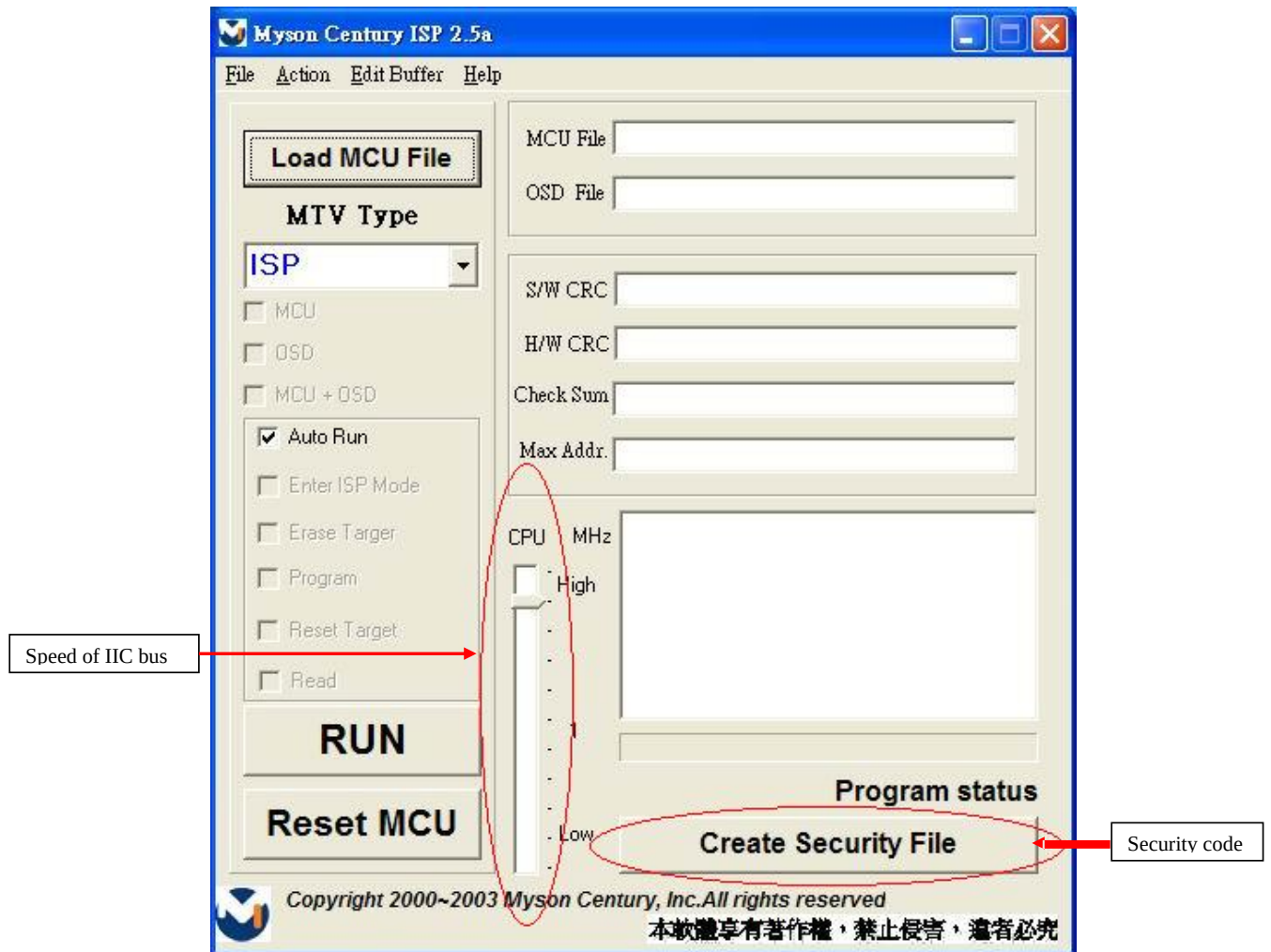


Fig. 2.4

5. Fig 2.5 shows the setting for security code of software ISP . it needs 2 command No. and key in command sequentially for 7C , 4C , 77. The command No. and command must be set by user while coding. About the detailed of setting , please refer to section 6 boot code of ISP .

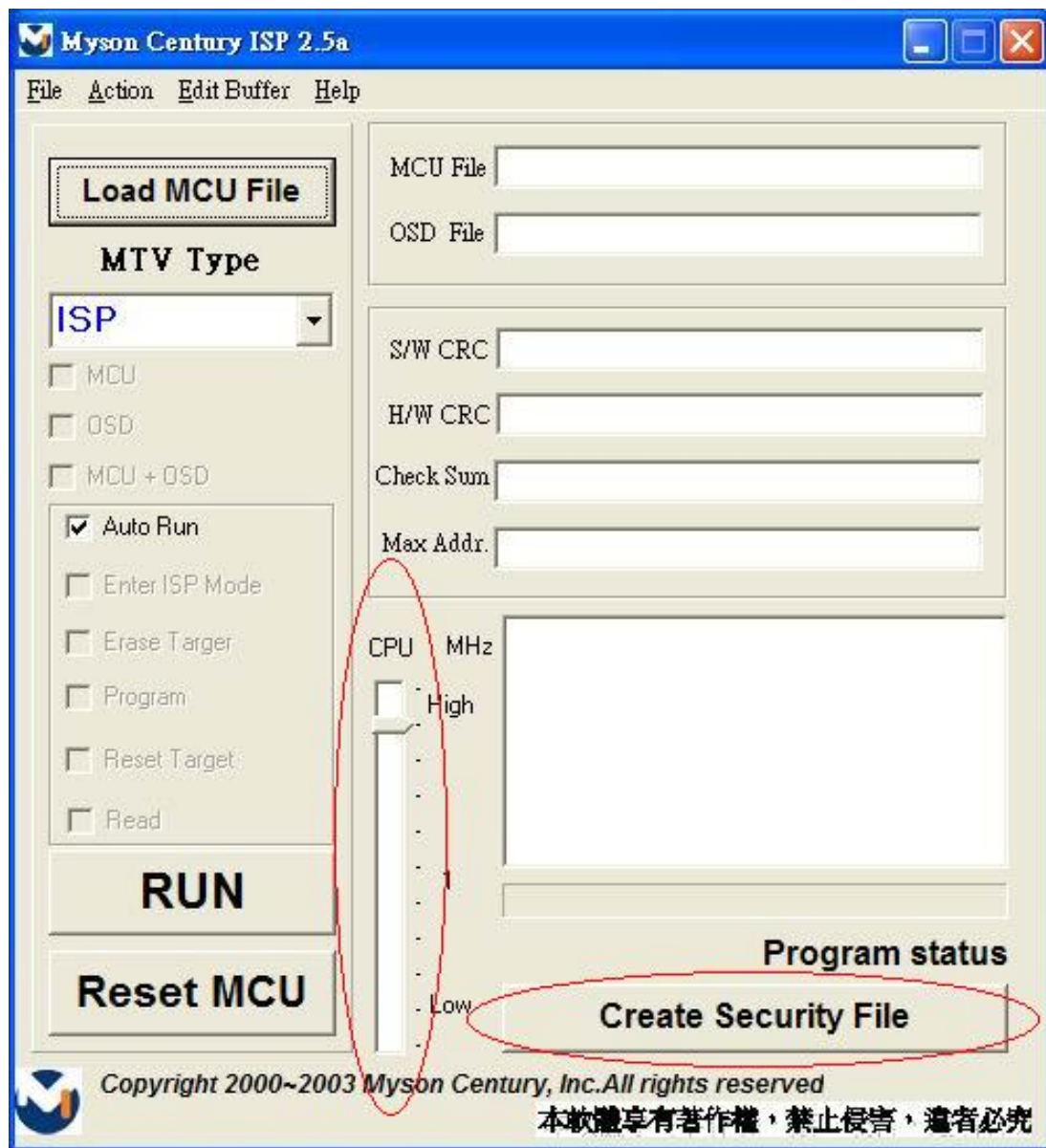


Fig. 2.5

Appendix C : Use ISP to program MCU

1. Select MTV type first , load the binary or intel hex file that you want to program into the MCU , and select “ AUTO” item , then press “ RUN “ button , see fig3.1

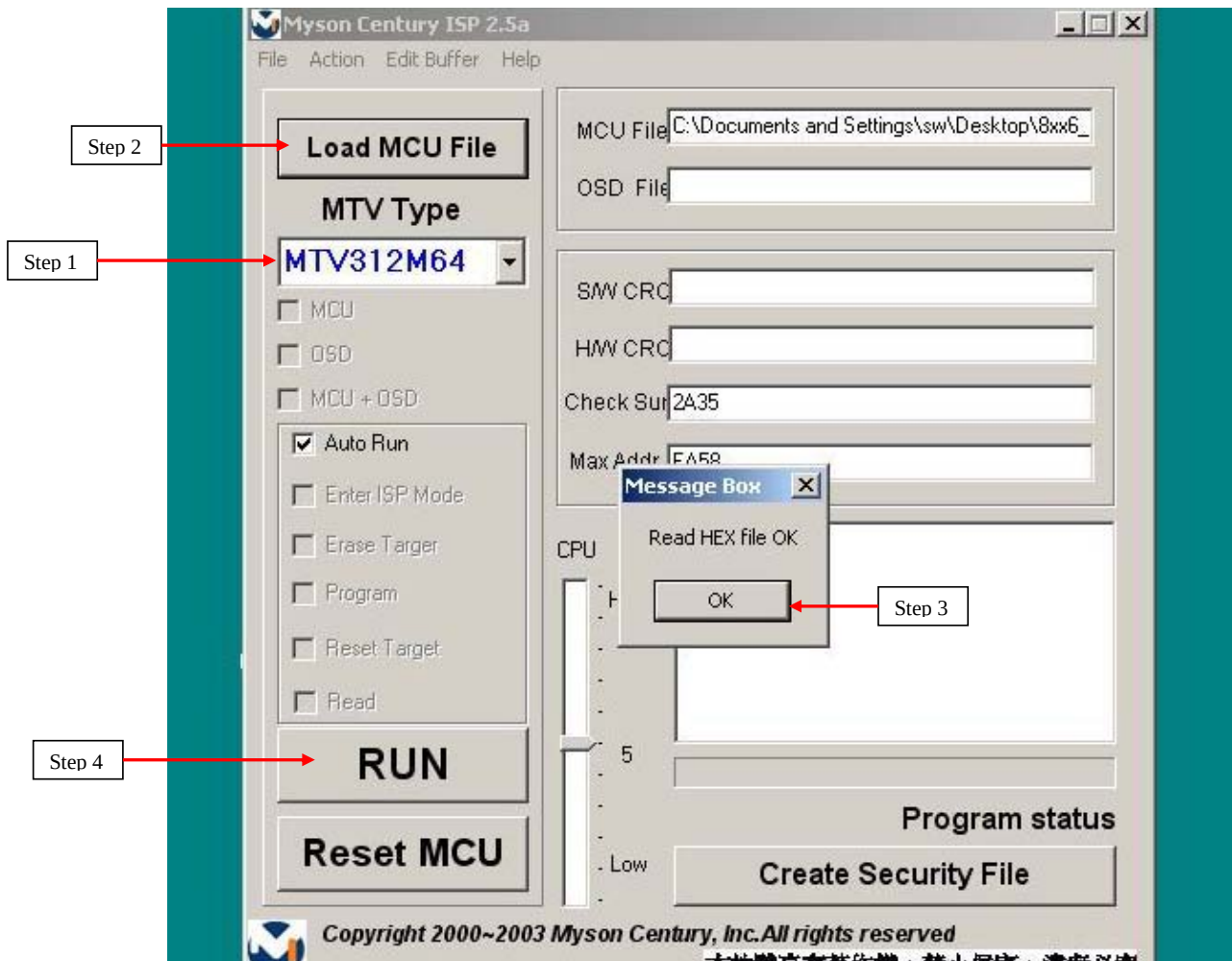


Fig. 3.1

2. If user change the MTV type , it must load file again , or the buffer of load file will be cleared .
3. CRC (cyclic redundancy check) : the host can check CRC register's result instead of reading every byte in flash .
The message of **Check MCU CRC OK** means that the host verify OK for the progress of program , see Fig.3.2

