Service Manual

ViewSonic VA912-4
VA912b-4

Model No. VS10867

19” Color TFT LCD Display

(VA912-4_VA912b-4_SM Rev. 1b Dec. 2005)

ViewSonic® 381 Brea Canyon Road, Walnut, California 91789 USA - (800) 888-8583

Revision History

Revision	SM Editing Date	ECR Number	Description of Changes	Editor
1a	11/09/05		Initial Release	G. Han
1b	12/01/05		Add assembling, handling notice, packing, firmware documents	Jamie Chang

TABLE OF CONTENTS

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 a high quality, safety approved AC/DC power cord.
(5) Disconnect the power plug from the AC outlet if the product will not be 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 containing excessive dust and dirt.
- Near any appliance generating a strong magnetic field.
- 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 connecting or disconnecting input connector.
(3) Wipe off water drops 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 ensure human earth when handling.
(7) Do not open or modify the Module Assembly.
(8) Do not press the reflector sheet at the back of the module in any direction.
(9) In the event that a Module must be put back into the packing container slot after it was taken out of 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 or 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 or bend the TFT Module even momentarily. When designing the enclosure, it should be taken into consideration that no bending/twisting forces may be applied to the TFT Module from outside. Otherwise the TFT Module may be damaged.

(12) The cold cathode fluorescent lamp in the LCD contains a small amount of mercury. Please follow local ordinances or regulations for disposal.

(13) The LCD module contains a small amount of materials having no flammability grade. The LCD module should be supplied with power that complies with the requirements of Limited Power Source (IEC60950 or UL1950), or an exemption should be applied for.

(14) The LCD module is designed so that the CCFL in it is supplied by a Limited Current Circuit (IEC60950 or UL1950). Do not connect the CCFL to a Hazardous Voltage Circuit.

VA912-4 series handling Notice

Correct Method	Incorrect method
	

Correct Method	Incorrect method
	

Correct Method	Incorrect method
	

Correct Method	Incorrect method
	

Correct Method	Incorrect method
	

2. Specification

1 PRODUCT DEFINITION AND SPECIFICATION

Region	VSA (M)	VSAP (A)/(S)/(K)	VSE (E)/(U)	VSCN (G)
Product Name	VA912/b-4 / **VA912-4U**			
Model Number	VS10867			
OSD Languages	English, French, German, Italian, Spanish, Finnish, Japanese, Traditional Chinese, Simplified Chinese			
TFT LCD Panel and Model #	Vendor : HSD, Model # : 190ME13 A02			
Scalar	Model # : RTD 2523			
Input Signal	Analog / Digital			
Sync Compatibility	Separate			
Audio	1W x 2			
Power Cable	a. Refer to Appendix D b. U model: (2 power cables are required) 1. Schuko CEE7-7 Type Plug 2. Separate 3-prong BS 1363 Type Plug			
Analog Cable (1.8 m, color : black), with PC 2001 and Hot Plug Detect &DDC	**YES**			
Audio Cable (1.8m, Color: black) with PC 2001	**YES**			
DVI Cable(1.8m, color: black) with PC 2001	**YES**	**YES**	**No**	**YES**
ViewSonic CD Wizard ViewSonic Quick Start Guide	Arabic, English, Finnish, Spanish, German, Italian, Swedish, Polish, Korean, Portuguese, Russian, French, Simplified Chinese, Traditional Chinese, Hungary, Czech, Turkish			
Screen Protector Mylar	**YES**	**YES**	**YES**	**YES**
Warranty Sticker	NO	NO	NO	**YES**
Warranty Card	NO	NO	NO	**YES**
Carton Sticker	NO	NO	NO	**YES**
PE bag of Carton	NO	NO	NO	**YES**

This product specification is divided into the following categories:

4-1 General Specification
4-2 Video Interface
4-3 Power Supply
4-4 Electrical Requirement
4-5 Front Panel Control and Indicators
4-6 Audio Interface
4-7 TFT LCD Panel
4-8 Image Performance
4-9 Mechanical
4-10 Packaging
4-11 Environmental
4-12 Manuals and Documents
4-13 Regulatory and Safety
4-14 Video Communications
4-15 Coding Assignment
4-16 Reliability
4-17 Mass Production Release
4-18 ECR / ECN
4-19 Service

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)
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 2B
Video Signals	1. Video RGB (Analog) 2. DVI (Digital) Separate
Video Impedance	75 Ohms (Analog)
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 2B	Compliant with Revision 1.3
Sync Compatibility	Separate Sync
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 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

Power Supply (Adapter)	FSP043-2PI01
Input Voltage Range	90 TO 264 VAC
Input Frequency Range	47 TO 63 HERTZ
Short Circuit Protection	Output can be shorted without damage
Over Current Protection	5.13 A typical at 18.1 VDC
Leakage Current	0.25mA (Max) at 264VAC / 50Hz
EFFICIENCY	80 % typical at 115VAC Full Load
Fuse	Internal and not user replaceable
Power Dissipation	65 Watts
Max Input AC Current	1.8Arms @ 90VAC,
INRUSH CURRENT (COLD START)	100 A @ 240VAC , 50Hz
Power Supply Cold Start	Shall start and function properly when under full load, with all combinations of input voltage, input frequency, and operating temperature
Power Supply Transient Immunity	Shall be able to withstand an EN61000-4-4 ±2KV transient test with no damage
Power Supply Line Surge Immunity	Shall be able to withstand ±2KV (L-L) and ±2.3KV (L-PE) with no damage
Power Supply Missing Cycle Immunity	Shall be able to function properly, without reset or visible screen artifacts, when ½ cycle of AC power is randomly missing at nominal input
Power Supply Acoustics	The power supply shall not produce audible noise that would be detectable by the user. Audible shall defined to be in compliance with ISO 7779 (DIN EN27779:1991) Noise measurements of machines acoustics. Power Switch noise shall not be considered
US Type Power Cable	Separate 3-prong NEMA 5-15P type plug. Length = 1.8m. Connects to display. Color = Black
European Type Power Cable	Schuko CEE7-7 type plug. Length = 1.8m, Connects to display. Color = Black
CCC Type Power Cable	Separate 3-prong type plug. Length = 1.8m. Connects to display. Color = Black

PSE Type Power Cable	Separate 2-prong NEMA 1-15P type plug. Length = 1.8m. Connects to display. Color = Black
Power Saving Operation(Method)	VESA DPMS Signaling
Power Consumption	ON Mode < 40W (max) / 36 W (typ) ACTIVE OFF < 1 W
Recovery Time	ON MODE = N/A, ACTIVE OFF < 5 SEC

ELECTRICAL REQUIREMENT

Horizontal / Vertical Frequency

Horizontal Frequency	30 – 82 KHZ
Vertical Refresh Rate	50 – 85* HZ.
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 @ 60Hz, 31.5kHz	Yes	Yes
5	640 x 480 @ 67Hz, 35.0kHz	Yes	Yes
6	640 x 480 @ 72Hz, 37.9kHz	Yes	Yes
7	640 x 480 @ 75Hz, 37.5kHz	Yes	Yes
8	640 x 480 @ 85Hz, 43.27kHz	Yes	Yes
9	720 x 400 @ 70Hz, 31.5kHz	Yes	Yes
10	800 x 600 @ 56Hz, 35.1kHz	Yes	Yes
11	800 x 600 @ 60Hz, 37.9kHz	Yes	Yes
12	800 x 600 @ 75Hz, 46.9kHz	Yes	Yes
13	800 x 600 @ 72Hz, 48.1kHz	Yes	Yes
14	800 x 600 @ 85Hz, 53.7kHz	Yes	Yes
15	832 x 624 @ 75Hz, 49.7kHz	Yes	Yes
16	1024 x 768 @ 60Hz, 48.4kHz	Yes	Yes
17	1024 x 768 @ 70Hz, 56.5kHz	Yes	Yes
18	1024 x 768 @ 72Hz, 58.1kHz	Yes	Yes
19	1024 x 768 @ 75Hz, 60.0kHz	Yes	Yes
20	1024 x 768 @ 85Hz, 68.67kHz	Yes	Yes
21	1152 x 870 @ 75Hz, 68.7kHz	Yes	Yes

22	1280 x 1024 @ 60Hz, 63.4kHz	Yes	Yes
23	1280 x 1024 @ 75Hz, 79.97kHz	Yes	Yes
24	1280x 720 @ 60Hz, 45kHz (HDTV)	Yes	Yes

Primary Presets

1280x1024 @ 60Hz

User Presets

Number of User Presets (recognized timings) Available: 10 presets total in FIFO configuration

Changing Modes

- Maximum Mode Change Blank Time for image stability : 3 seconds (Max), excluding "Auto Adjust" time
- Under DOS mode (640 x 350, 720 x 400 & 640 x 400), there is no "Auto Adjust" feature.
- The monitor needs to do "Auto Adjust" the first time a new mode is detected but except the DOS mode 640 x 350, 720 x 400 & 640 x 400.(see section "0-Touch™ Function Actions")
- While running Change Mode, Auto Adjust or Memory Recall, the image shall blank

FRONT PANEL CONTROLS AND INDICATORS

Front Panel Hardware Controls

Power Switch (Front Head)	Power Control, soft Power Switch.
Power LED (Front Head)	Green – ON Orange – Active Off Dark = Soft Power Switch OFF
Front Panel Controls (Head) [◀X] [1] [▲] [▼] [2] [⏻]	[⏻] Power [1] Button 1 [2] Button 2 [▲] Up arrow button [▼] Down arrow button [◀ X] MUTE Note: Power Button, Button 1 and Button 2 and Mute Button must be one-shot logic operation. (i.e. there should be no cycling)
Reaction Time	OSD must fully appear within 0.5s after pushing Button 1

Panel Source Identify

(1) ID label - The panel code “T” for HSD panel should be shown on the lower right side of ID label. (See Figure 2)

(2) UPC label - The panel code “T” for HSD panel should be shown on the lower right side of UPC label. (See Figure 3)

Panel Characteristics:

Model number	HSD 190ME13-A02	
Type	TN type with LVDS interface	
Active Size	376.32 (H) x 301.056 (V)	
Pixel Arrangement	RGB Vertical Stripe	
Pixel Pitch	0.294 mm	
GLASS TREATMENT	Anti Glare (Hard coating 3H)	
# OF BACKLIGHTS	4 CCFL direct light	
BACKLIGHT LIFE	40,000 Hours (min)	
Luminance (Center) – 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 (9 Points)	U = 80% (typ), 75% (Min). U = Min Luminance in 5 points / Max Luminance in 5 points	
Contrast Ratio	600 (typ), 450 (min)	
Color Depth	16 million colors (6 bit + 2 bit FRC)	
Viewing Angle (Horizontal)	@ CR>10 Typical: 140 Minimum: 120	@ CR>5 Typical: 160 Minimum: 140
VIEWING ANGLE (VERTICAL)	@ CR>10 Typical: 130 Minimum: 110	@ CR>5 Typical: 150 Minimum: 130
Response Time 10%-90% @ Ta=25°C	8ms (Tr= 2 ms, Tf = 6 ms) (typ) 20 ms (Tr= 7 ms, Tf = 13 ms) (max)	
Panel Defects	Please see Panel Quality Specifications.	

MECHANICAL

Dimension (Desktop)

Width	437 mm (17.2 inch)
Height	419 mm (16.5 inch)
Depth	216 mm (8.5 inch)
Monitor Weight	4.7 Kg/ 10.4 lbs

*Refer to Figure 1

Ergonomics

Tilt Up	≧ 20 º to 18°
Tilt Down	≦ -5 º to -3°

Vibration Test

- Vibration Frequency : 2 – 200 Hz
- Acceleration : 1.14 G RMS
- Sweep Time : 1 oct. / min
- Test Time : 60 min per axis, total 3 axis / 6 main face
- Vibration Test Data shall be submitted for approval to ViewSonic before Mass Production

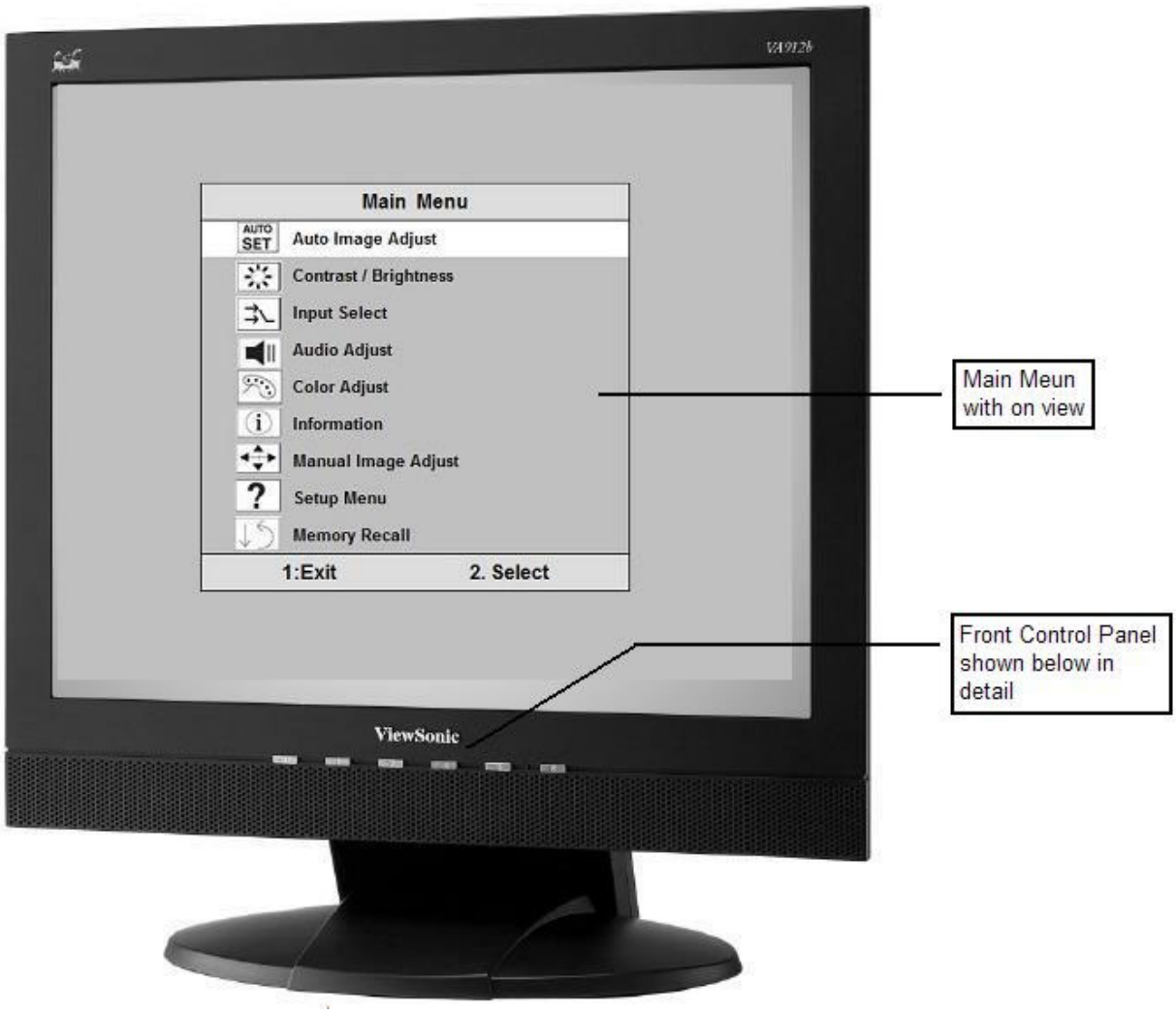
Drop Test (100G)