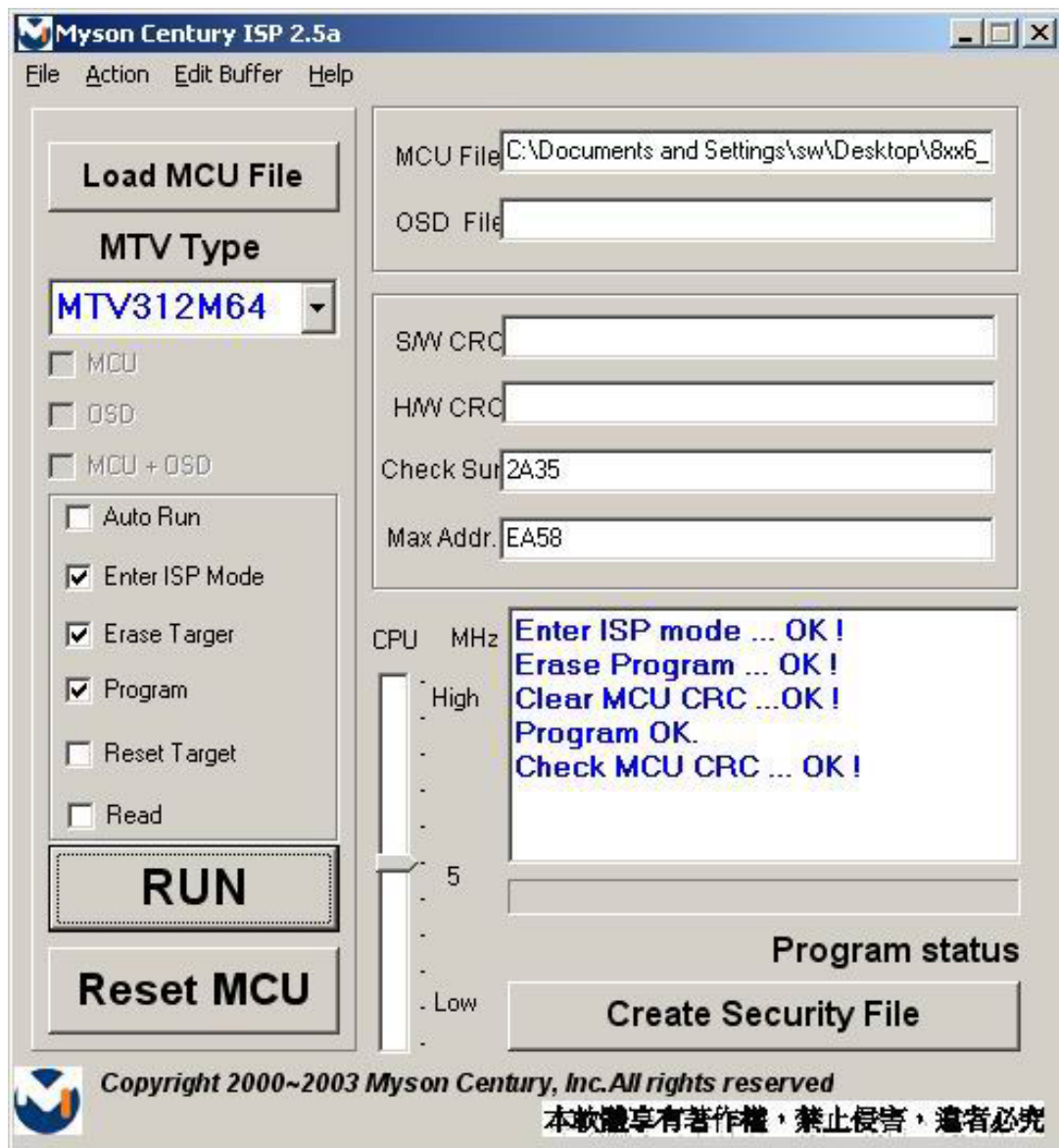
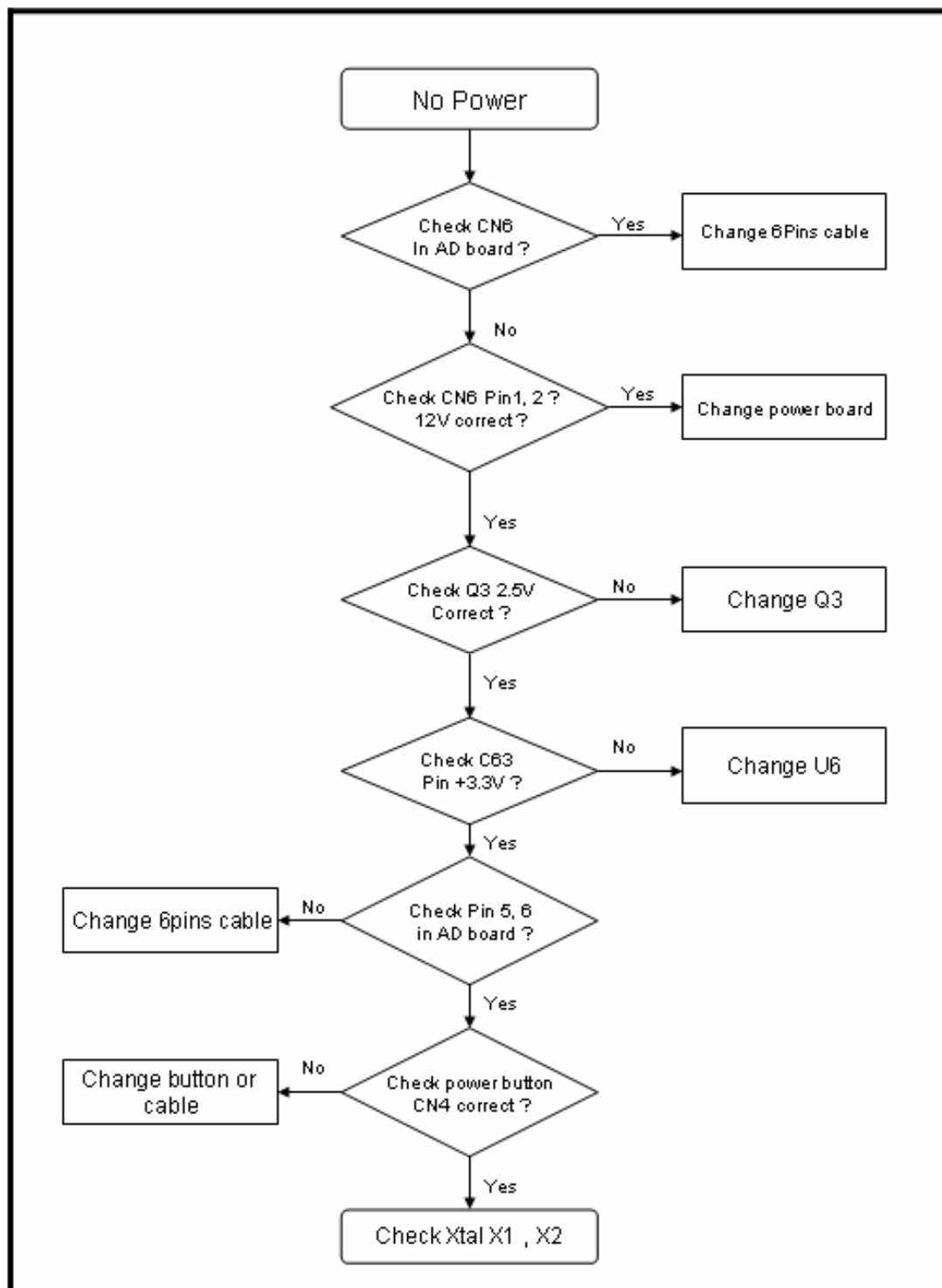


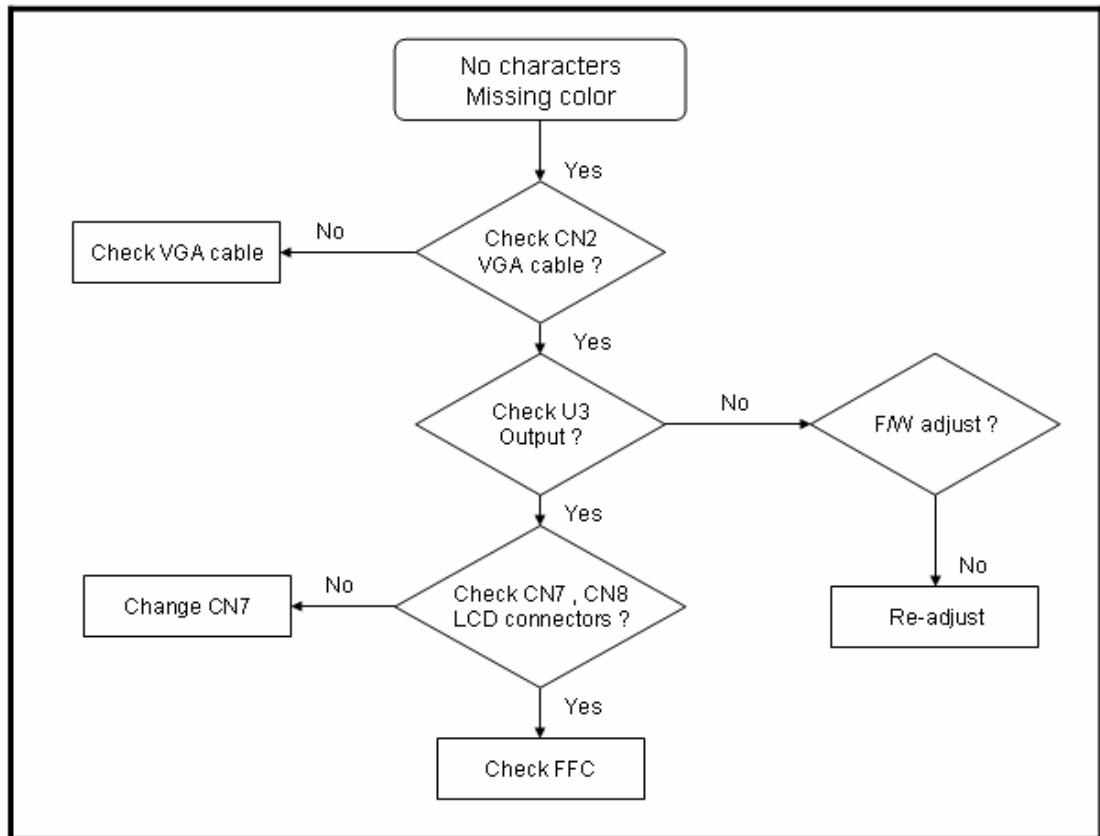
Fig. 3.2

6. Trouble Shooting Flow Chart

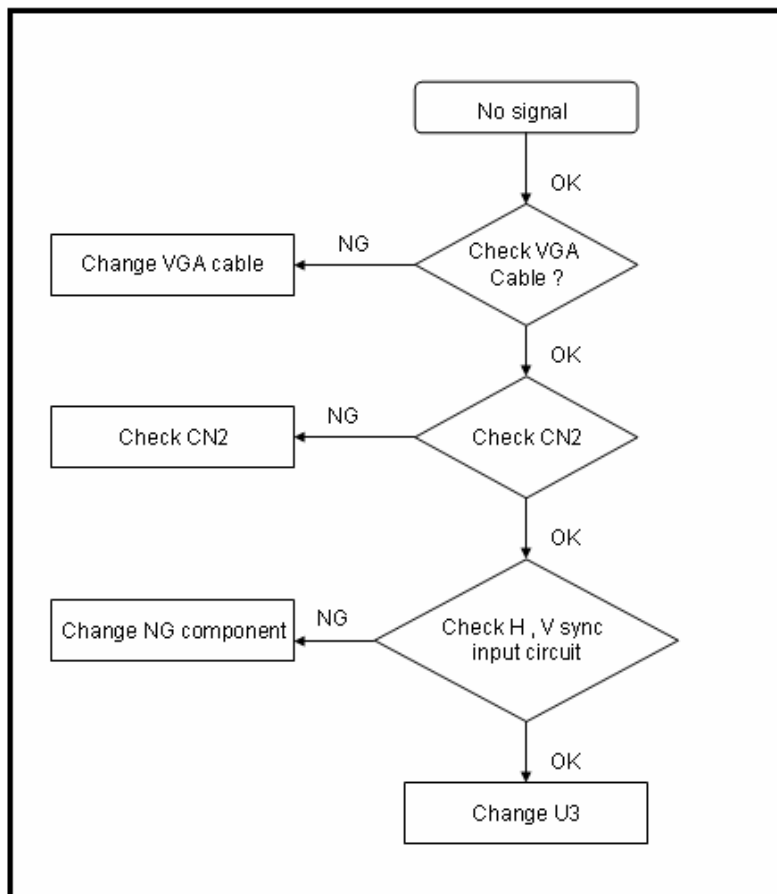
1. No Power



2. No Characters , Missing Color



3 Always show NO SIGNAL



7. Recommended Spare Parts List

RECOMMENDED SPARE PARTS LIST (VX912)

ViewSonic Model Number: VX10162

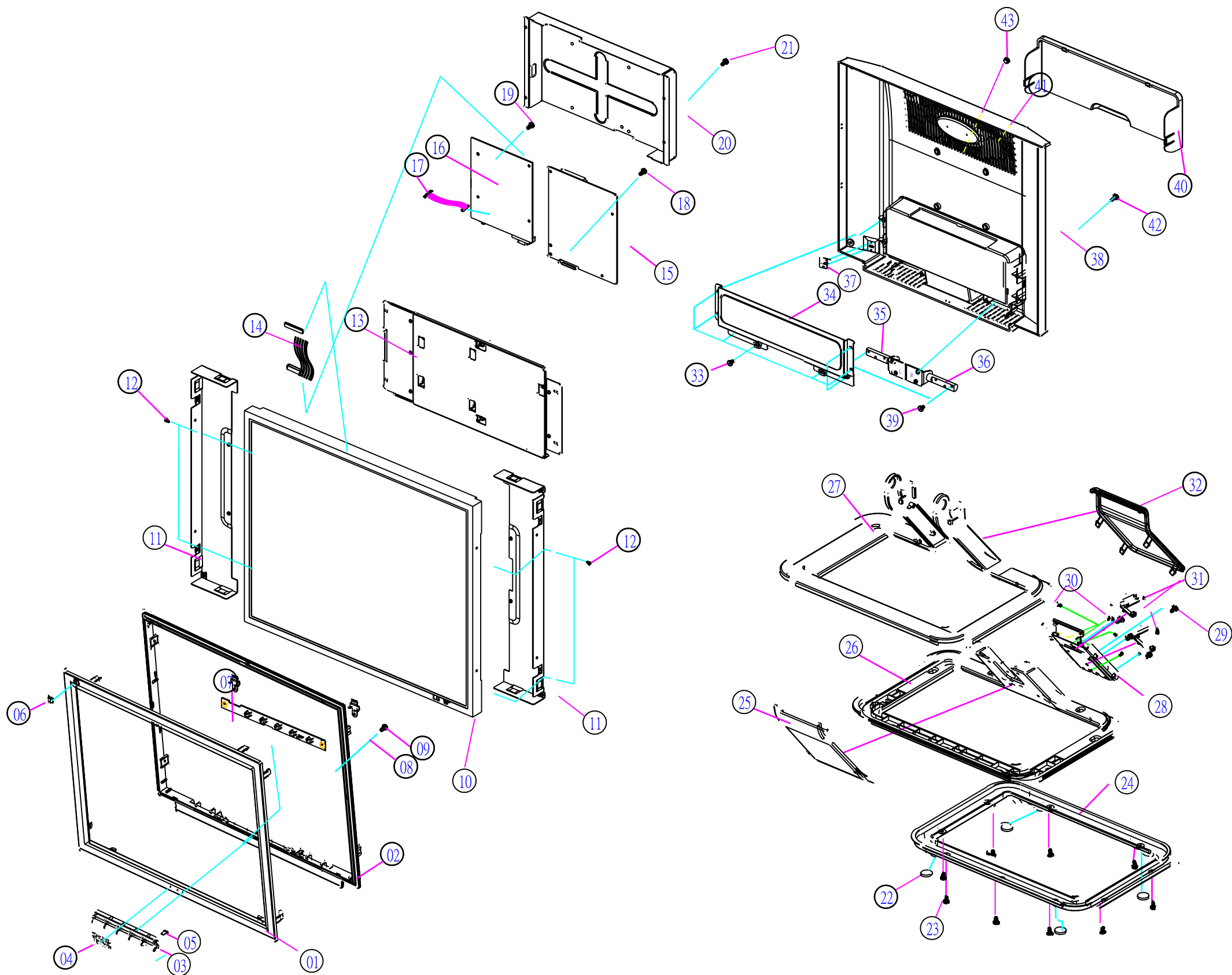
Rev: 1b

Item	Description	ECR/ECN	ViewSonic P/N	Ref. P/N	Location	Q'ty	
1	PC Board Assembly:	Power board		B-PS-0204-0076	AS02B012D24	Adaptor/Inveter board	1
2		main board		B-MB-0201-2780	10MBZZZVSF3	mail board	1
3		Power board		A-PC-0106-0224	DM333181G97	AC power cord	1
4		L7VD B/B S/P (DONG KUAN)	Added 10/07/04	B-00000263	1HYJZZZVSF7	button board	
5	Cabinets:	Front bezel assy		C-FP-0301-1033	32L9VFBVS07	front bezel ass'y	1
		Stand cover rear	Removed 10/07/04	C-BC-0302-0615	EBL9V002015	stand cover	1
6		I/O COVER L9V(EBL9V003,REV3A)	Added 10/07/04	M-CV-0830-2593	EBL9V003011	I/O cover	1
7		back cover assy		C-BC-0302-0626	33L9VBCVS05	back cover	1
8		Stand base ass'y		C-BS-0303-0553	24L9VSAVS02	stand cbase ass'y	1
9	Cables:	Cable for MB-LCD (30P. Rev.1A)		M-FC-0809-0829	DD0L7TLC006	MB-LCD cable	
10		VGA cable		M-MS-0808-9399	DDL7VDPC005	VGA cable	1
11		Cable Assy L7VD Button-MB(8P/10P,REV1A)	Added 10/07/04	M-MS-0808-9398	DDL7VDTH009	cable Button-MB	1
	Documentation:	CD/user's menu	Removed 10/07/04	A-CD-VX910	HGL9V001013	CD wizard/user's menu	1
12		User Manual CD-R L9VD(HGL9V002,R3A)VX912	Added 10/07/04	DC-00000264	HGL9V002010	CD wizard/user's menu	1
13	Electronic	19" LGL TFT LCD panel		M-LCD-0826-0252	AA190E03018	LCD panel	1
14	Hardware:	Screw		M-SCW-0824-6859	MM40060IL69	screw	4
15		Screw		M-SCW-0824-6802	MM30040IBJ9	screw	14
16	Miscellaneous:	LCD film L9V		M-MS-0808-9682	JXL9V001010	LCD panel	1
17	Packing Material:	End cap (L)		P-FM-0602-0896	HBL9V001019	cushion	1
18		End cap (R)		P-FM-0602-0897	HBL9V002015	cushion	1
		EPE bags	Removed 10/07/04	M-MS-0808-9681	HAL0T001012	EPE bags	1
19		EPE bags	Added 10/07/04	M-MS-0808-9817	HAL9V002014	EPE bags	1
20		Carton		P-BX-0601-1085	HFL9V003015	carton	1

BOMS LIST (VX912-1)

Level		Part Number	Part Description	Qty	Location
0	VX912	1L9VDZLVS12	L9V LCD MONITOR(L9VD,LG VX912)USA		
1	#N/A	29L7VMB00T3	L7VD M/B ASSY(FOR L9V) VX912	1	
2	#N/A	3BL7VSS0033	L7VD M/B S/S ASSY(FOR L9V)	1	
2	#N/A	CC62204MD23	CAP ELEC 22U 25V(+/-20%,105C,5*11,2000HR)	7	C17,C25,C28,C30,C33,C36,C49
2	#N/A	CC73303MD51	CAP ELEC 330U 16V(+/-20%,105C,8*11,2000HR)	2	C58,C79
2	#N/A	CC71004MD68	CAP ELEC 100U 25V +/-20%,105C,6*11,LESR	4	C68,C69,C70,C71
2	E-C-0404-4904	CC81001MD71	CAP ELEC DIP 1000U6.3V +/-20% 105C 8*11.5	1	C62
2	E-X-0415-0128	BG614318D55	XTAL DIP 14.318MHZ(+/-30PPM,07010-X-136-2	1	X1
2	#N/A	BG611059319	CRYSTAL DIP 11.0592MHZ(+/-30PPM,49/US)	1	X2
2	#N/A	DFDI30FR049	CONN DVI-I DIP30P 3R FR(P1.905,H10.04)	1	CN3
2	#N/A	DFDS15FR050	CONN D-SUB 15P 3R FR,P1.15,H12.55,NO SRW	1	CN1
2	E-L-0407-1563	DC04725K002	CHOKE COIL 47UH(2.5A,+/-10%,T07473)	1	L21
2	M-MS-0808-9810	DFHD10MR316	CONN DIP HEADER 10P 1R MR(P2.0,H4.1)	1	CN4
2	#N/A	DFHD06MR247	CONN DIP HEADER 6P 2R MR(P2.5,H6.0)	1	CN6
2	M-MS-0808-9809	DFHD30MR259	CONN DIP HEADER 30P 2R MR(P2.0,H4.0)	1	CN9
1	B-PS-0204-0076	AS02B012D24	ADD/INV,FSP035-1PI01,90~264V REV1A	1	
1	B-CB-0206-0188	23L7VBB0034	L7VD BUTTON/B ASSY	1	
1	#N/A	23L9VLAVS04	L9V LCD MODULE ASSY	1	
2	C-FP-0301-1033	32L9VFBVS07	L9V FRONT BEZEL ASSY	1	
2	C-BC-0302-0626	33L9VBCVS05	L9V BACK COVER ASSY	1	
2	M-LCD-0826-0240	AA190E03000	LCD(TFT)19" LM190E03-B4 SVGA	1	
2	M-LCD-0826-0252	AA190E03018	LCD(TFT)19" LM190E03-B4N2/B4N4 SXGA	1	
2	M-BK-0805-0079	FAL7V014017	PCB BKT L7VD(FAL7V014,REV3A)	1	
2	M-MS-0808-9405	FAL7V015013	PCB SHIELDING L7VD(FAL7V015,REV3A)	1	
2	M-BK-0805-0109	FBL9V004018	LCD BKT L9V(FBL9V004,REV3A)	2	
2	M-LCD-0826-0241	FBL9V007017	LCD PANEL LOCK METAL L9V(FBL9V007,REV3A)	2	
2	M-SCW-0824-0726	MF30080BBJ5	SCREW F3.0*8L,B,NI	2	
2	M-SCW-0824-6802	MM30040IBJ9	SCREW M3.0*4.0-I(NI)	14	
2	M-SCW-0824-6800	MM30060IBJ8	SCREW M3.0*6.0-I(NI)	11	
2	M-SCW-0824-6799	MM35080BBW2	SCREW M3.5*8-B (NI,WASHER)	1	
2	M-MS-0808-8986	MBLI1004018	IO NUT LI1(MBLI1004,REV3A)	4	
2	M-MS-0808-9247	EBL70023013	WIRE MOUNTS L70L-E(EBL70023,REV3A)	1	
2	#N/A	EBL7V030013	PCB SPACER L7VD(EBL7V030,REV3A)	1	
1	C-BS-0303-0553	24L9VSAVS02	L9V STAND ASSY	1	
2	#N/A	34L9VSBVS08	L9V STAND BKT ASSY	1	
2	C-BS-0303-0553	EAL9V004017	STAND BASE L9V(EAL9V004,REV3A)	1	
2	M-MS-0808-9811	GAL5M002011	RUBBER FOOT L5M(GAL5M002,REV3B)	4	
2	M-CV-0830-2589	EAL9V005013	STAND BKT COVER L9V(EAL9V005,REV3A)	1	
2	M-SCW-0824-0813	MF30060BBJ6	SCREW F3.0*6-B(NI)	9	
2	M-MS-0808-9812	EBL9V001019	STAND COVER F L9V(EBL9V001,REV3A)	1	
2	M-MS-0808-9404	EBL7V029015	WIRE CLAMP L7VD(EBL7V029,REV3A)	2	
2	M-SCW-0824-6894	MF30060BJ28	SCREW F3.0*6-B(BNI)	4	
1	#N/A	25L9VCSVS09	L9V CHASSIS ASSY	1	
2	M-FC-0809-0829	DD0L7TLC006	CABLE ASSY L7T MB-LCD(30P,REV1A)	1	
2	M-MS-0808-9398	DDL7VDTH009	CABLE ASSY L7VD BUTTON-MB(8P/10P,REV1A)	1	
2	C-BC-0302-0615	EBL9V002015	STAND COVER R L9V(EBL9V002,REV3A)	1	
2	M-CV-0830-2593	EBL9V003011	I/O COVER L9V(EBL9V003,REV3A)	1	
2	M-SCW-0824-6859	MM40060IL69	SCREW M4*6-I (BNI)(NYLOK))	4	
2	M-SCW-0824-0870	MS40070B808	SCREW M4*7B (BMC)NYLOK	4	
2	M-MS-0808-9815	GAL9V002014	RUBBER PLUG VESA L9V(GAL9V002,REV3A)	4	
1	#N/A	26L9VPKVS51	L9VD PACKING ASSY(LG,VX912) USA	1	
2	M-MS-0808-9399	DDL7VDP005	CABLE ASSY L7VD MB-VGA (15/15P,REV1A)	1	
2	A-PC-0106-0224	DM333181G97	POWER CORD 3P 1.8M(USA)V04VS35001218000	1	
2	M-MS-0808-9817	HAL9V002014	EPE BAG L9VD(HAL9V002,REV3A)	1	
2	P-FM-0602-0896	HBL9V001019	END CAP-L L9V(HBL9V001,REV3A)	1	
2	P-FM-0602-0897	HBL9V002015	END CAP-R L9V(HBL9V002,REV3A)	1	
2	M-LB-0813-0747	HCL7V004013	CORE LABEL(HCL7V004,REV3A)	1	
2	#N/A	HCL9V003012	ID LABEL L9VD(HCL9V003,REV3A) VX912	1	
2	M-LB-0813-0745	HCL7V002011	SERIAL LABEL(HCL7V002,REV3A)	1	
2	M-LB-0813-1042	HCL7V019011	CARTON LABEL L7VC(HCL7V019,REV3B)	1	
2	P-BX-0601-1085	HFL9V003015	CARTON L9VD (HFL9V003,REV3A) VX912	1	
2	DC-00000264	HGL9V002010	USER MANUAL CD-R L9VD(HGL9V002,R3A)VX912	1	
2	#N/A	JXLM5003011	HANDLE LM5S(JXLM5003,REV 3B)	1	
2	M-MS-0808-9682	JXL9V001010	LCD FILM L9V(JXL9V001,REV3A)	1	
2	M-LB-0813-1043	HCL70021011	HI-POT LABEL L70L(HCL70021,REV3A)	1	
2	#N/A	HFL9V002019	SPACE PLATE L9V(HFL9V002,REV3A)	0.05	