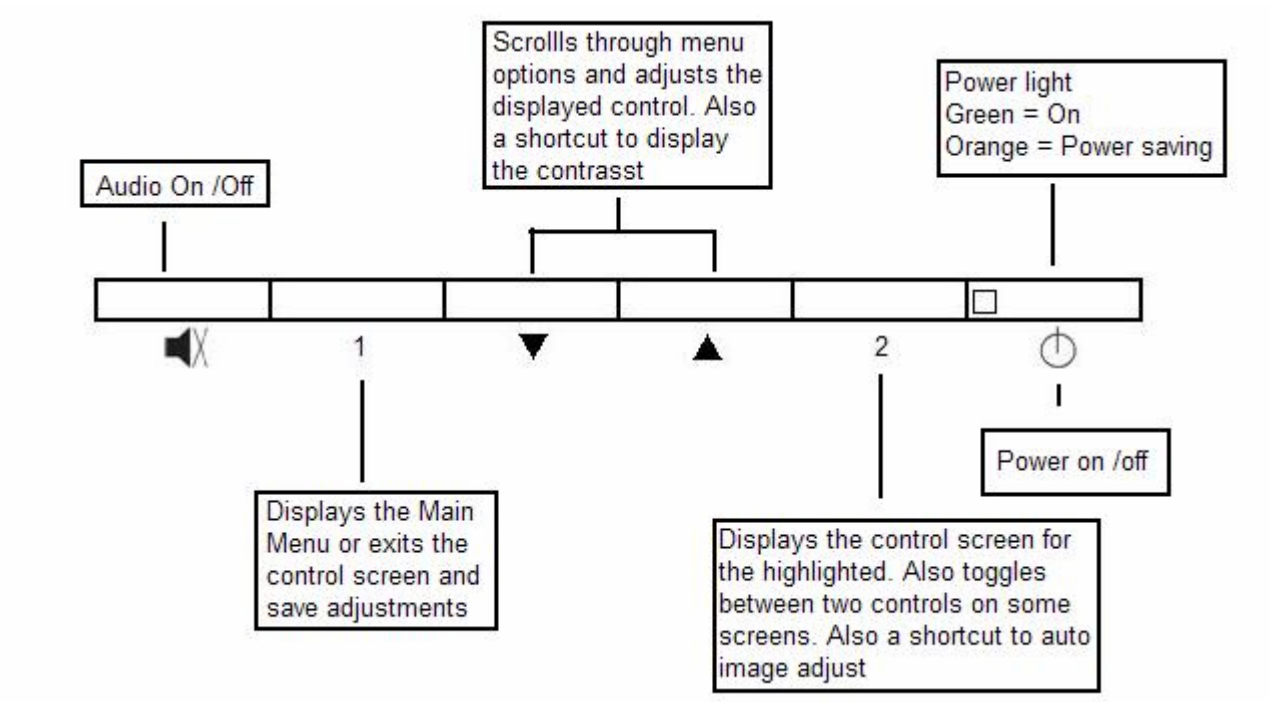
- Weak Corner : 76.2 cm
- Six Faces : 76.2 cm
- 3 Edges Radiating From Weak Corner : 76.2 cm
- Drop Test Data shall be submitted for approval to ViewSonic before Mass Production

ENVIRONMENTAL

- Operating Temperature : 5°C to +35°C
- Storage Temperature : -20°C to +55°C
- Operating Relative Humidity : 20% to 80% RH Non-Condensing
- Storage Relative Humidity : 20% to 85% RH Non-Condensing
- Operating Altitude : 0 to +3,000 meters
- Storage Altitude : 0 to +12,000 meters

3. Front Panel Function Control Description





ViewSonic VA921-4/VA921b-4/VA912-4U

Main Menu Controls

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

A. **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: 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.

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

C. **Brightness adjusts** the lamps current to control the screen brightness.

D. **Input adjusts** the Analogue or the Digital input source

E. **Audio Adjust** the volume increase or decrease and mute function

F. **Color Adjust** provides several color options: preset color temperatures and Custom User Color which allows you to adjust red (R), green (G), and blue (B). The factory setting for this product is 6500K (6500° Kelvin).

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

5400K — Adds red to the screen image for warmer white and richer red.

Custom User Color — Individual adjustments for red, green, and blue.

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

2 To adjust selected color, press ▲ or ▼.

3 When you are finished making all color adjustments, press button [1] twice.

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

H. **Manual Image Adjust** controls are explained below:

H. Size (Horizontal Size) adjusts the width of the screen image.

NOTE: Vertical size is automatic with your LCD display.

H./V. Position adjusts horizontal and vertical position of the screen image. You can toggle between Horizontal and Vertical by pressing button [2]. Horizontal moves the screen image to the left or to the right. Vertical moves the screen image up and down.

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

Sharpness adjusts the clarity and focus of the screen image.

Setup Menu controls are explained below:

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

Resolution Notice displays the recommended resolution for this LCD display.

Enable allows the Resolution Notice to appear on-screen.

Disable will not allow the Resolution Notice to appear on-screen.

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 OSD disappears.

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

J. **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.

4. Circuit Description

1. Outline

1.1 Power On/Off, up arrow- button, down arrow button, (1) MENU button, (2) Enter button, Mute button on the front panel.

1.2 D-sub 15pin connector, DVI-D connector, audio line-in receptacle, and AC-IN are located on the back side of the cabinet.

1.3 OSD menu includes the following function;

Auto Image Adjust (only active under analog input)

Contrast/Brightness

Input Select

Audio Adjust

Color Adjust

Information

Manual Image Adjust

Setup Menu

Memory Recall

1.4 Contrast and Brightness can be directly controlled with UP / DOWN key.

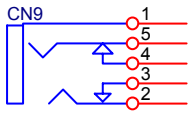
1.5 Audio volume can be controlled with up key and down key when Audio Adjust menu is active.

1.6 Pushing Mute key can disable audio output.

2. CONNECTORS

2.1 AC inlet : CEE22 typed connector

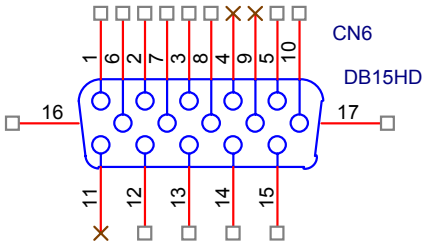
2.2 Audio : Line-in,



Line-in receptacle

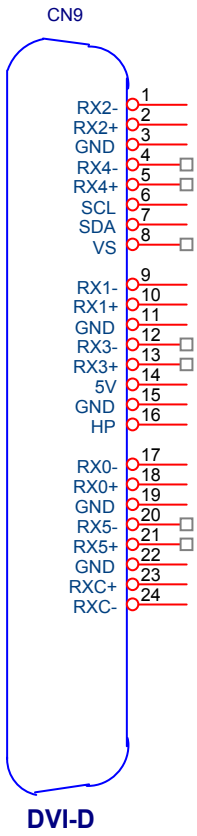
(Line-in receptacle is green)

2.3 Video signal connector for analog input: 15P Mini D-Sub



PIN	MNEMONI	SIGNAL
1	RV	Red Video
2	GV	Green Video
3	BV	Blue Video
4	NC	None
5	GND	Ground (DDC return)
6	RG	Red GND
7	GG	Green GND
8	BG	Blue GND
9	+5V	+5V (for DDC)
10	SG	Sync GND
11	NC	None
12	SDA	DDC Data
13	HS	Horizontal Sync
14	VS	Vertical Sync
15	SCL	DDC Clock

2.4 Video signal connector for digital input: 24pin DVI-D connector



Pin No.	Signal Name	Description
1	RX2-	TMDS negative differential input, channel 2
2	RX2+	TMDS positive differential input, channel 2
3	GND	Logic Ground
4	RX4-	Reserved. No connection
5	RX4+	Reserved. No connection
6	SCL	DDC2B Clock
7	SDA	DDC2B Data
8	VS	Reserved. No connection
9	RX1-	TMDS negative differential input, channel 1
10	RX1+	TMDS positive differential input, channel 1
11	GND	Logic Ground
12	RX3-	Reserved. No connection
13	RX3+	Reserved. No connection
14	+5V	Power
15	GND	Logic Ground
16	HP	SENSE Pin, Pull High
17	RX0-	TMDS negative differential input, channel 0
18	RX0+	TMDS positive differential input, channel 0
19	GND	Logic Ground
20	RX5-	Reserved. No connection
21	RX5+	Reserved. No connection
22	GND	Logic Ground
23	RXC+	TMDS positive differential input, reference clock
24	RXC-	TMDS negative differential input, reference clock

3. ELECTRICAL SPECIFICATIONS

3.1 Standard conditions

Display Area	**376.32 x 301.056 mm**
Video Signal	**0.7Vpp**
Contrast	**Default**
Brightness	**Default**
Ambient	**20 +/- 5 ˚C**
Input	**AC**
Warming up	**> 30 min**
Display	**1280 x 1024**

3.2 POWER

3.2.1 Power supply

Input voltage	100~240Vac
Power frequency	50~60Hz
Input current	<1.8Arms@90Vac
Inrush current	100A(Max) at 90Vac(cold start)
Power consumption	36W(typical);40Watts(Max)

3.2.2 Power Management

State	Power	Indicator
On	36Watts	Blue
Standby	< 1Watts	Amber
Off	<1Watts	Off

3.3 Acceptable timing

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

Horizontal: Sync frequency: 30~82 kHz

Vertical: Sync frequency: 50~85*Hz

3.4 Signal level and input impedance

3.4.1 Video Signal level: 0.7Vp-p Video signal.

3.4.2 Sync Signal level

H/V Separate: TTL level

3.4.3 Input impedance

Analog video input: 75 ohm

Digital video input: 100 ohm

Sync input: > 1 k ohm

Audio input: 10K ohm

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

5. EDID data

5.1. Analog EDID: Analog EDID is stored in U8.

Time: 15:03:33

Date: Fri Aug 05, 2005

VIEWSONIC CORPORATION

EDID Version # 1, Revision # 3

DDCTest For: ViewSonic VA912-4SERIES

EDID Block 0, Bytes 0-127

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	1C	72	00	00	00	00	01	0F	01	03
20	08	26	1E	78	2E	FD	56	A5	53	4A
30	9D	24	14	4F	54	BF	EF	80	81	80
40	81	40	71	4F	61	59	45	59	31	59
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	57	38
80	30	35	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	41	39	31	32	2D	34
120	53	45	52	49	45	53	00	18		

(08-09) ID Manufacturer Name _____ = VSC

(11-10) Product ID Code _____ = 721C

(12-15) Last 5 Digits of Serial Number _____ = Not Used

(16) Week of Manufacture _____ = 01

(17) Year of Manufacture _____ = 2005

(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

(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 - 0.647 Green X - 0.292 Blue X - 0.142 White X - 0.310
Red Y - 0.327 Green Y - 0.614 Blue Y - 0.079 White Y - 0.330

(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
1280 X 960 @60Hz
1152 X 864 @75Hz
1024 X 768 @85Hz
800 X 600 @85Hz
640 X 480 @85Hz
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:
PW8050100001

(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:
VA912-4SERIES

(126) No Extension EDID Block(s)
(127) CheckSum OK

5.2. Digital EDID: Digital EDID is stored in U5.

Time: 15:02:23

Date: Fri Aug 05, 2005

VIEWSONIC CORPORATION
EDID Version # 1, Revision # 3
DDCTest For: ViewSonic VA912-4SERIES

EDID Block 0, Bytes 0-127
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	1C	72	00	00	00	00	01	0F	01	03
20	80	26	1E	78	2E	FD	56	A5	53	4A
30	9D	24	14	4F	54	BF	EF	80	81	80
40	81	40	71	4F	61	59	45	59	31	59
50	31	0A	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	57	38
80	30	35	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	41	39	31	32	2D	34
120	53	45	52	49	45	53	00	67		

(08-09) ID Manufacturer Name _____ = VSC
(11-10) Product ID Code _____ = 721C
(12-15) Last 5 Digits of Serial Number _____ = Not Used
(16) Week of Manufacture _____ = 01
(17) Year of Manufacture _____ = 2005
(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 - 0.647 Green X - 0.292 Blue X - 0.142 White X - 0.310
Red Y - 0.327 Green Y - 0.614 Blue Y - 0.079 White Y - 0.330
(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
1280 X 960 @60Hz
1152 X 864 @75Hz
1024 X 768 @85Hz
800 X 600 @85Hz
640 X 480 @85Hz
640 X 400 @70Hz
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:
PW8050100001

(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:
VA912-4SERIES

(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/inverter board and button board.