8. Exploded Diagram And Spare Parts List



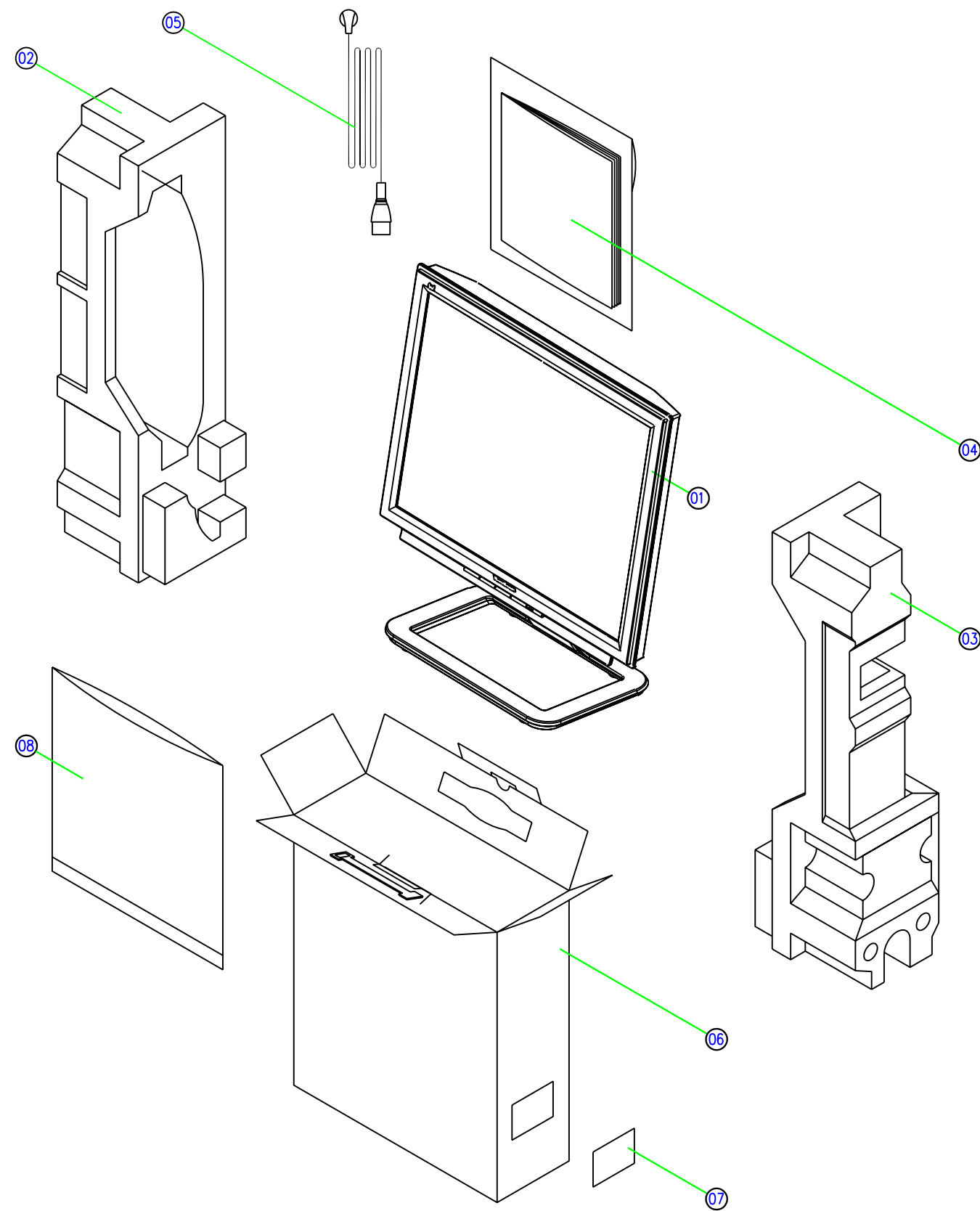
EXPLODED PARTS LIST (VX912-1)

ViewSonic Model Number: VX10162

Rev: 1a

Item	ViewSonic P/N	Ref. P/N	DESCRIPTION	UNIT
1	C-FP-0301-1048	EBL9V001018	BEZEL L9V(EAL9V001,REV3A)	1
2	C-FP-0301-1047	EAL9V002014	MIDDLE BEZEL L9V(EAL9V002,REV3A)	1
3	PL-BT-0706-0165	EBL7V027012	CONTROL BUTTON L7VD(EBL7V027,REV3A)	1
4	M-MS-0808-9243	FEL7V003019	LOGO FRONT-VSC-38CM L7VC(FEL7V003,REV3A)	1
5	M-MS-0808-9401	EBL7V028019	LENS L7VD(EBL7V028,REV3A)	1
6	M-MS-0808-9402	FEL7V007014	BIRD LOGO L7VD(FEL7V007,REV3A)	1
7	B-CB-0206-0188	23L7VBB0034	L7VD BUTTON/B ASSY	1
8	M-LCD-0826-0241	FBL9V007017	LCD PANEL LOCK METAL L9V	2
9	M-SCW-0824-0726	MF30080BBJ5	SCREW F3.0*8L,B,Nl	2
10	M-LCD-0826-0252	AA190E03015	LCD(TFT)19" LM190E03-B4N2 / N4 SVGA	1
11	M-BK-0805-0109	FBL9V004018	LCD BKT L9V(FBL9V004,REV3A)	2
12	M-SCW-0824-6802	MM30040IBJ9	SCREW M3.0*4.0-I(Nl)	4
13	M-BK-0805-0079	FAL7V014017	PCB BKT L7VD(FAL7V014,REV3A)	1
14	M-MS-0808-9809	DFHD30MR259	CONN DIP HEADER 30P 2R MR(P2.0,H4.0)	1
15	B-PS-0204-0076	AS02B012D24	ADD/INV,FSP035-1PI01,90~264V REV1A	1
16	B-MB-0201-2780	29L7VMB00T3	L7VD M/B ASSY(FOR L9V)	1
17	M-MS-0808-9810	DFHD10MR316	CONN DIP HEADER 10P 1R MR(P2.0,H4.1)	1
18	M-SCW-0824-6799	MM35080BBW2	SCREW M3.5*8-B (Nl,WASHER)	1
19	M-SCW-0824-6800	MM30060IBJ8	SCREW M3.0*6.0-I(Nl)	7
20	M-MS-0808-9405	FAL7V015013	PCB SHIELDING L7VD(FAL7V015,REV3A)	1
21	M-SCW-0824-6802	MM30040IBJ9	SCREW M3.0*4.0-I(Nl)	10
22	M-MS-0808-9811	GAL5M002011	RUBBER FOOT L5M(GAL5M002,REV3B)	4
23	M-SCW-0824-0813	MF30060BBJ6	SCREW F3.0*6-B(Nl)	1
24	M-CV-0830-2589	EAL9V005013	STAND BKT COVER L9V(EAL9V005,REV3A)	1
25	M-MS-0808-9812	EBL9V001019	STAND COVER F L9V(EBL9V001,REV3A)	1
26	M-BK-0805-0110	FBL9V005014	STAND BKT L9V(FBL9V005,REV3A)	4
27	C-BS-0303-0553	EAL9V004017	STAND BASE L9V(EAL9V004,REV3A)	1
28	M-MS-0808-9813	FBL9V006011	STAND PLATE L9V(FBL9V006,REV3A)	1
29	M-SCW-0824-6859	MM40060IL69	SCREW M4*6-I (BNI)(NYLOCK)	4
30	M-SCW-0824-6894	MF30060BJ28	SCREW F3.0*6-B(BNI)	4
31	M-MS-0808-9814	FCL7V015015	WIRE CLAMP L7VD(FCL7V015,REV3A)	2
32	C-BC-0302-0615	EBL9V002015	STAND COVER R L9V(EBL9V002,REV3A)	1
33	M-SCW-0824-6895	MF40080IBJ1	SCREW F4.0*8-I(Nl)	8
34	M-BK-0805-0111	FBL9V002015	HNGE-BKT L9V(FBL9V002,REV3A)	1
35	M-CV-0830-2590	FBL9V001019	HINGE-L L9V(FBL9V001,REV3A)	1
36	M-CV-0830-2591	FBL9V003011	HINGE-R L9V(FBL9V003,REV3A)	1
37	M-MS-0808-9411	FBL70008014	LOCK METAL L70B(FBL70008,REV3A)	1
38	M-CV-0830-2592	EAL9V003011	LCD COVER L9V(EAL9V003,REV3A)	1
39	M-SCW-0824-6859	MM40060IL69	SCREW M4.0x6 (BNI)NYLOCK	6
40	M-CV-0830-2593	EBL9V003011	I/O COVER L9V(EBL9V003,REV3A)	1
41	M-MS-0808-9253	FEL7V005011	LOGO PLATE	1
42	M-SCW-0824-6896	MS40070B24X	SCREW M4.0x7 (Bzn)NYLOCK	4
43	M-MS-0808-9815	GAL9V002014	RUBBER PLUG VESA L9V	4

Packing for shipping



PACKING PARTS LIST (VX912-1)

Rev: 1a

Item	Viewsonic P/N	Ref. P/N	Description
1	M-00000265	1L9VDZLVS12	VX912 LCD monitor
2	P-FM-0602-0896	HBL9V001019	End-cap (L)
3	P-FM-0602-0897	HBL9V002015	End-cap (R)
4	DC-00000264	HGL9V002010	User manual & CD ROM
5	A-PC-0106-0224	DM333181G97	Power cord 3P 1.8M
6	P-BX-0601-1085	HFL9V003015	Carton
7	M-LB-0813-1042	HCL7V019011	Carton label
8	M-MS-0808-9817	HAL9V002014	PE bag

Packing procedure

1. Paste protection film to protect the monitor.



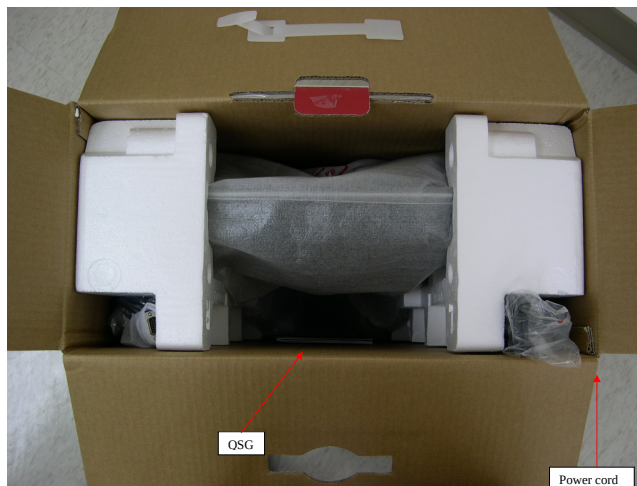
2. Put the monitor in EPE bag & seal the with tape



3. Put the cushion on the monitor



4. Put the monitor into carton & put all the accessories into the carton .
Then close the carton.



Disassemble monitor

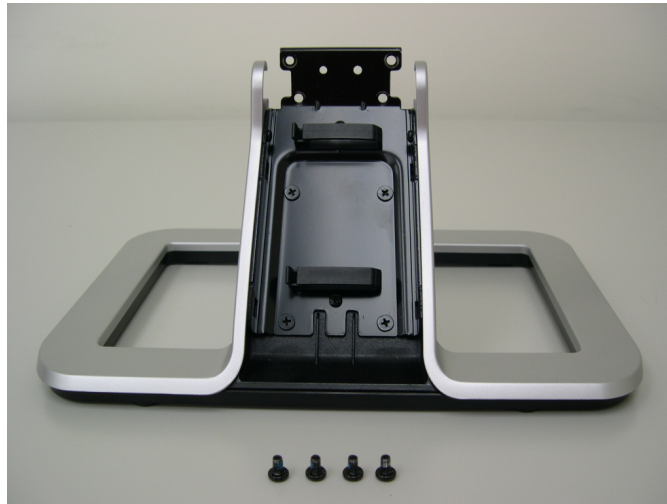
1. Turn the monitor , face to back-side & take the I/O cover off



2. Remove the stand back cover



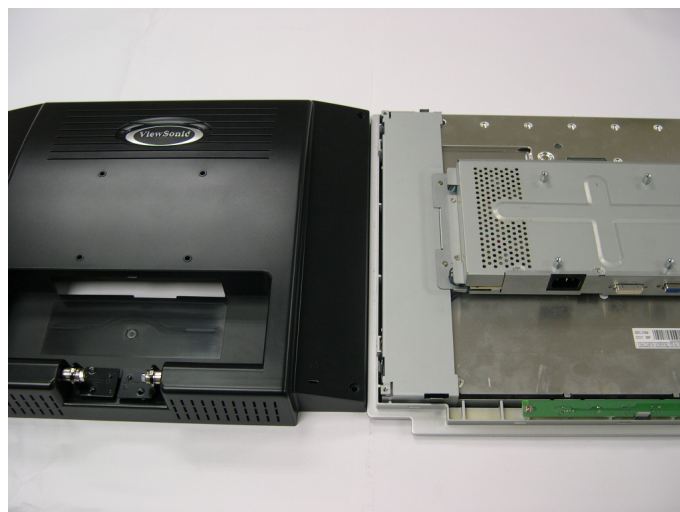
3. Remove the 4pcs of black hinge screw & separate the stand & head part



4. Face-down & put the monitor on soft surface of desktop



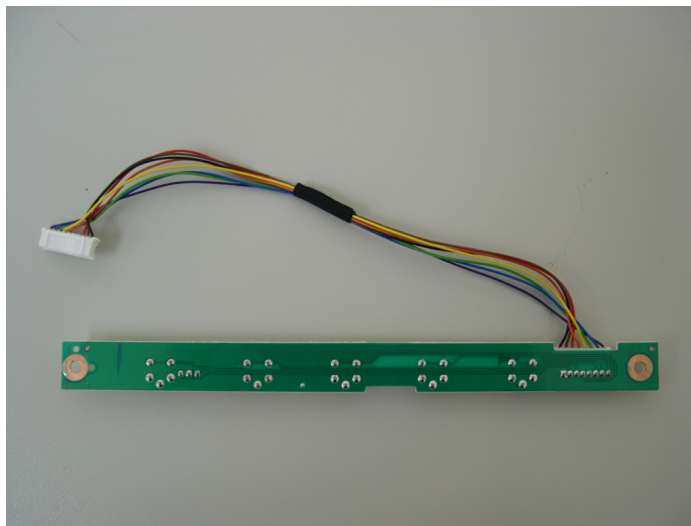
5. Separate the back cover & front bezel



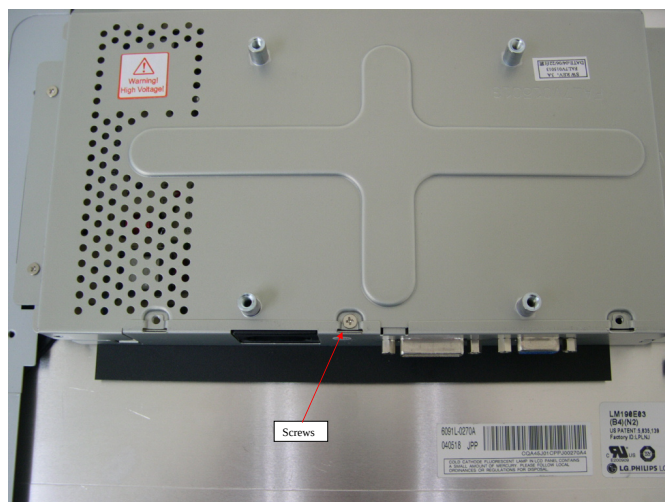
6. Remove the screws which for fixed the B/B & pull the cable out from the connector on M/B



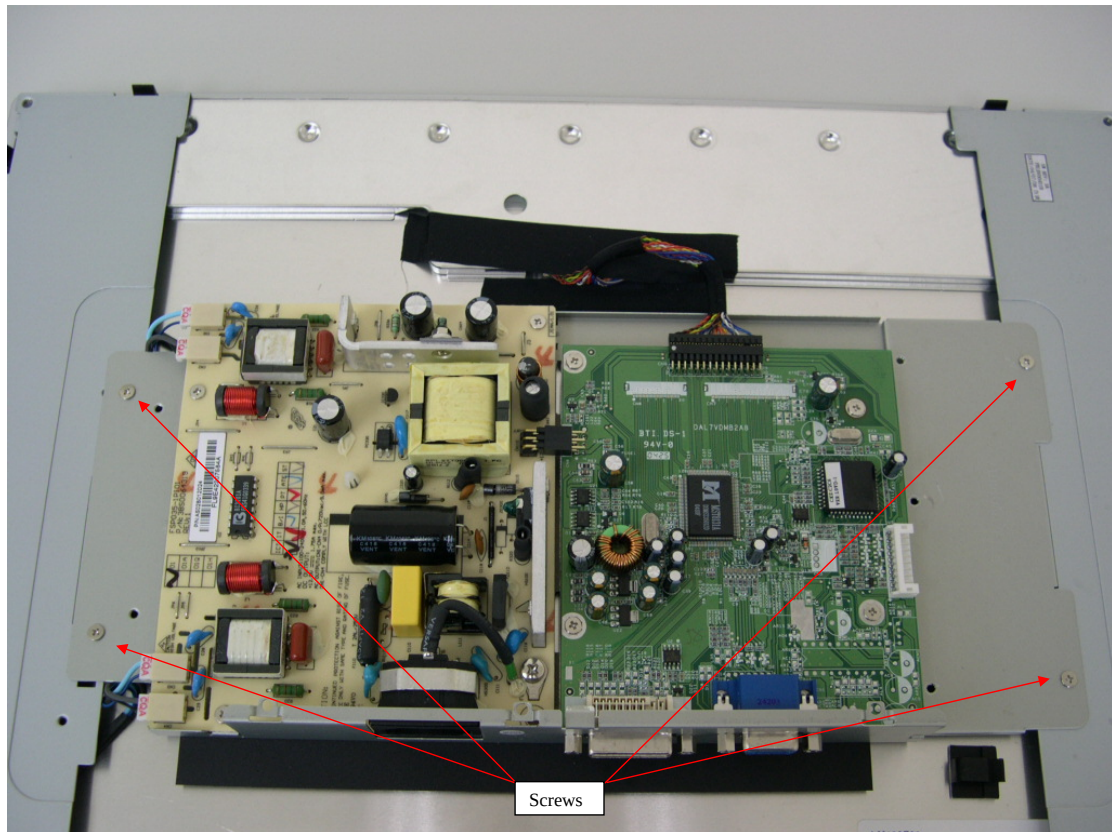
7. Remove the B/B



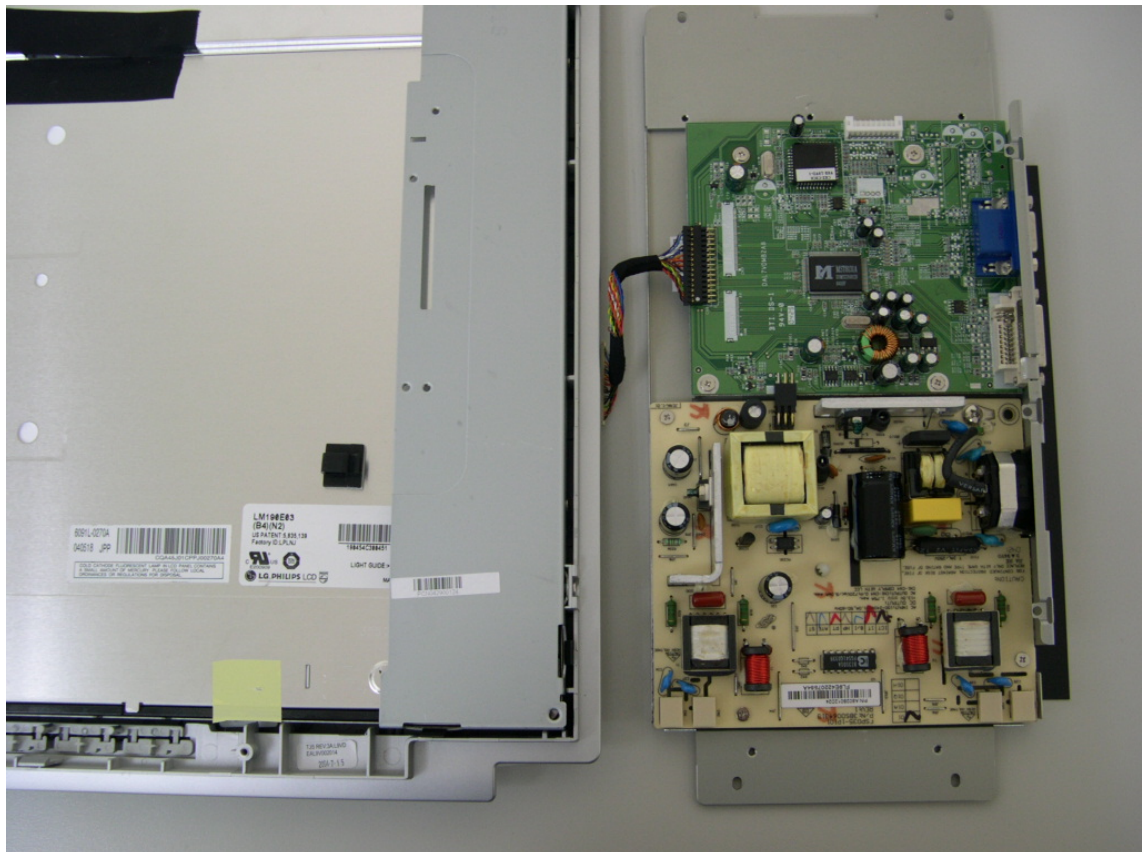
8. Remove the screws on PCB shield & remove it