6.1 MB BOARD

The MB board is a two-layer, single-landed. 5V and 12V DC power from the power adapter enters the board through connector CN1. Other connectors on the board are for audio and 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, flash ROM, power regulator and Audio amplifier

6.1.1 Flat panel controller… RTD2523 (U6)

The heart of the system board is the scalar chip of RTD2523. The RTD2523 is a high performance, dual input graphics processing IC for LCD monitors with resolutions up to SXGA. It provides all key IC functions required for LCD panel. On-chip functions include an 8-bit triple ADC, PLL, DVI receiver, high scaling engine, OSD controller and dual LVDS transmitter.

a) Clock Generation:
Crystal Input Clock (XIN and XOUT): This is the input pair to an internal crystal oscillator and corresponding logic. A 24.576 MHz crystal is recommended.

b) Hardware Reset (Pin 56):
Hardware Reset signal is provided to MCU (I1). It is active high.

c) Analog to Digital Converter:
The RTD2523 chip has three ADC's (analog-to-digital converters), one for each color (red, green and blue) .The analog RGB and synchronous signals are connected to RTD2523 as described below:

Pin Name	Pin Number
Red +	37
Red -	38
Green +	34

Green -	35
Blue +	30
Blue -	31
H sync	42
V sync	43

d) Embedded OSD: Embedded 11.25K SRAM dynamically stores OSD command and fonts.

e) On chip TMDS receiver: The RTD2523 integrated TMDS receiver, which operates up to 165MHz and can directly connect to all DVI compliant TMDS transmitters. The TMDS signals are connected to RTD2523 as described bellow:

Pin Name	Pin NO.
TX0+	20
TX0-	21
TX1+	18
TX1-	17
TX2+	15
TX2-	14
TXC+	23
TXC-	24

f) PWM controlling function (Pin 112, Pin 113): The RTD2523 has two dedicated PWM outputs of PWM0 and PWM1 to control audio volume and back light brightness.

g) Serial interface ports (pin 70 and pin 71): This serial interface ports communicate with MCU and support up to 400Kbit per second transmit rate.

h) Panel interface (Pin 85~94, Pin 73~82,) : The RTD2523 driver interface is highly programmable. It supports dual /Single LVDS interface output.

6.1.2 Power Regulator AIC1117 (U1, U3): The AIC1117 is a low dropout positive adjustable regulator with minimum of 800mA output current capability.

So it is well suited for 3.3 V and 2.5 V Regulator.

U3 as a 2.5V regulator, Desired output voltage are determined by the equation

Volt=1.25 x (1 + R17/R15)= 2.5

U1 as a 3.3V regulator, Desired output voltage are determined by the equation

Volt=1.255 x (1+ R6/R3)= 3.3

6.2 Audio Amplifier UTC TDA7496L(U9)

The TDA7496L is a stereo 2W+2W class AB power amplifier; Features of the TDA7496L include linear volume control, Stand-by and mute functions.

6.3 Power/Inverter Board

This is a specific power/inverter for VA912 monitor 45W 5V + 12V power and backlight which converters 12Vdc to drive four cold cathode fluorescence tubes. Electrical specification described as below.

6.3.1 Inverter Electrical specification described as below.

INPUT	Rated Input Voltage	12Vdc
	Input Voltage Range	11.4~12.6Vdc
	Input Current	<1.96A
	Off state Input Power	<0.1W

	On / off control Voltage	2~5.25 for on, 0~0.13 for off
OUTPUT	Rated Output Strike-on Voltage	1500~2000Vrms
	Rated Output Voltage	710Vrms at 6mA
	Rated Output Frequency	40~50KHz
	Rated Output Current	6~7mA

6.3.2 Power Electrical specification described as below.

INPUT	Rated Input Voltage	90~264Vac, 47~63Hz
	Operation Input Voltage	100~240Vac, 50~60Hz
	Input Current	<1.8A@90Vac
	Inrush Current	<100A @ 90Vac(Cold start)
	Efficiency	80 % TYPICAL AT 115VAC FULL LOAD
OUTPUT	Output Voltage Regulation	+/-5%
	Output Ripple and Noise	120 mVp-p
	Rated Output Current	<4.16A
	Turn-on Delay	<3 seconds

5. Adjustment Procedure

1. Function test

(1) Test equipment
Color video signal and pattern generator (or PC with SXGV resolution)

(2) Test condition
Before function testing and alignment, the unit must warm up for at least 30 minutes under the following conditions:

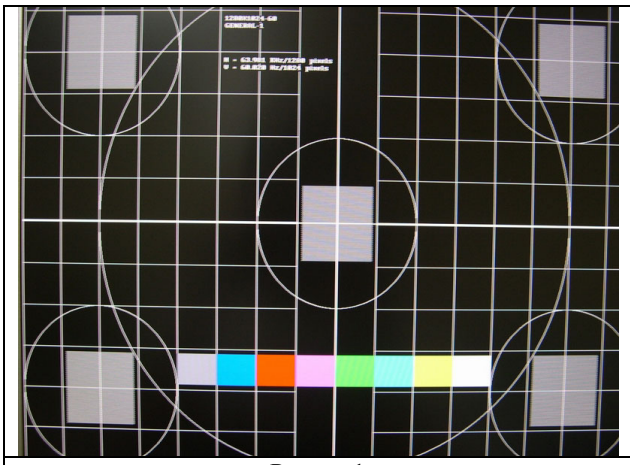
1. Room temperature
2. With full-white screen , RGB , black pattern
3. with cycled display modes.

2. Test display modes

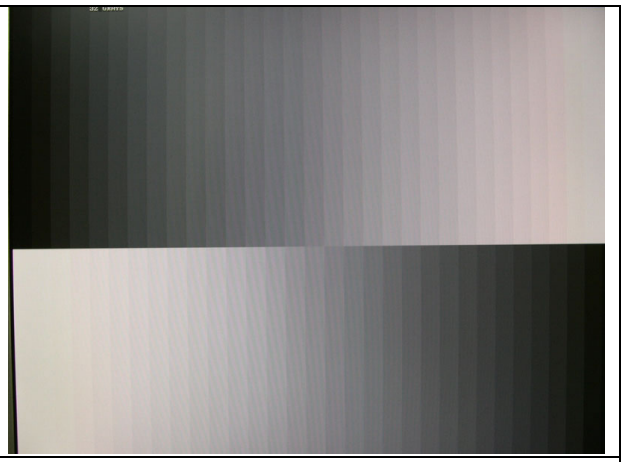
Item	Timing	Analog	Digital
1	640 x 350 @ 70Hz, 31.5kHz	Yes	Yes
2	640 x 400 @ 60Hz, 31.5kHz	Yes	Yes
3	640 x 400 @ 70Hz, 31.5kHz	Yes	Yes
4	640 x 480 @ 60Hz, 31.5kHz	Yes	Yes
5	640 x 480 @ 67Hz, 35.0kHz	Yes	Yes
6	640 x 480 @ 72Hz, 37.9kHz	Yes	Yes
7	640 x 480 @ 75Hz, 37.5kHz	Yes	Yes
8	640 x 480 @ 85Hz, 43.27kHz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

3. Test pattern

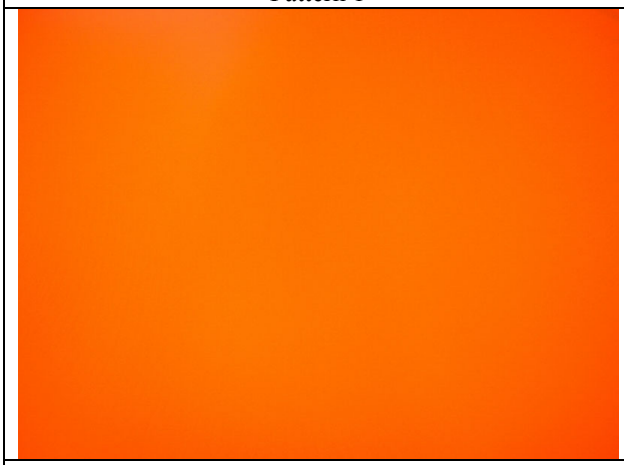
Item	Test condition	Pattern	Specification	Remark
1	Frequency & performance	Cross-hatch pattern	No noise is allowed, all colors must be clear	Pattern 1
2	Monitor saturation	16-gray scale pattern	3 to 4 levels must be saturated when brightness and contrast are set to 100%	Pattern 2
3	RGB color performance	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 and contrast ratio, and check for bright pixel defects	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



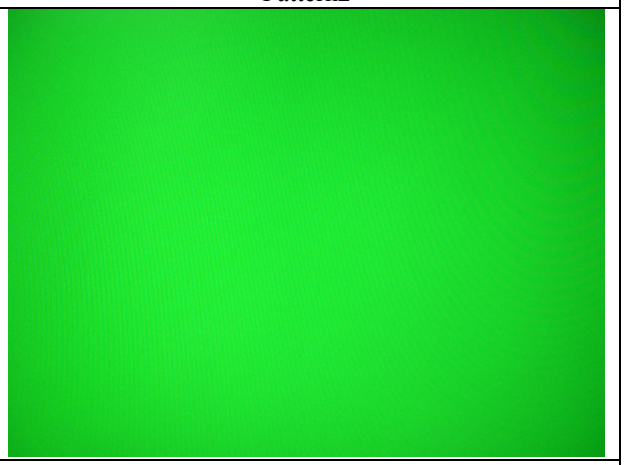
Pattern 1



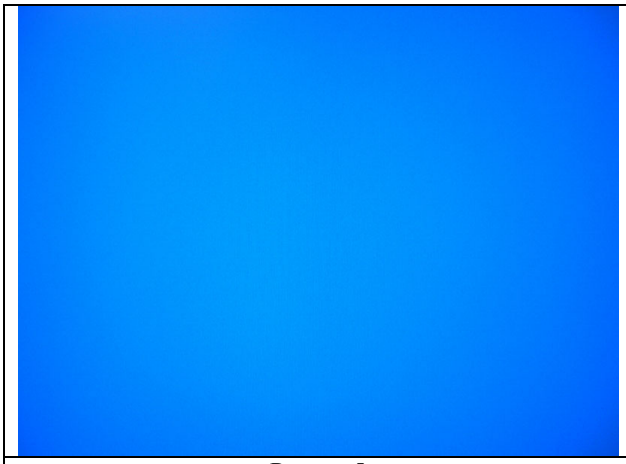
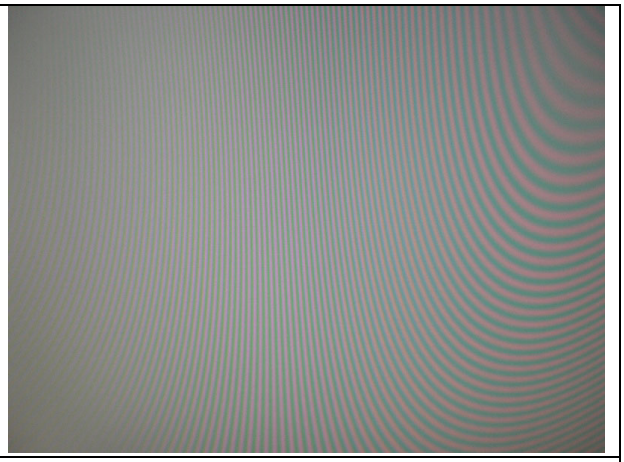
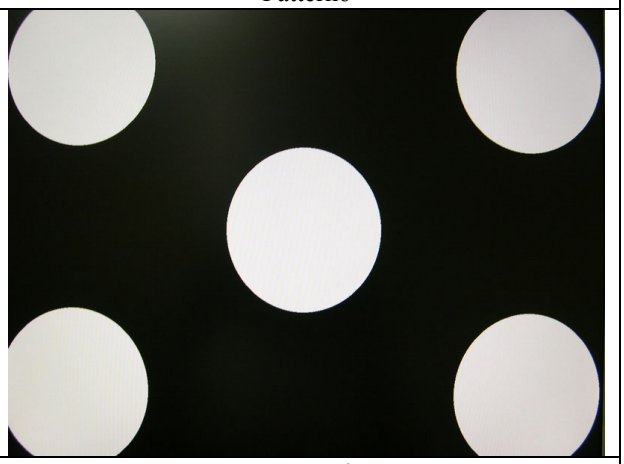
Pattern2



Pattern 3



Pattern4

	
Pattern 5	Pattern6
	
Pattern 7	Pattern 8
	
Pattern 9	

OSD Function Menu

A. When in Analog Input Mode

1. Main Menu

Press the [1] (Menu) button to enter the Main Menu:
Press the [▲] button to highlight the previous item or the [▼] button to highlight the next item.
Press the [1] (Menu) button to exit the Main Menu.

(1) Auto Image Adjust Page:

Press the [2] button to execute the auto image adjust function.
Press the [1] button to exit the page.

(2) Contrast/Brightness Page:

Press the [2] button to enter the contrast adjustment page.
Press the [1] button to exit the page.

1) Contrast Item

Press the [▲] button to increase the contrast.
Press the [▼] button to decrease the contrast.
Press the [2] button to enter the brightness adjustment page.
Press the [1] button to exit the page.

2) Brightness Item

Press the [▲] button to increase the brightness.
Press the [▼] button to decrease the brightness.
Press the [2] button to enter the contrast adjustment page.
Press the [1] button to exit the page.

(3) Input Select Page:

Press the [2] button to switch to digital input mode.

(4) Audio Adjust Page:

Press the [▲] button to increase the volume.
Press the [▼] button to decrease the volume.
Press the [2] button to enable or disable mute function .
Press the [1] button to exit the page.