9. Remove the MB-LCD connector & loosen the 4 screws on PCB holder



10. Separate the PCB holder & panel



11. Loosen the 4 screws on the sides of panel



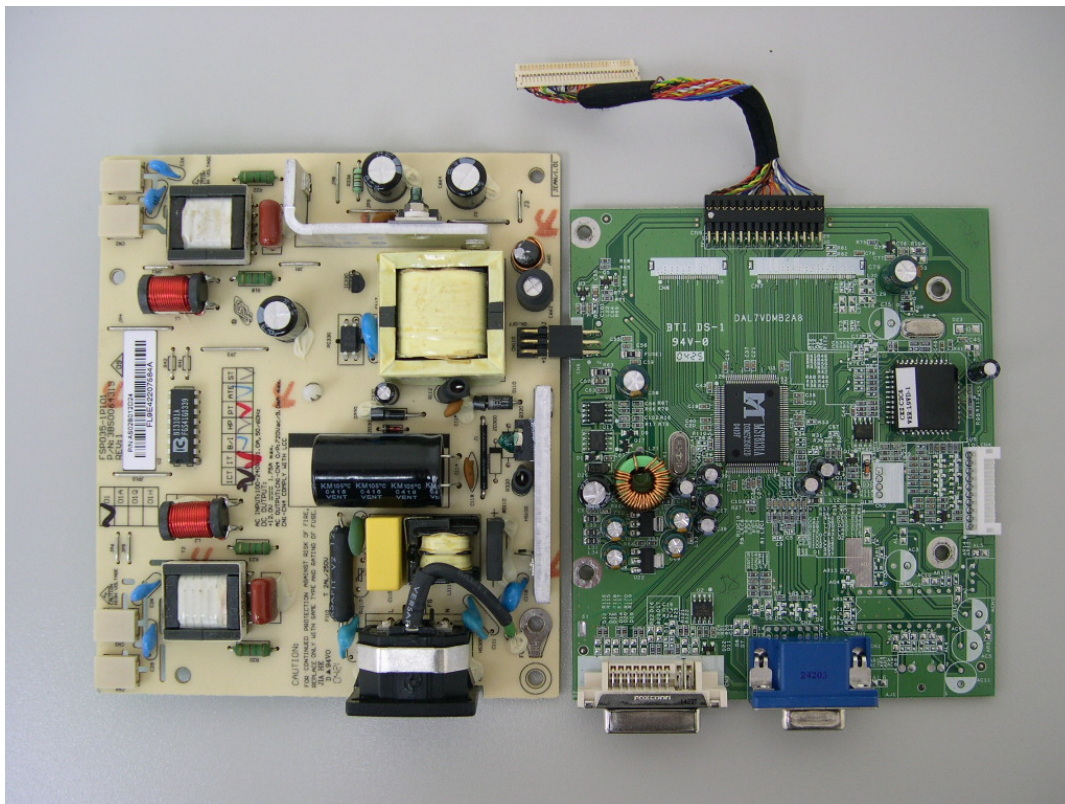
12. Remove the front bezel & panel



13. Remove the 4 hexagon screws beside the DVI & D-sub connector

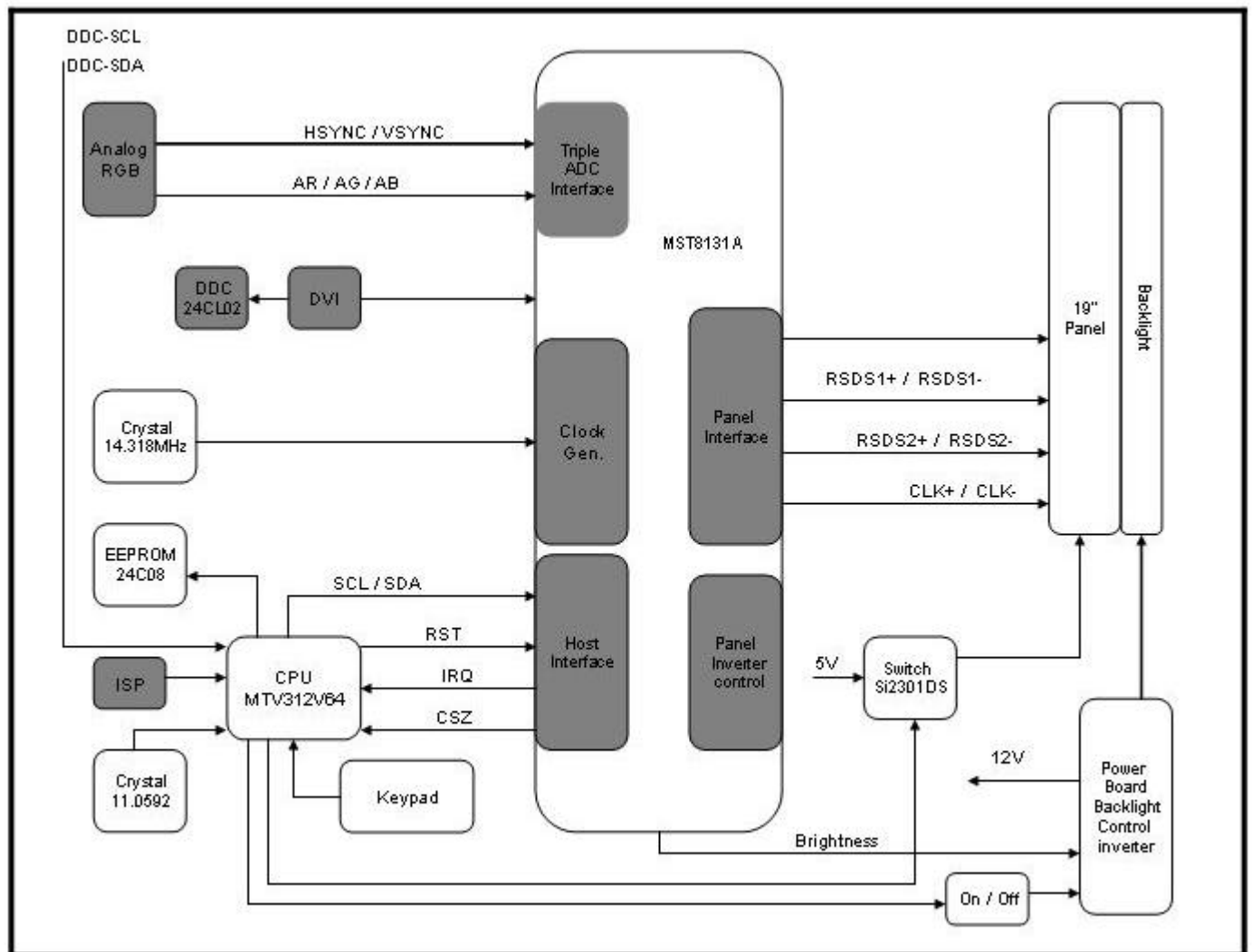


14. Remove the screws which fixed the power board & Main board

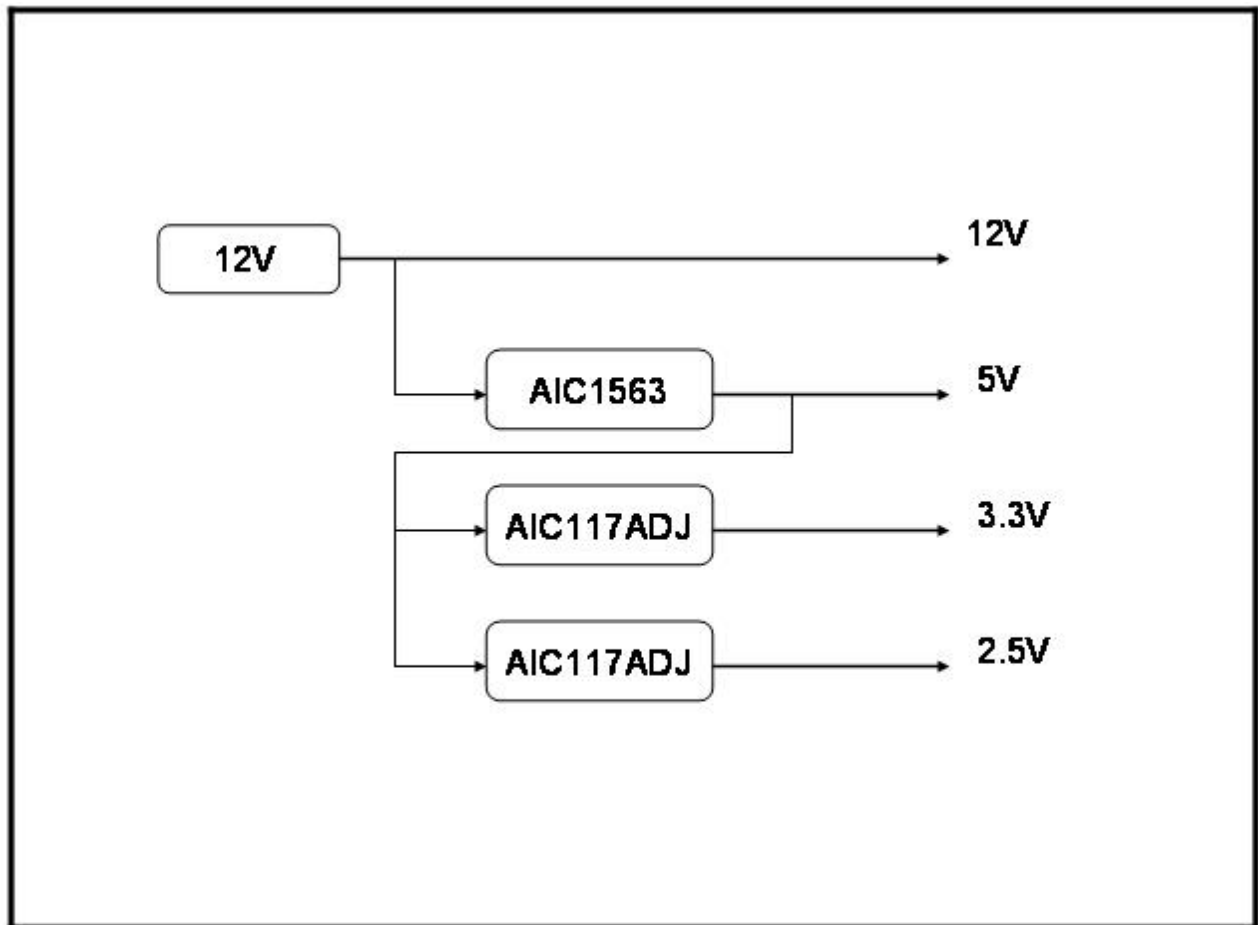


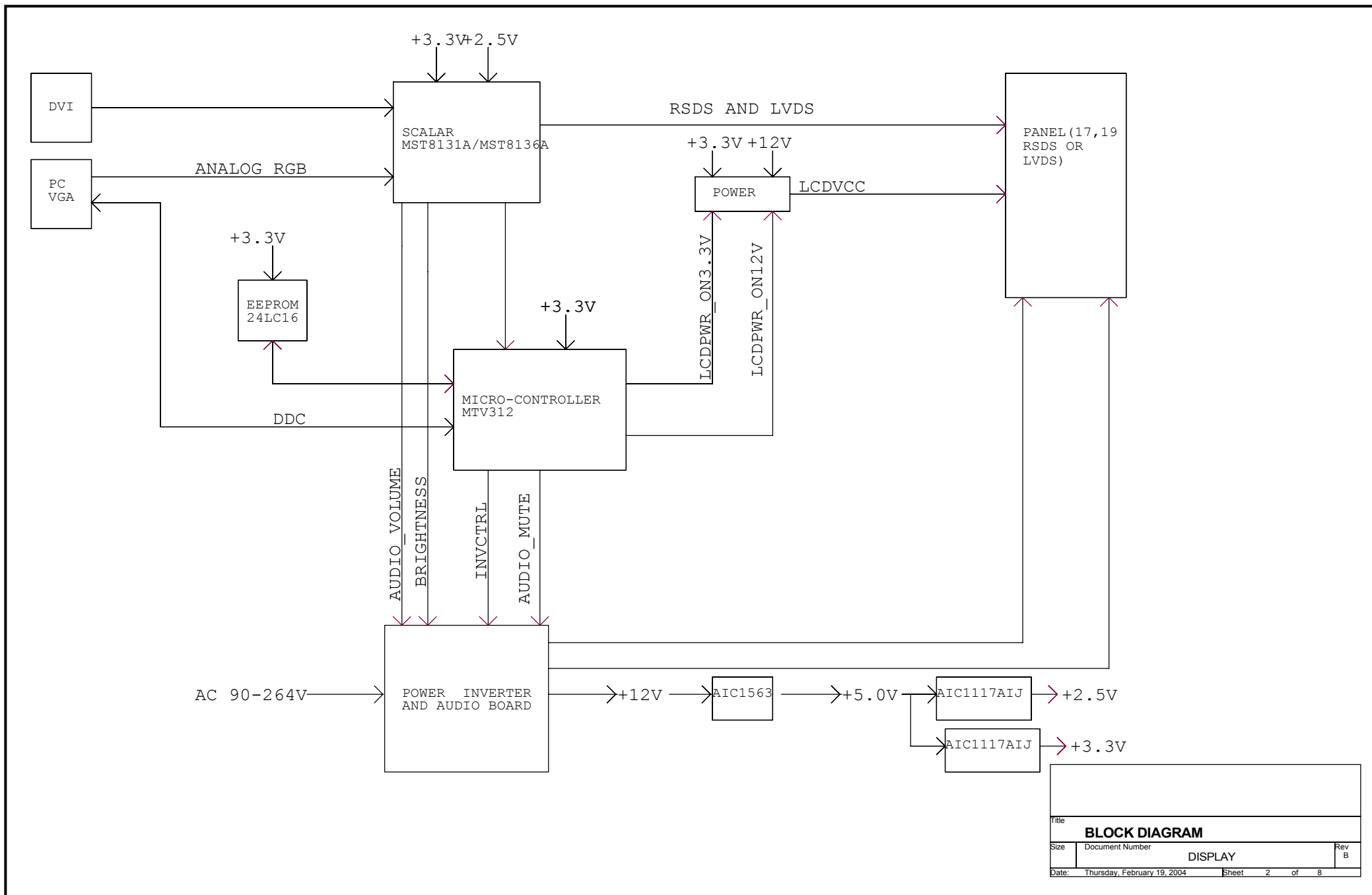
9. Block Diagram

9.1 Video



9.2 Power

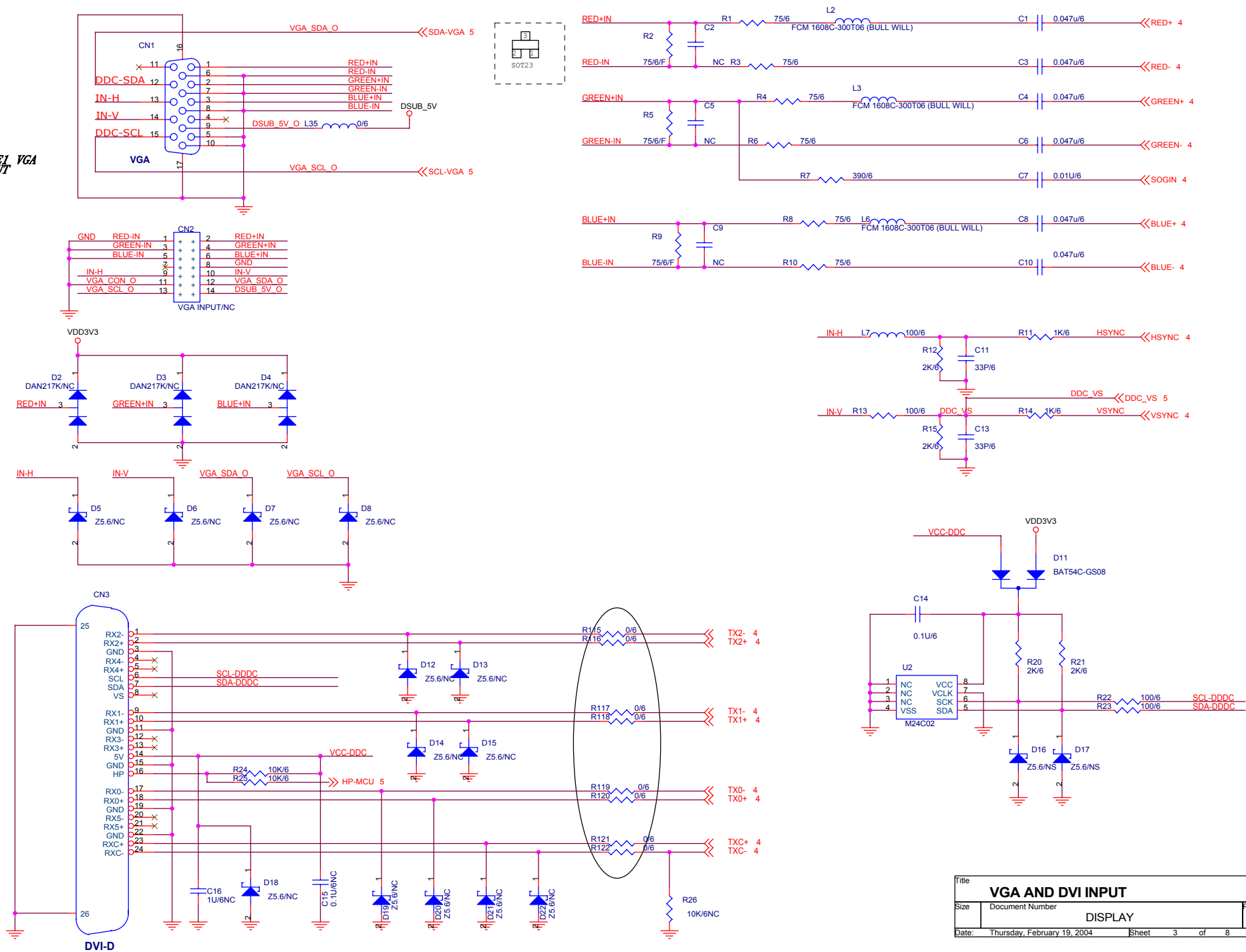


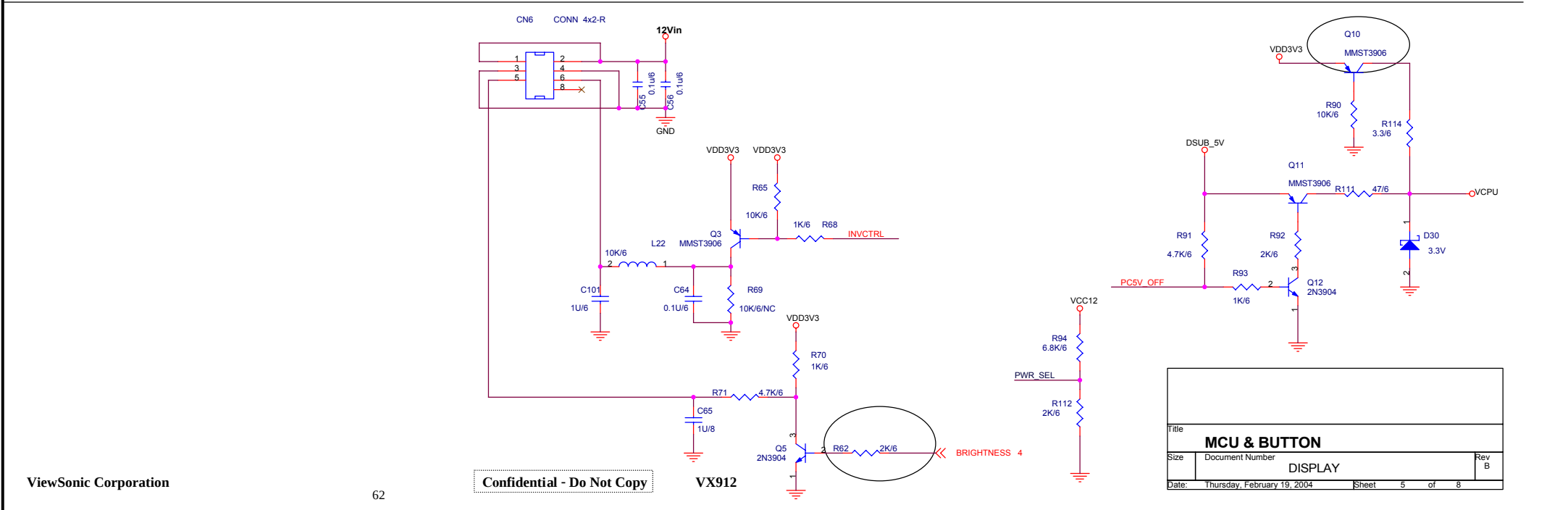
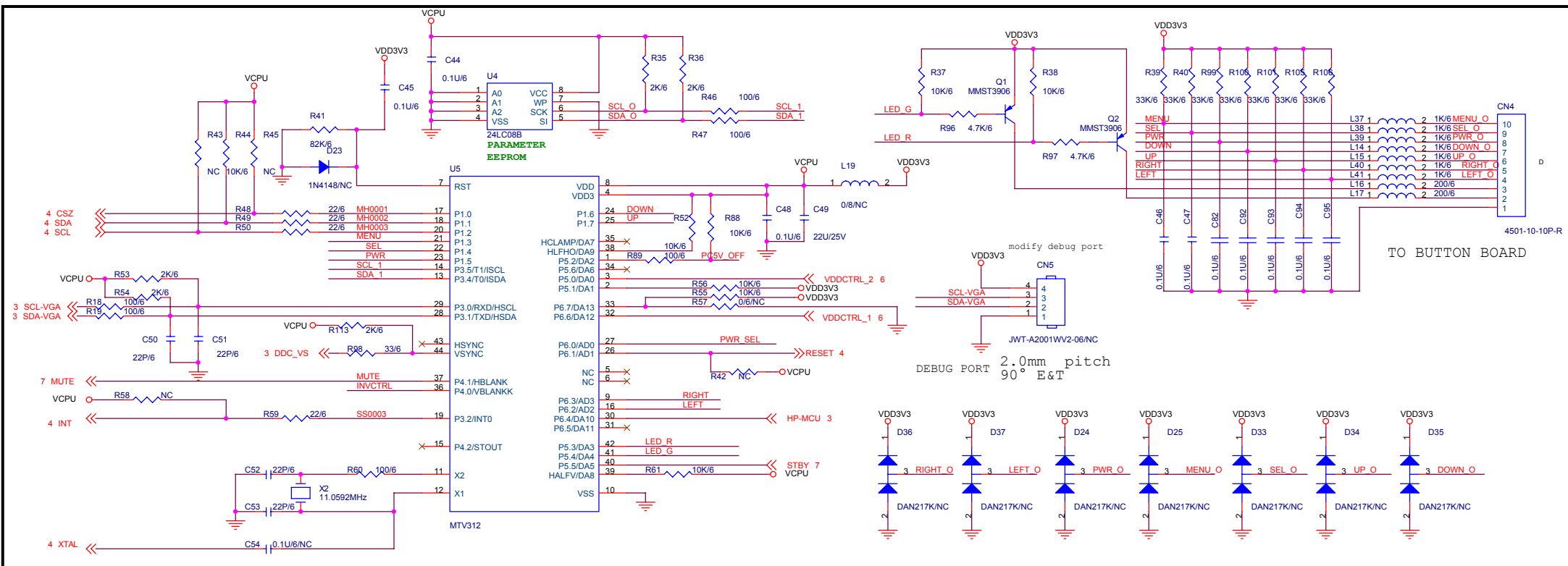


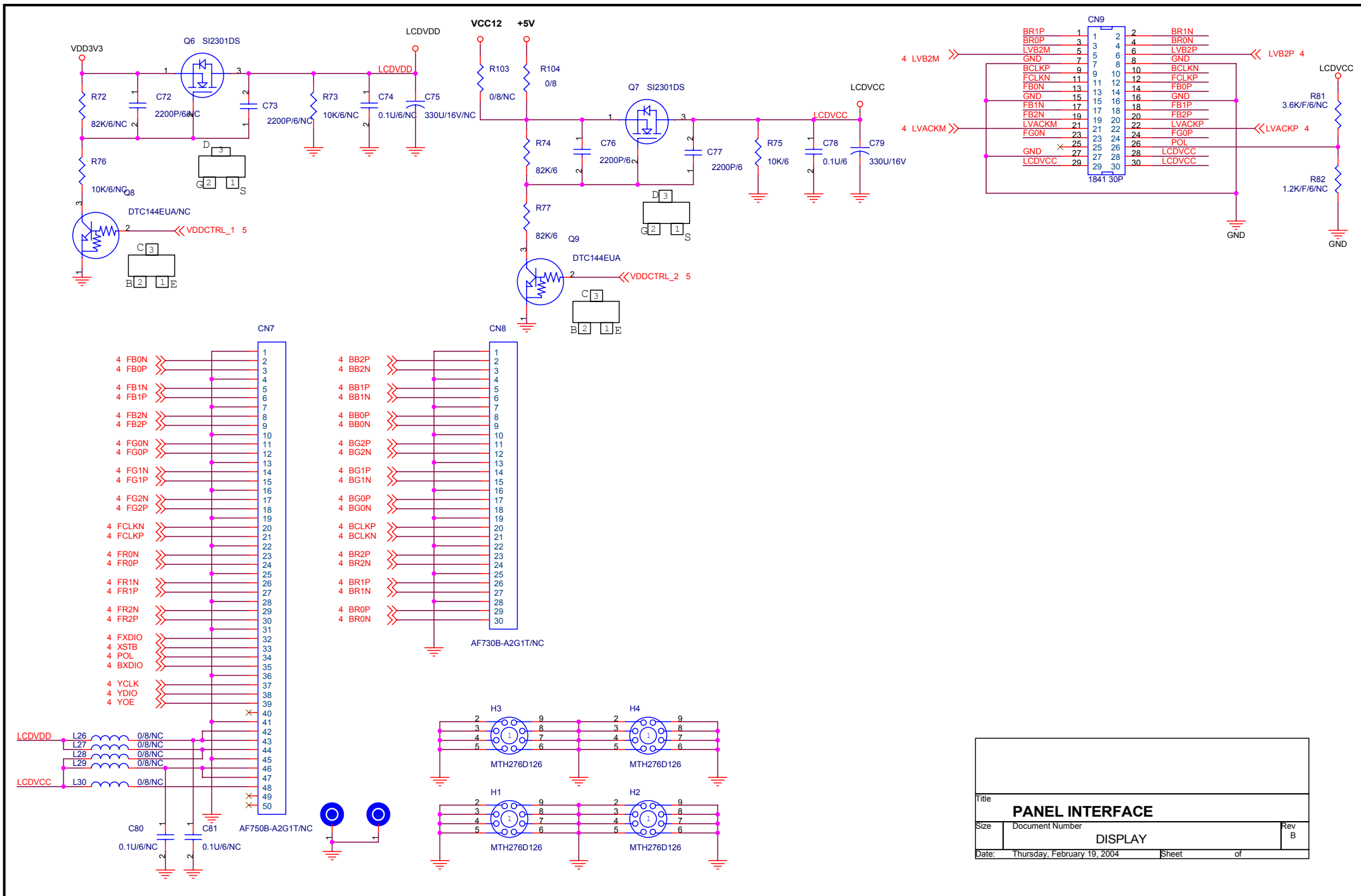
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BLOCK DIAGRAM		
Size	Document Number	Rev
	DISPLAY	B
Date:	Thursday, February 19, 2004	Sheet 2 of 8