(5) Color Adjust Page:

Press the [2] button to enter the color adjustment page.
Press the [1] button to exit the page.
Press the [▲] button to highlight the previous item or the [▼] button to highlight the next item.

1) sRGB Item
2) 9300K Item
3) 6500K Item
4) 5400K Item
5) 5000K Item

Press the [2] button to select the currently highlighted item.
Press the [1] button to exit the currently highlighted item.

6) User Color Item

Press the [2] button to enter the user color page.

Press the [1] button to exit the page.

Red, Green, Blue Options:

Press the [2] button to cycle among the colors.
Press the [1] button to exit the page.
Press the [▲] button to increase the selected color level.
Press the [▼] button to decrease the selected color level.

(6) Information Page:

Press the [2] button to enter the information page.
Press the [1] button to exit the information page.

(7) Manual Image Adjust Page:

Press the [2] button to enter the manual image adjustment page.
Press the [1] button to exit the page.
Press the [▲] button to highlight the previous item or the [▼] button to highlight the next item.

1) H./V. Position Item

Press the [2] button to enter the horizontal/vertical postion adjustment page.
Press the [1] button to exit the page.

a) Horizontal Position:

Press the [2] button to enter the vertical position adjustment page.
Press the [1] button to exit the page.
Press the [▲] button to shift the image to the right.
Press the [▼] button to shift the image to the left.

b) Vertical Position:

Press the [2] button to return to the horizontal position adjustment page.
Press the [1] button to exit the page.
Press the [▲] button to shift the image upward.
Press the [▼] button to shift the image downward.

2) Horizontal Size Item

Press the [2] button to enter the horizontal size adjustment page.
Press the [1] button to exit the page.
Press the [▲] button to make the image wider.
Press the [▼] button to make the image narrower.

3) Fine tune Item

Press the [2] button to enter the fine tuning page.
Press the [1] button to exit the page.
Press "[▲]" Button to adjust character position in one direction.
Press "[▼]"Button to adjust character position in the other direction.

4) Sharpness Item

Press the [2] button to enter the sharpness adjustment page.
Press the [1] button to exit the page.
Press "[▲]" Button to increase image sharpness.
Press "[▼]" Button to decrease image sharpness.

(8) Setup Menu Page:

Press the [2] button to enter the setup menu page.
Press the [1] button to exit the page.
Press the [▲] button to highlight the previous item or the [▼] button to highlight the next item.

1) Language Select Item

Press the [2] button to enter the language selection page.
Press the [1] button to exit the page.
Press the [▲] button to highlight the previous item or the [▼] button to highlight the next item.

English, French… Option

Press the [2] button to select the language.
Press the [1] button to exit the page.

2) Resolution Notice Item

Press the [2] button to enter the resolution notice page.
Press the [1] button to exit the page.

Enable, Disable Option

Press the [2] button to select the highlighted option.
Press the [1] button to exit the page.
Press the [▲] button to highlight the previous option or the [▼] button to highlight the next option.

3) OSD Position Item

Press the [2] button to enter the OSD position adjustment page.
Press the [1] button to exit the page.

a) Horizontal Position Option

Press the [2] button to enter the vertical position adjustment page.
Press the [1] button to exit the page.
Press the [▲] button to shift the menu to the right.
Press the [▼] button to shift the menu to the left.

b) Vertical Position Option:

Press the [2] button to enter the horizontal position adjustment page.
Press the [1] button to exit the page.
Press the [▲] button to shift the menu upward.
Press the [▼] button to shift the menu downward.

4) OSD Time Out Item

Press the [2] button to enter the OSD time out adjustment page.
Press the [1] button to exit the page.
Press the [▲] button to increase the OSD time out.
Press the [▼] button to decrease the OSD time out.

5) OSD Background Item

Press the [2] button to enter the OSD background selection page.
Press the [1] button to exit the page.

Enable, Disable Option

Press the [▲] button to highlight the previous option or the [▼] button to highlight the next option.
Press the [2] button to select the highlighted option.

Press the [1] button to exit the page.

(9) Memory Recall Page

Press the [2] button to execute the memory recall function.
Press the [1] button to exit the page.

2. Other Menu:

This "shortcut" menu is directly accessible without bringing up the OSD.

(1) Contrast Dialog

Press the [▲] or [▼] button to enter the Contrast Dialog.
Press the [1] button to exit the Contrast Dialog.
Press the [2] button to enter the Brightness Dialog.
Press the [▲] button to increase the contrast.
Press the [▼] button to decrease the contrast.

(2) Brightness Dialog

Press the [▲] or [▼] button to enter the Brightness Dialog.
Press the [1] button to exit the Brightness Dialog.
Press the [2] button to enter the Contrast Dialog.
Press the [▲] button to increase the brightness.
Press the [▼] button to decrease the brightness.

(3) Analog/Digital Dialog

Press the [2] button to toggle between analog and digital modes.

B. When in Digital Input Mode

1. Main Menu

Press the [1] (Menu) button to enter the Main Menu:
Press the [▲] button to highlight the previous item or the [▼] button to highlight the next item.
Press the [1] (Menu) button to exit the Main Menu.

(1) Auto Image Adjust Page:

Press the [2] button to execute the auto image adjust function.
Press the [1] button to exit the page.

(2) Contrast/Brightness Page:

Press the [2] button to enter the contrast adjustment page.
Press the [1] button to exit the page.

1) Contrast Item

Press the [▲] button to increase the contrast.
Press the [▼] button to decrease the contrast.
Press the [2] button to enter the brightness adjustment page.
Press the [1] button to exit the page.

2) Brightness Item

Press the [▲] button to increase the brightness.
Press the [▼] button to decrease the brightness.
Press the [2] button to enter the contrast adjustment page.
Press the [1] button to exit the page.

(3) Input Select Page:

Press the [2] button to switch to analog input mode.

(4) Audio Adjust Page:

Press the [▲] button to increase the volume.
Press the [▼] button to decrease the volume.
Press the [2] button to enable or disable mute function .
Press the [1] button to exit the page.

(4) Color Adjust Page:

Press the [2] button to enter the color adjustment page.
Press the [1] button to exit the page.
Press the [▲] button to highlight the previous item or the [▼] button to highlight the next item.

1) **sRGB Item**
2) **9300K Item**
3) **6500K Item**
4) **5400K Item**
5) **5000K Item**

Press the [2] button to select the currently highlighted item.
Press the [1] button to exit the currently highlighted item.

6) **User Color Item**

Press the [2] button to enter the user color page.
Press the [1] button to exit the page.
Red, Green, Blue Options:
Press the [2] button to cycle among the colors.
Press the [1] button to exit the page.
Press the [▲] button to increase the selected color level.
Press the [▼] button to decrease the selected color level.

(5) Information Page:

Press the [2] button to enter the information page.
Press the [1] button to exit the information page.

(6) Manual Image Adjust Page:

Press the [2] button to enter the manual image adjustment page.
Press the [1] button to exit the page.
Press the [▲] button to highlight the previous item or the [▼] button to highlight the next item.

1) **Sharpness Item**

Press the [2] button to enter the sharpness adjustment page.
Press the [1] button to exit the page.
Press "[▲]" Button to increase image sharpness.
Press "[▼]" Button to decrease image sharpness.

(7) Setup Menu Page:

Press the [2] button to enter the setup menu page.
Press the [1] button to exit the page.

Press the [▲] button to highlight the previous item or the [▼] button to highlight the next item.

1) **Language Select Item**
   Press the [2] button to enter the language selection page.
   Press the [1] button to exit the page.
   Press the [▲] button to highlight the previous item or the [▼] button to highlight the next item.
   English, French… Option
   Press the [2] button to select the language.
   Press the [1] button to exit the page.

2) **Resolution Notice Item**
   Press the [2] button to enter the resolution notice page.
   Press the [1] button to exit the page.
   Enable, Disable Option
   Press the [2] button to select the highlighted option.
   Press the [1] button to exit the page.
   Press the [▲] button to highlight the previous option or the [▼] button to highlight the next option.

3) **OSD Position Item**
   Press the [2] button to enter the OSD position adjustment page.
   Press the [1] button to exit the page.
   a) **Horizontal Position Option**
      Press the [2] button to enter the vertical position adjustment page.
      Press the [1] button to exit the page.
      Press the [▲] button to shift the menu to the right.
      Press the [▼] button to shift the menu to the left.

   b) **Vertical Position Option:**
      Press the [2] button to enter the horizontal position adjustment page.
      Press the [1] button to exit the page.
      Press the [▲] button to shift the menu upward.
      Press the [▼] button to shift the menu downward.

4) **OSD Time Out Item**
   Press the [2] button to enter the OSD time out adjustment page.
   Press the [1] button to exit the page.
   Press the [▲] button to increase the OSD time out.
   Press the [▼] button to decrease the OSD time out.

5) **OSD Background Item**
   Press the [2] button to enter the OSD background selection page.
   Press the [1] button to exit the page.
   Enable, Disable Option
   Press the [▲] button to highlight the previous option or the [▼] button to highlight the next option.
   Press the [2] button to select the highlighted option.
   Press the [1] button to exit the page.

(8) Memory Recall Page

Press the [2] button to execute the memory recall function.
Press the [1] button to exit the page.

2. Other Menu:

This "shortcut" menu is directly accessible without bringing up the OSD.

(1) Contrast Dialog

Press the [▲] or [▼] button to enter the Contrast Dialog.
Press the [1] button to exit the Contrast Dialog.
Press the [2] button to enter the Brightness Dialog.
Press the [▲] button to increase the contrast.
Press the [▼] button to decrease the contrast.

(2) Brightness Dialog

Press the [▲] or [▼] button to enter the Brightness Dialog.
Press the [1] button to exit the Brightness Dialog.
Press the [2] button to enter the Contrast Dialog.
Press the [▲] button to increase the brightness.
Press the [▼] button to decrease the brightness.

(3) Analog/Digital Dialog

Press the [2] button to toggle between analog and digital modes.

C. Other Information

When the "No Signal" or "Out of Range" messages appear:

If no input signal is detected, the "No Signal" message will appear in the center of the screen.
If the V-Sync signal rate is greater than than 85Hz or its resolution is greater than SXGA, the "Out of Range" message will appear in the center of the screen.

Activating Factory Mode and Burn Mode:

While the device is in standby, press the [2] button, then press the power button to enter Factory Mode. While Factory Mode is active, an additional menu page titled "Factory Menu" will be accessible. Press the [2] button to enter the Factory Menu page, then press the [2] button to enter Burn Mode.

When Installing a New Main Board

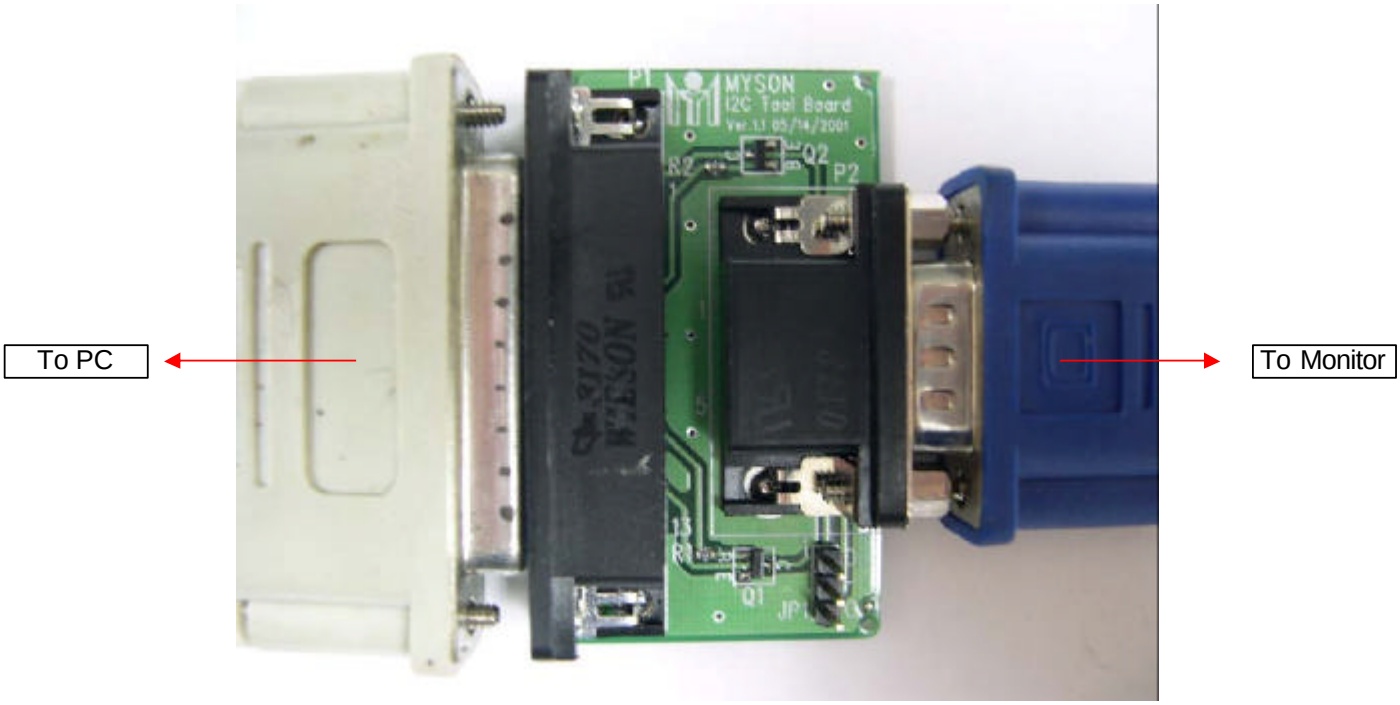
1. Enter Factory Mode.
2. Use a PC or chrom to send a 32-tone gray scale signal to the monitor.
3. Select "Auto Color"

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 :
   - VA912-4/VA912b-4/VA912-4U
   - PC (Personal computer)
   - LPT cable
   - Fixture (LM5ISP)
   - Firmware upgrade program
   -

2. Connection :



Appendix A : How to install the software for ISP :

0. 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

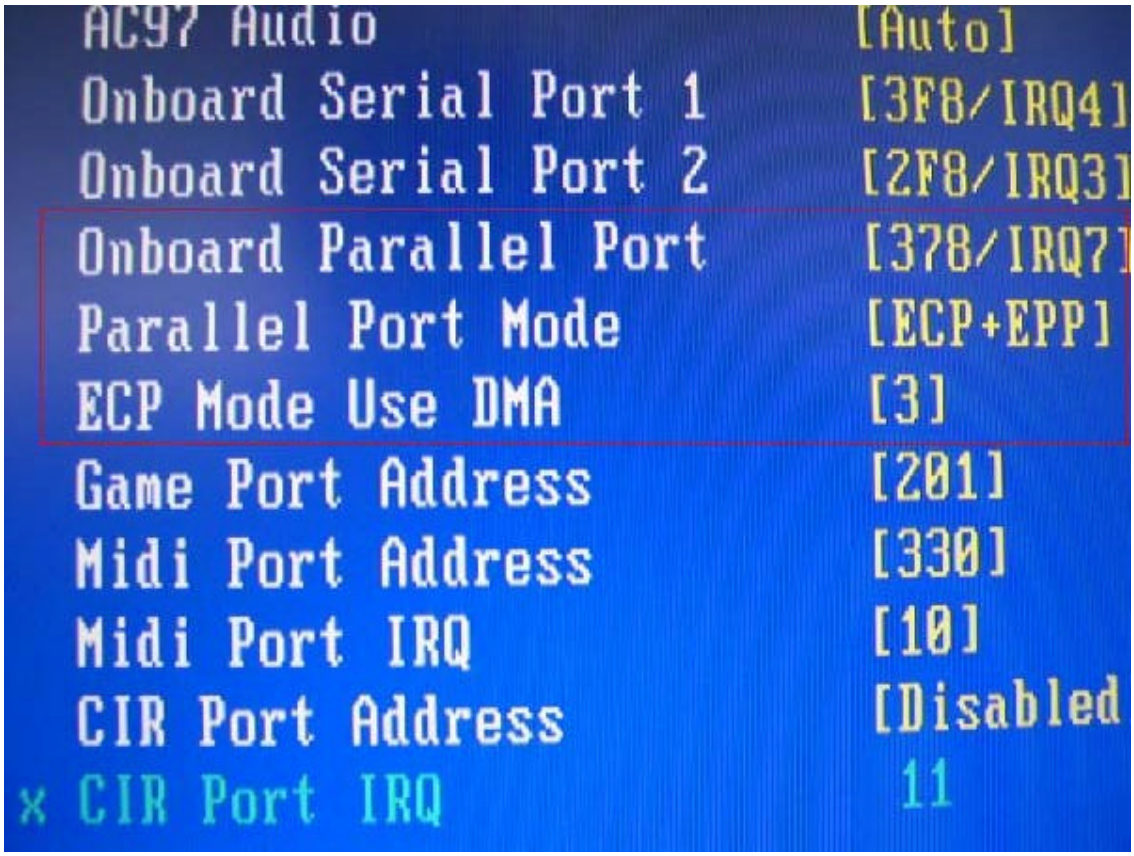


Fig 0.0

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

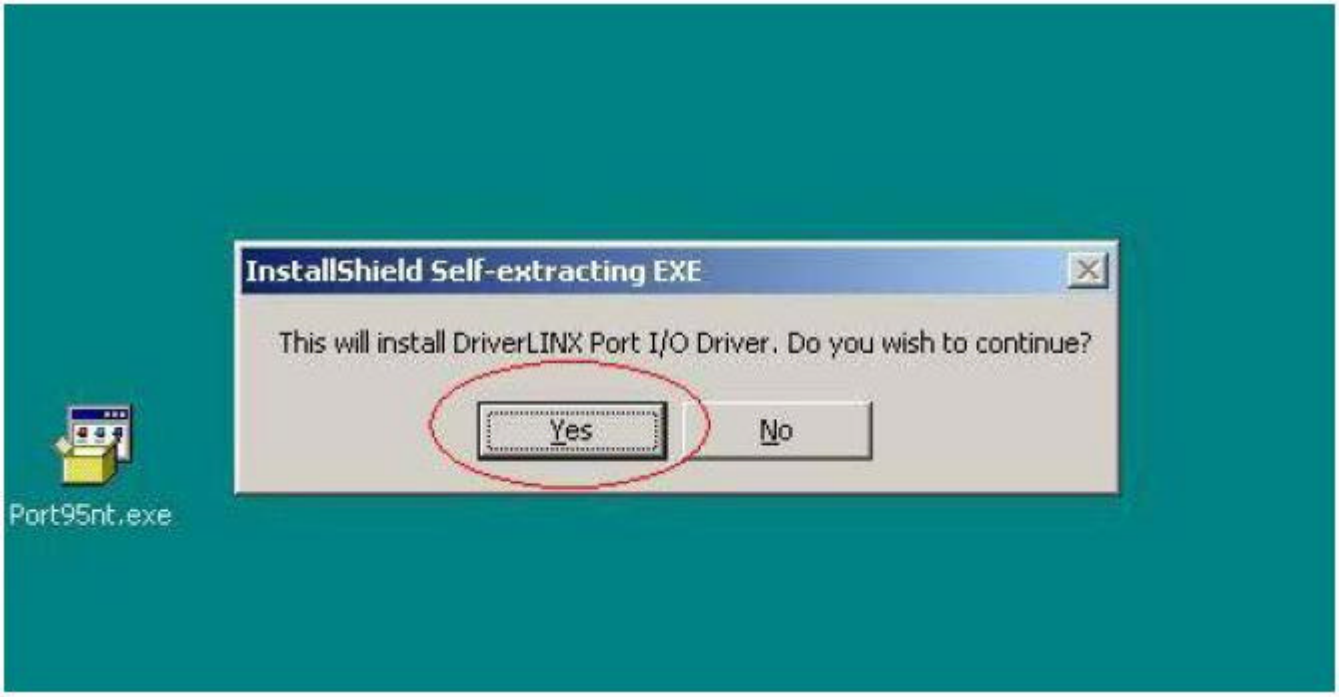


Fig 0.1

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

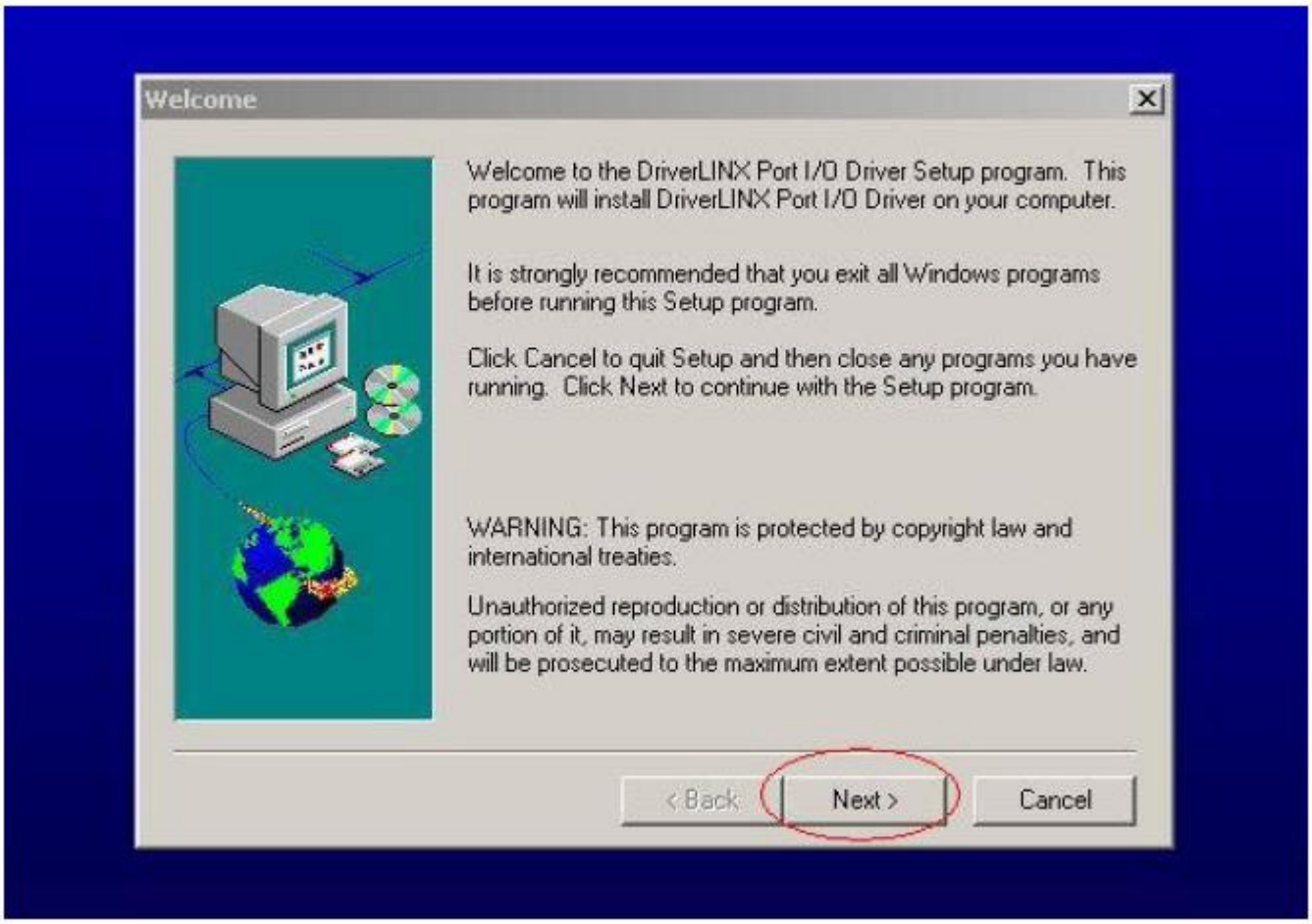


Fig. 0.2

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

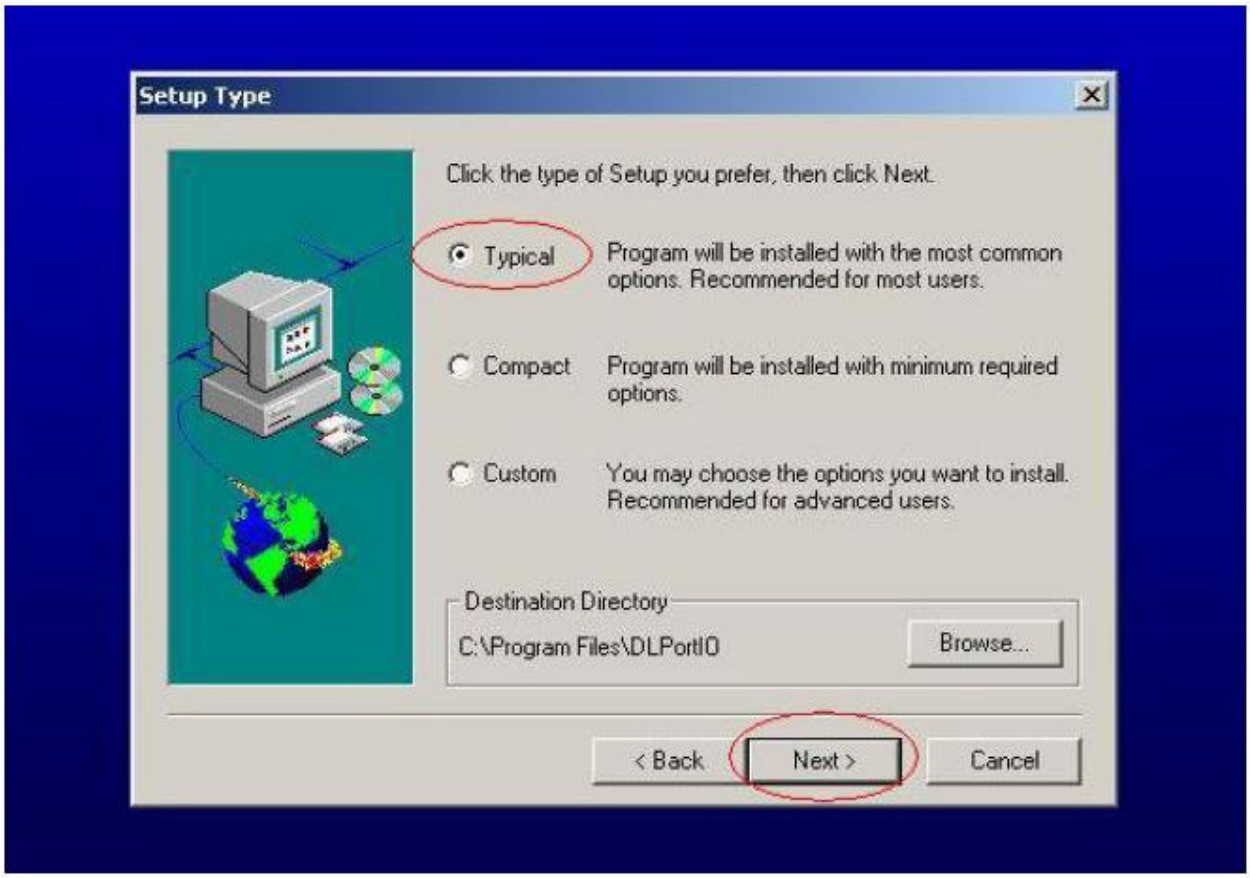