10. Schematic Diagrams

PAGE 1
VGA
INPUT

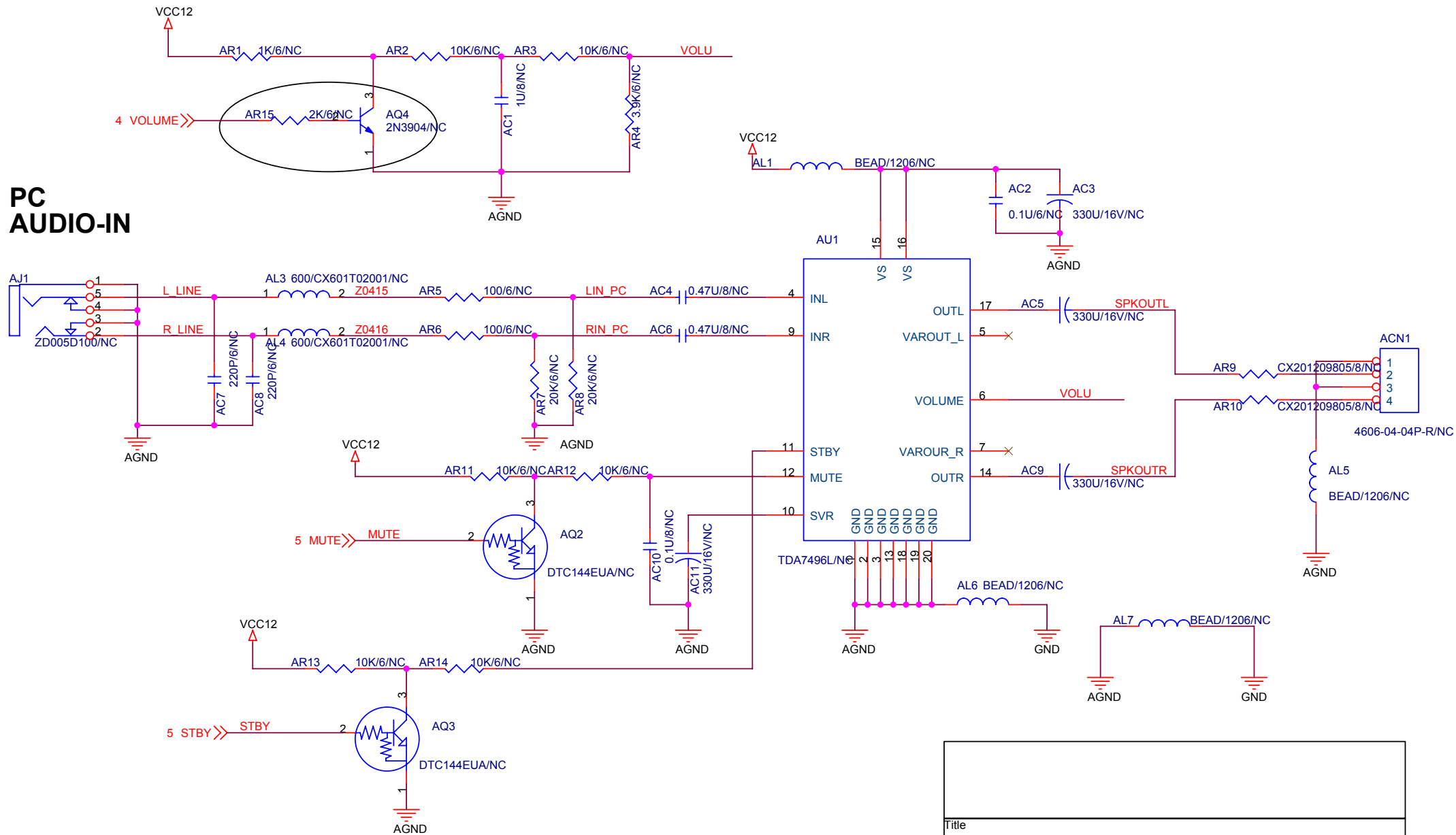




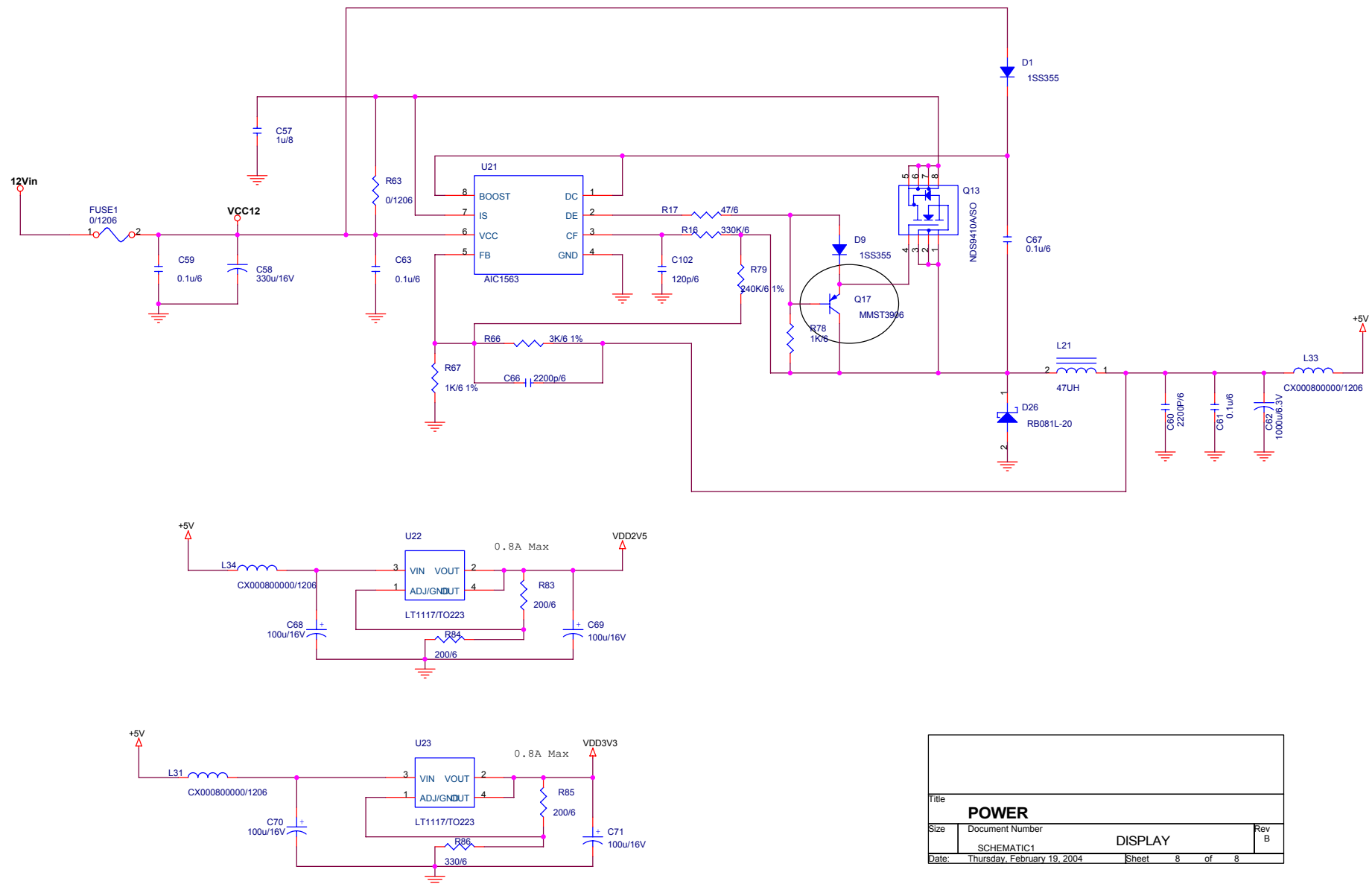


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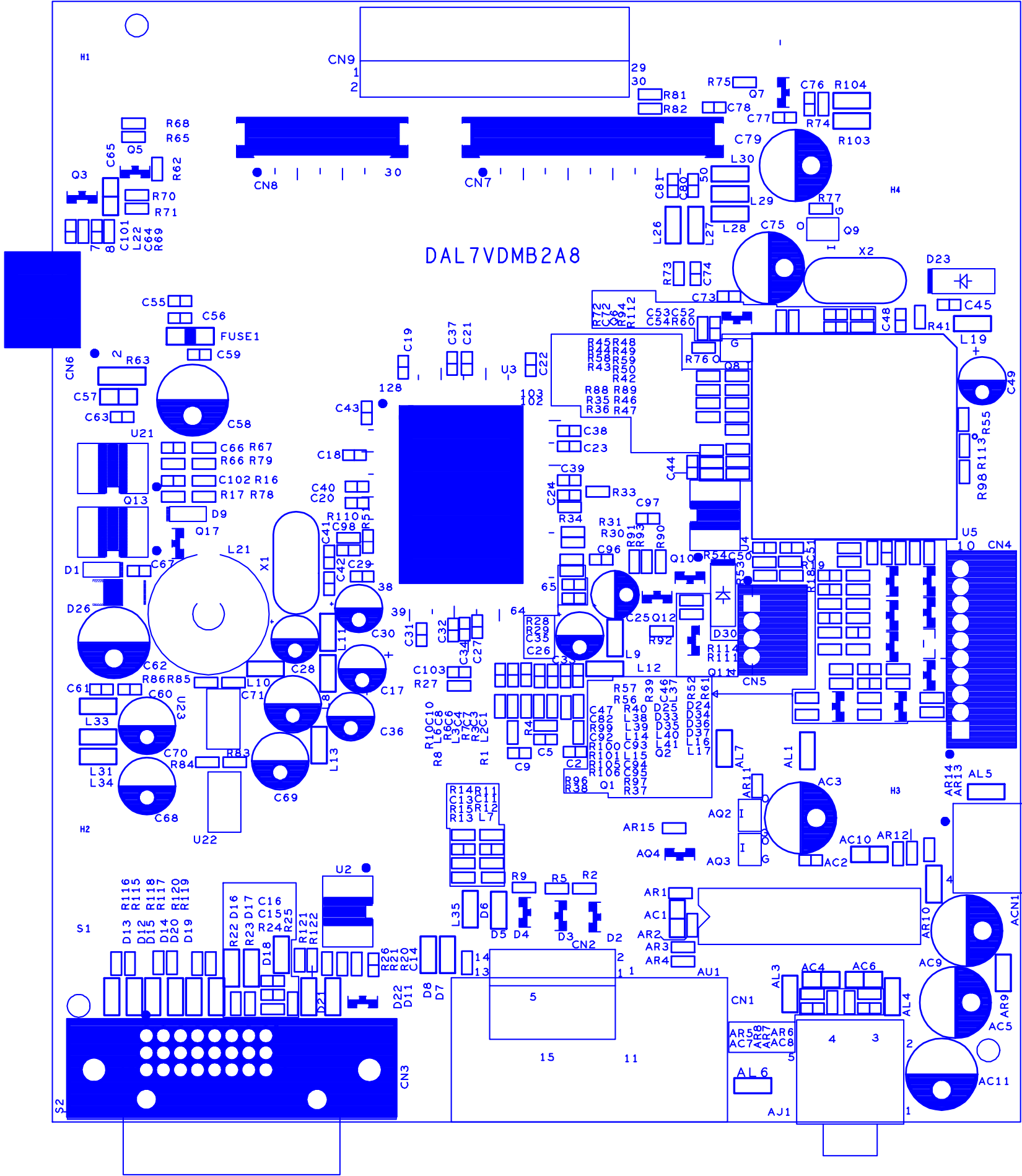
PC AUDIO-IN



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Audio			
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Date:		Thursday, February 19, 2004	
Sheet		7	of 8



11. PCB Layout Diagrams



Reader's Response

Dear Readers:

Thank you in advance for your feedback on our Service Manual, which allows continuous improvement of our products. We would appreciate your completion of the Assessment Matrix below, for return to ViewSonic Corporation.

Assessment

A. What do you think about the content after reading **VX912** Service Manual?

<i>Unit</i>	<i>Excellent</i>	<i>Good</i>	<i>Fair</i>	<i>Bad</i>
1. Precautions And Safety Notices				
2. Specification				
3. Front Panel Function Control Description				
4. Circuit Description				
5. Adjusting Procedure				
6. Trouble Shooting Flow Chart				
7. Recommended Spare Parts List				
8. Exploded Diagram and Spare Parts List				
9. Block Diagram				
10. Schematic Diagrams				
11. PCB Layout Diagrams				

B. Are you satisfied with the **VX912** service manual?

<i>Item</i>	<i>Excellent</i>	<i>Good</i>	<i>Fair</i>	<i>Bad</i>
1. Service Manual Content				
2. Service Manual Layout				
3. The form and listing				

C. Do you have any other opinion or suggestion about this service manual?

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After completing this form, please return it to ViewSonic Quality Assurance in the USA at facsimile 1-909-839-7943. You may also e-mail any suggestions to the Director, Quality Systems & Processes (marc.maupin@viewsonic.com)