Fig. 0.3

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

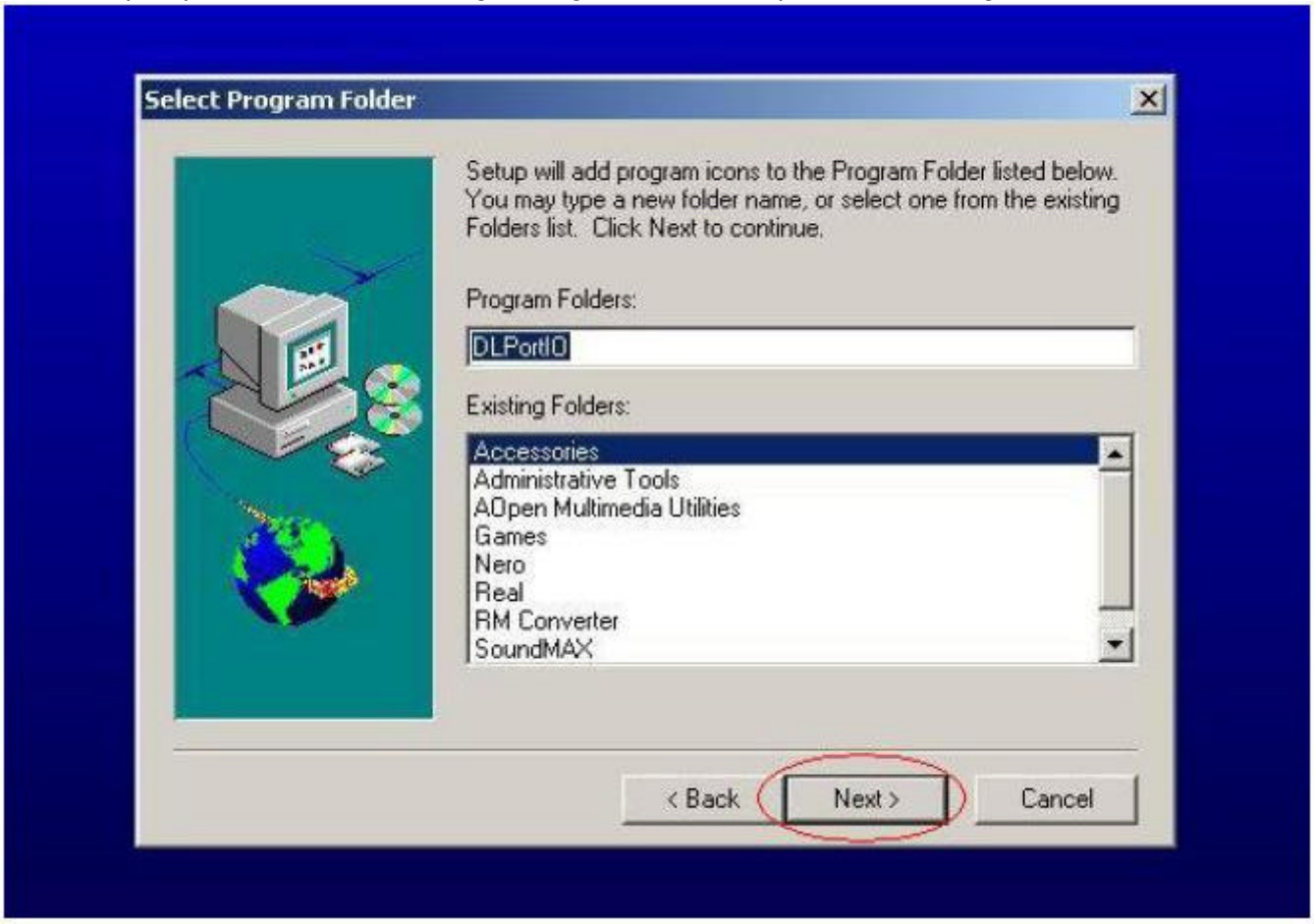


Fig. 0.4

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

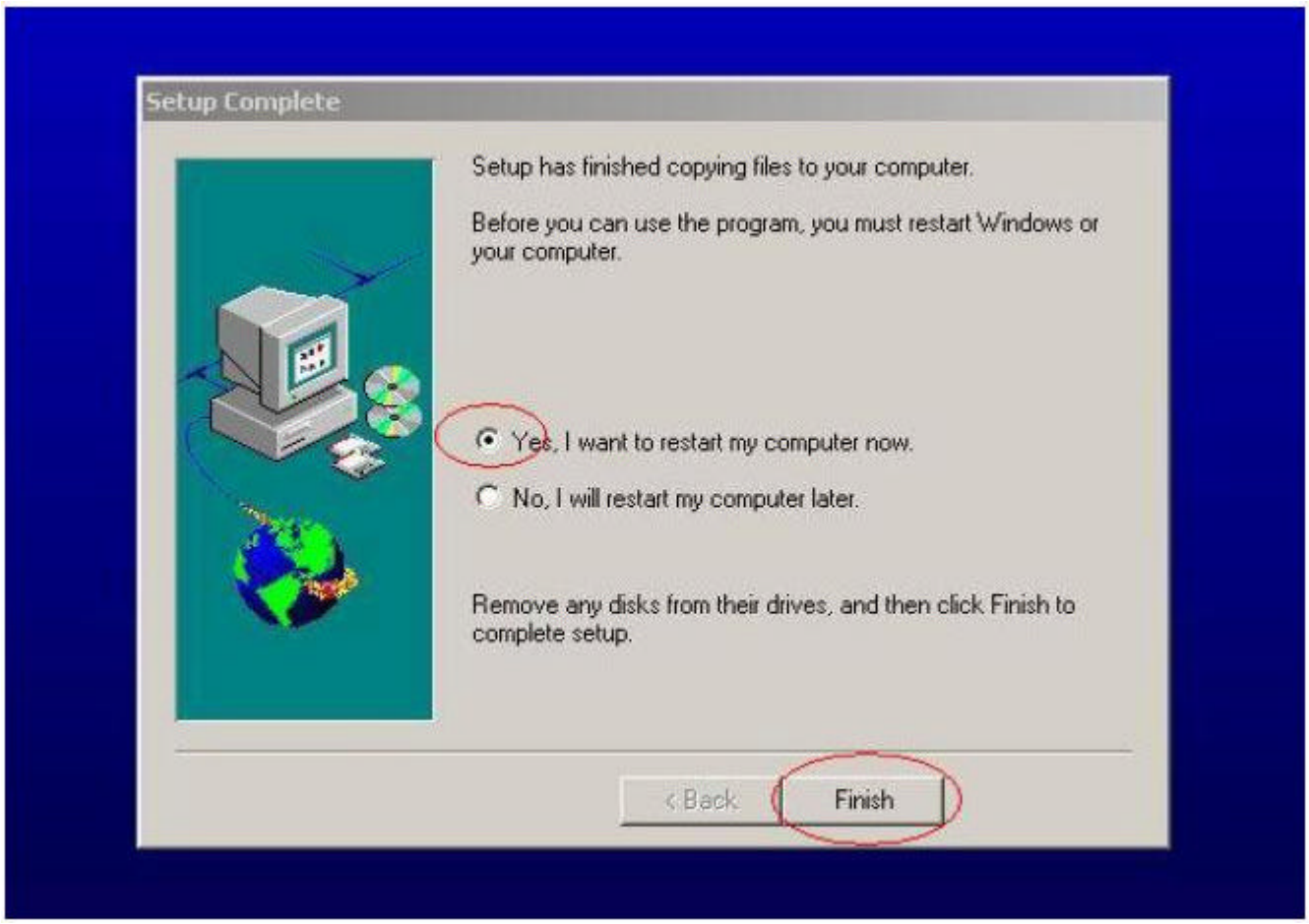


Fig. 0.5

1. Install ISP

1.1 User could download ISP driver and PORT95NT install from Myson Century website (www.myson.com.tw)

1.2 After extracting the ZIP file , the total files list as Fig 1.0 , and double click the file of setup.exe to install.

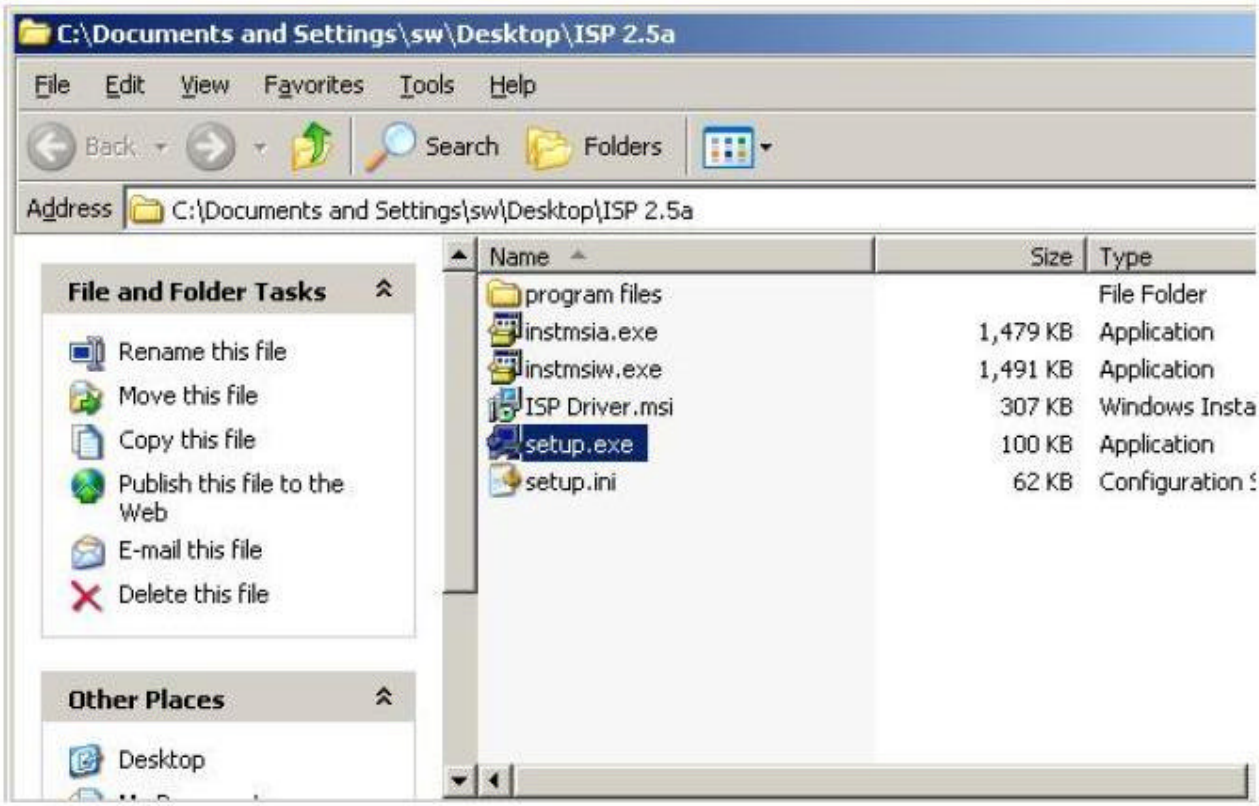


Fig 1.0

1.3 Press " Next " button to continue., see Fig 1.1

Fig 1.1

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

1.5 Press “ Install “ button to continue , see Fig 1.3

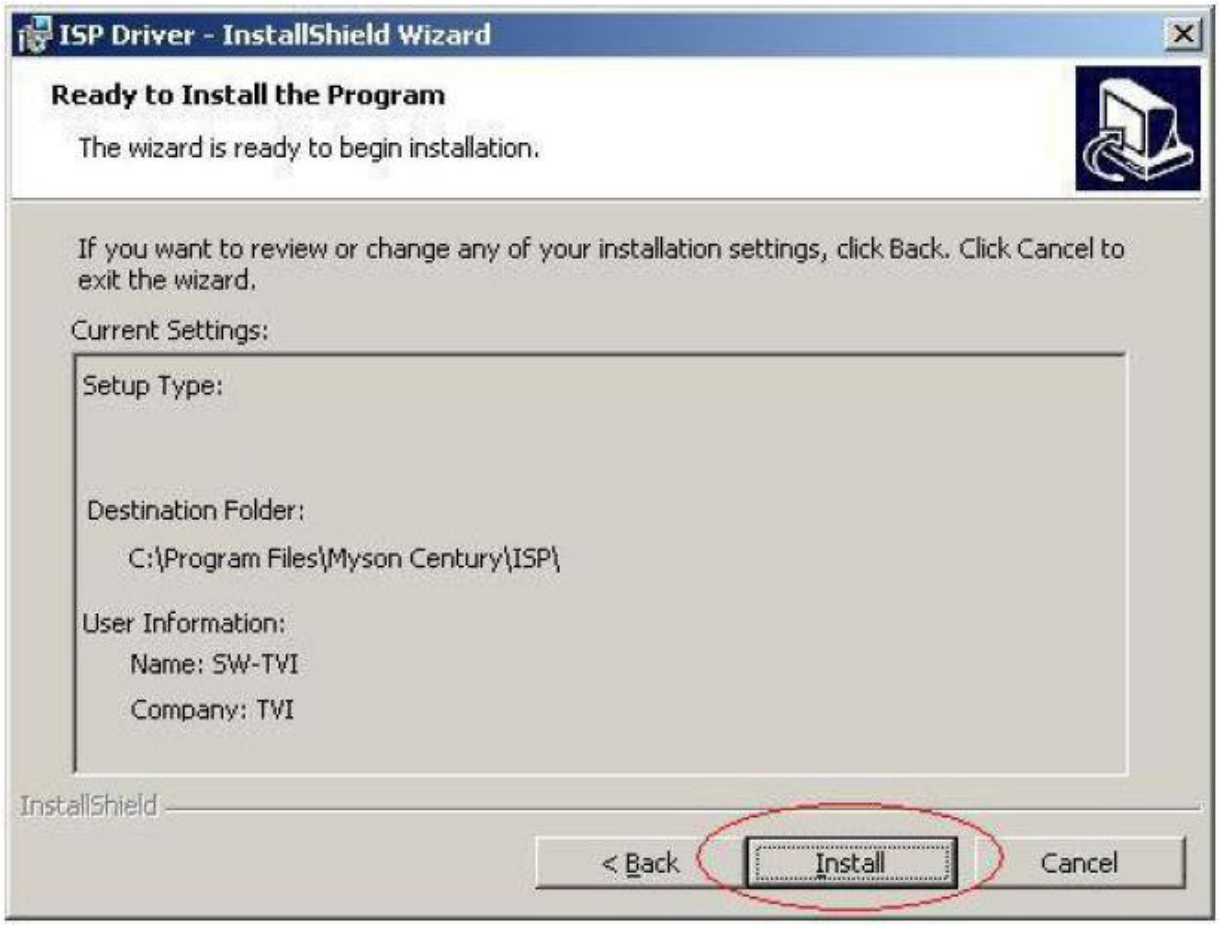


Fig. 1.3

1.6 Installation has finished , press “ Finish “ button , see Fig 1.4

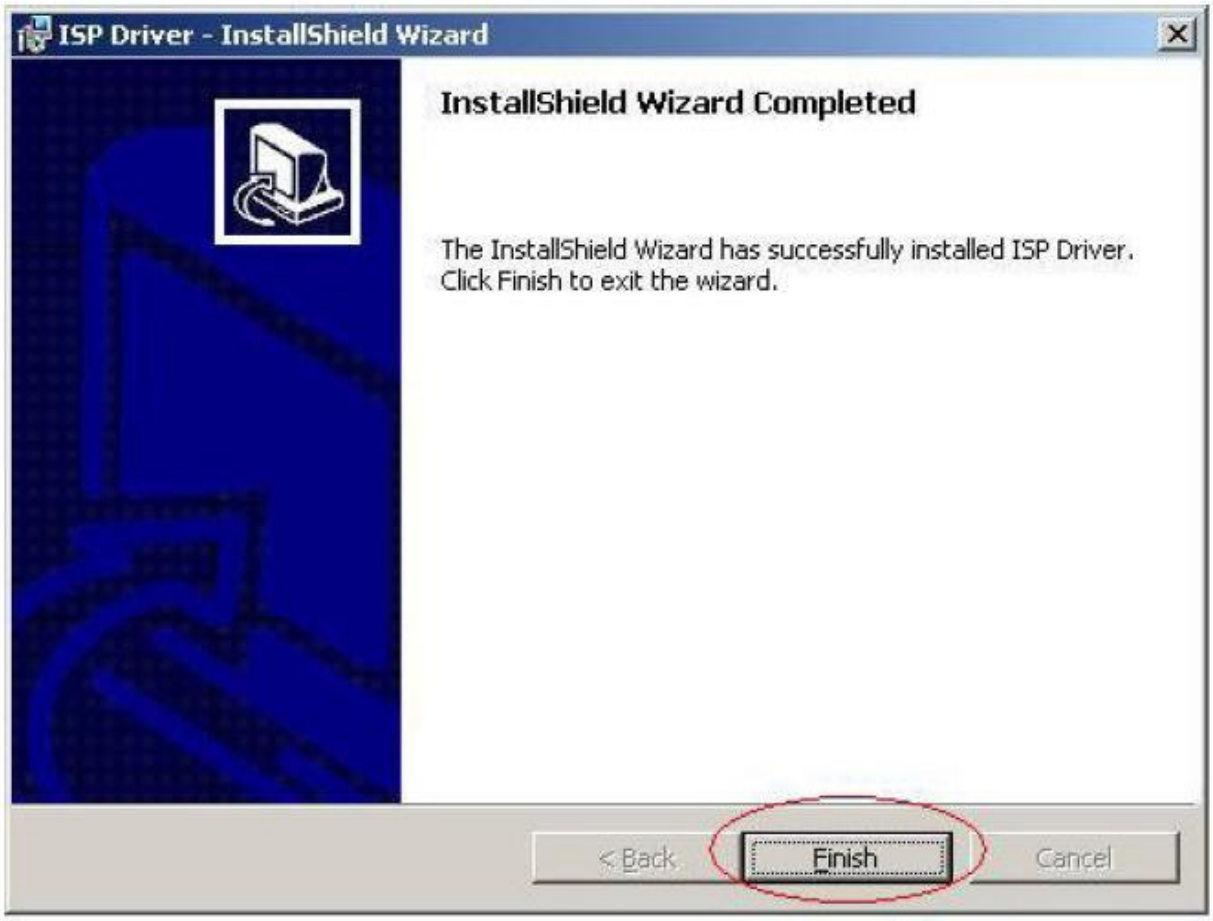


Fig. 1.4

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

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

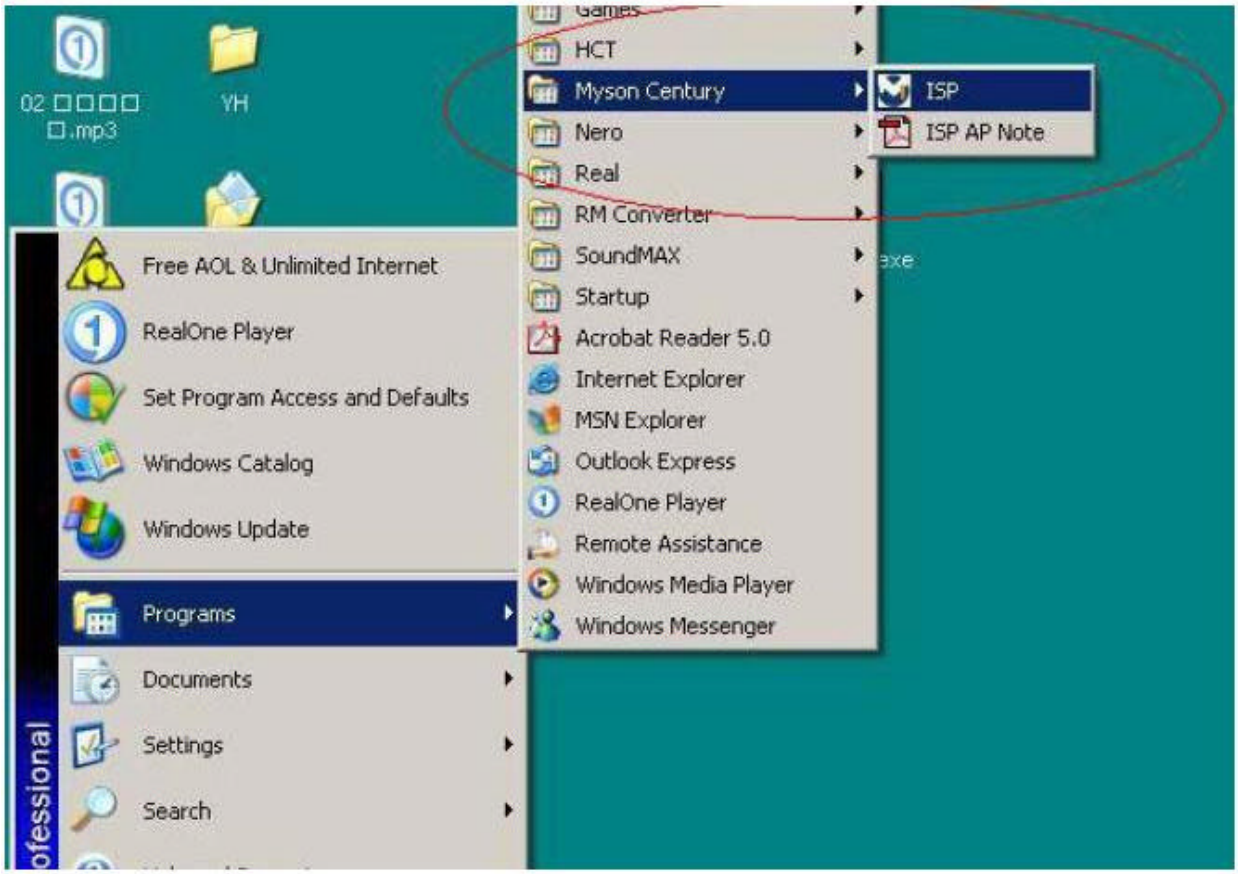


Fig. 2.1

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

Fig. 2.2

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

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

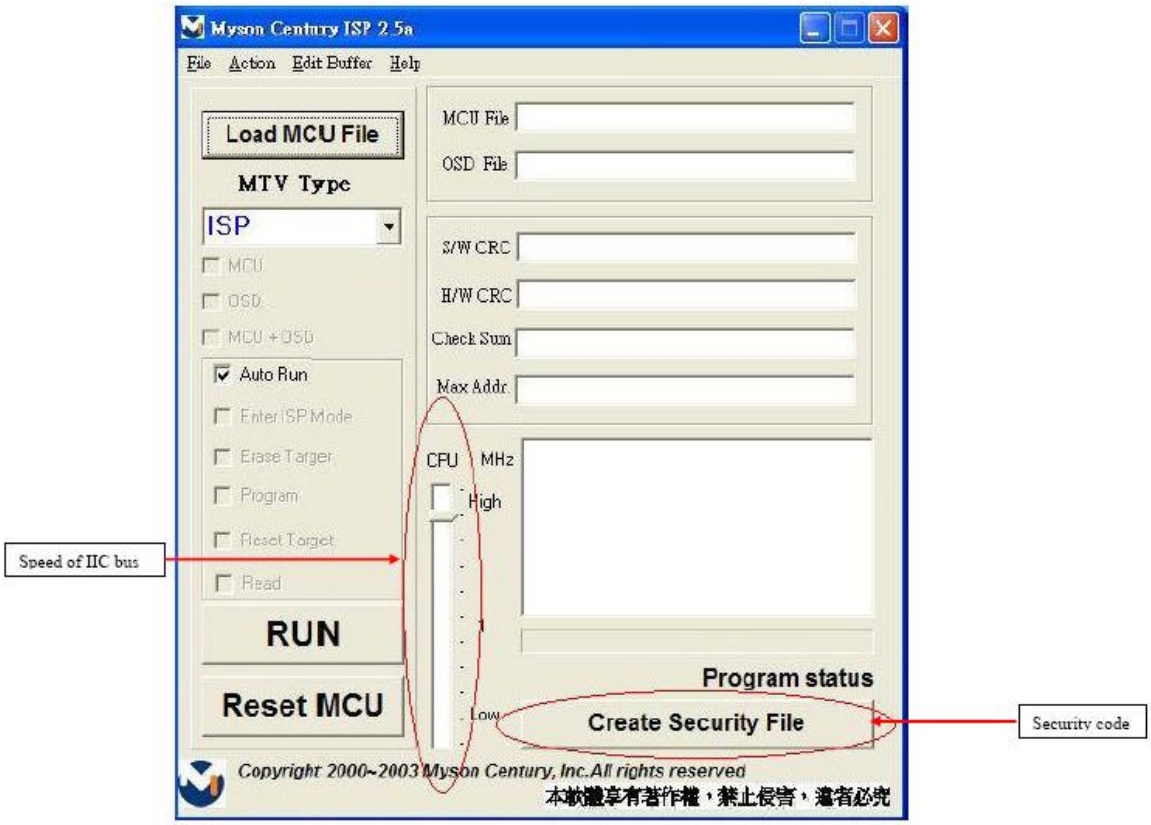


Fig. 2.4

2.5 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 .

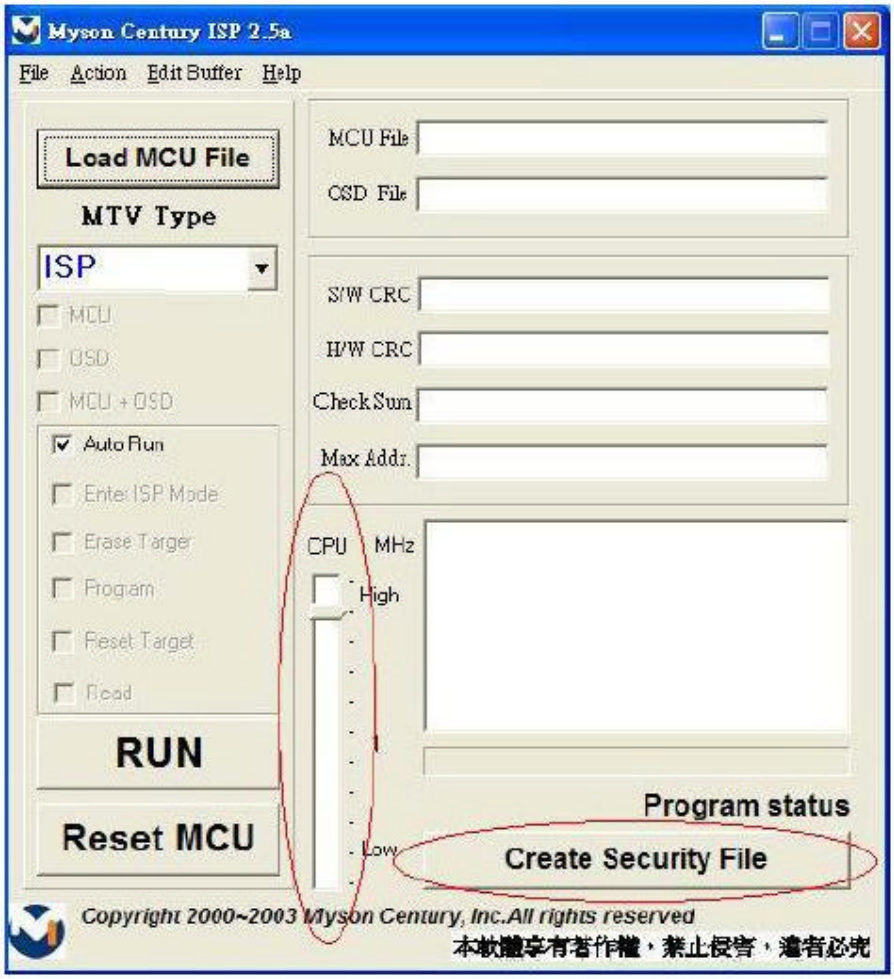


Fig. 2.5

Appendix C : Use ISP to program MCU

3.1 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

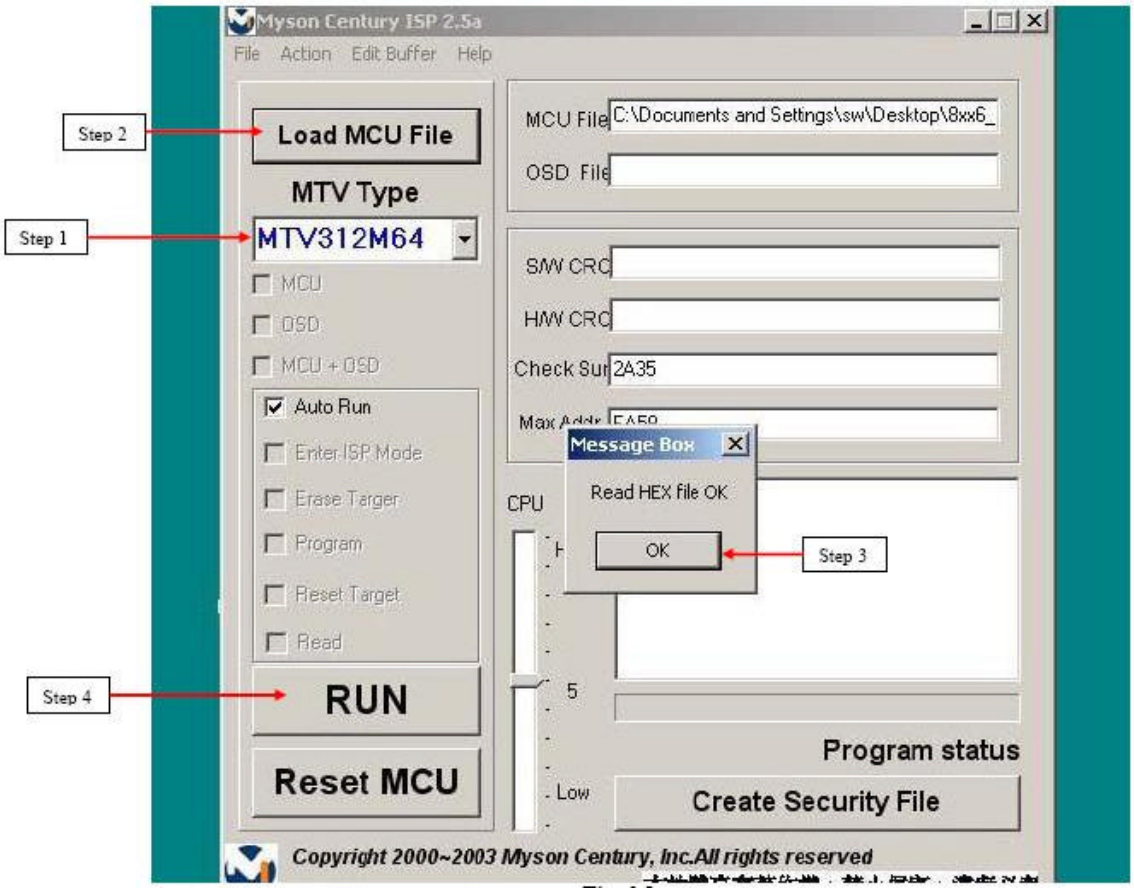


Fig. 3.1

3.2 If user change the MTV type , it must load file again , or the buffer of load file will be cleared .

3.3 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

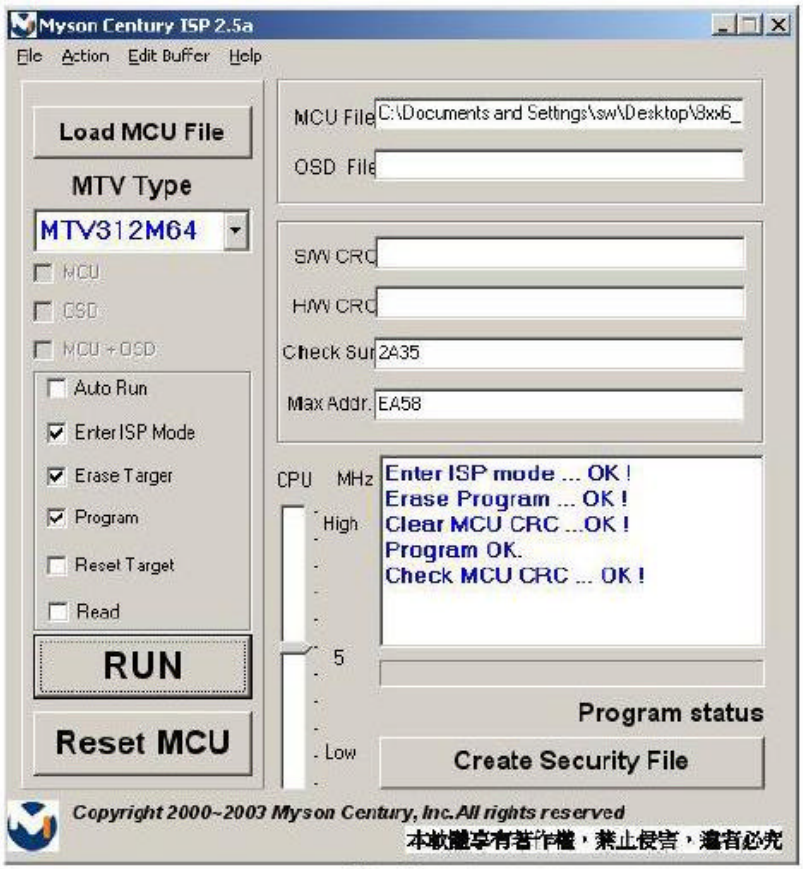
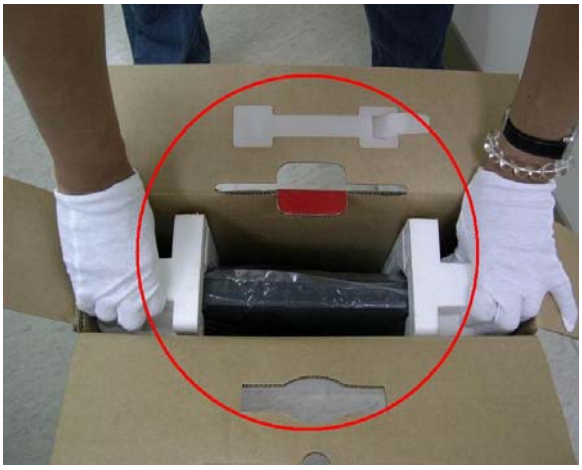
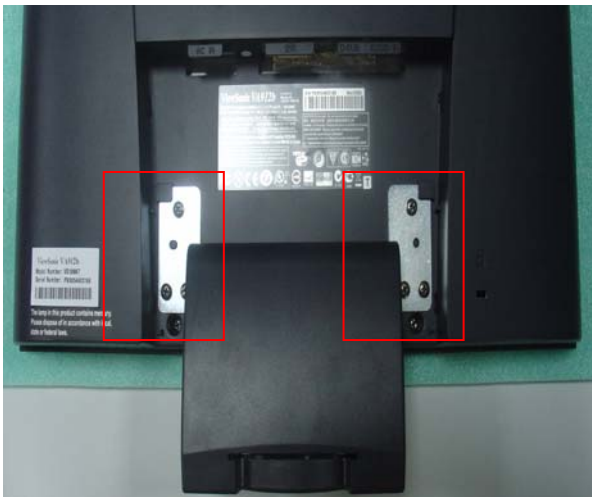


Fig. 3.2

VA912-4 series de-assembling procedure

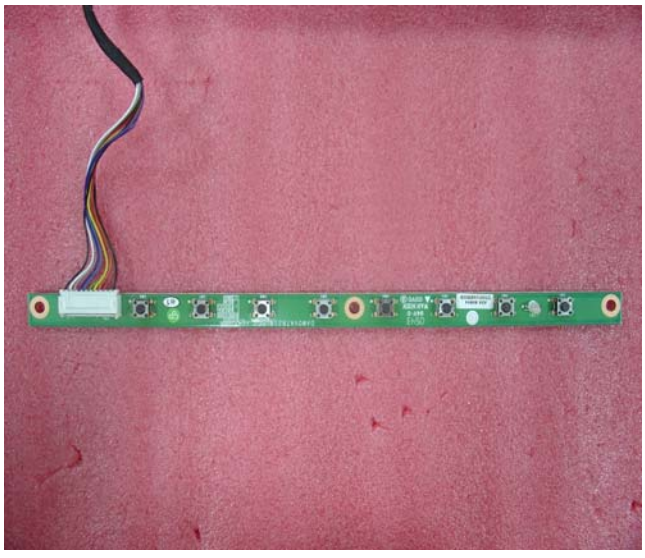
1. Move the monitor our from carton	2. Put the monitor on desk & face down
	

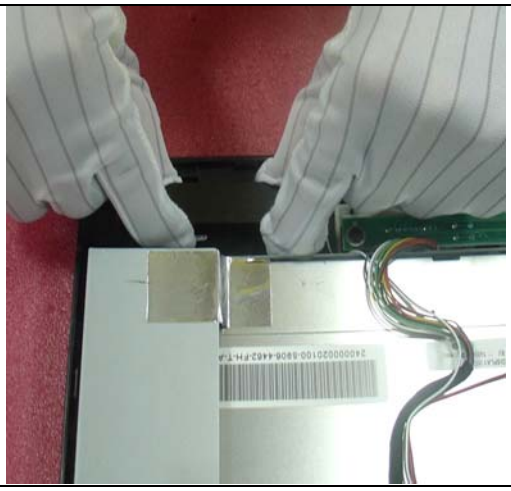
3. Remove the I/O cover	4. Loose the screws & remove the stand
	

5. Separate the hook by tool (coin or screw-driver)	6. Remove the bezel & cover & AL-Foil
	

7. Pull out the CCFL cables	8. Loose the shielding screw
	

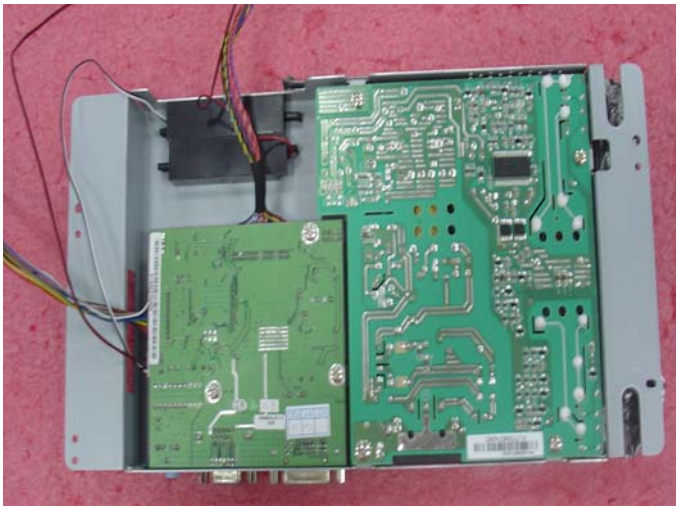
9. Tear off the yellow tape	10. Tear off the black tape
	

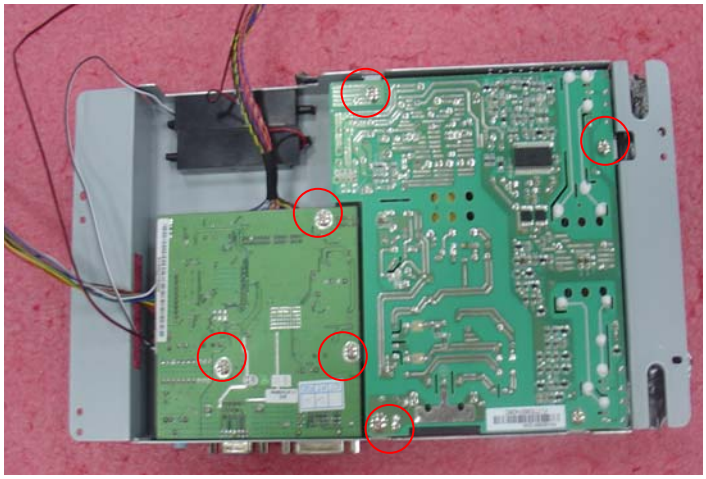
11. Loose the Button/B screw	12. Move the Button board
	
13. Remove the speaker	14. Remove the shielding

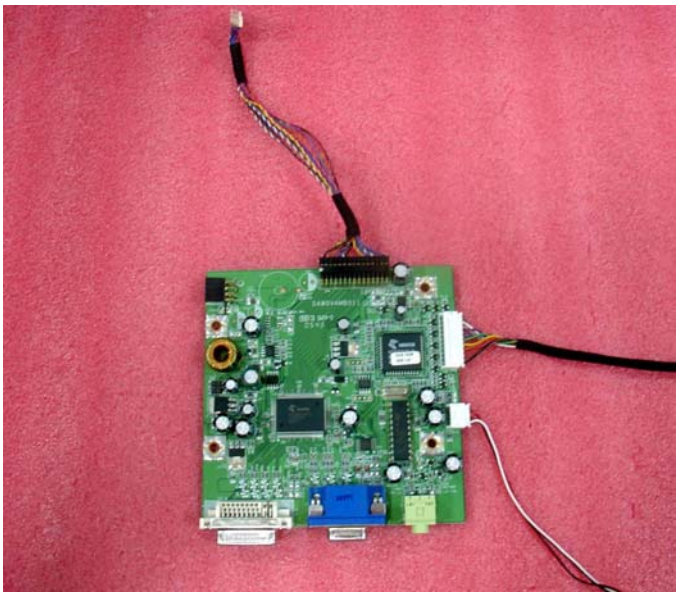


15. Remove the AL-foil	16.Remove the AL-Foil & black tape

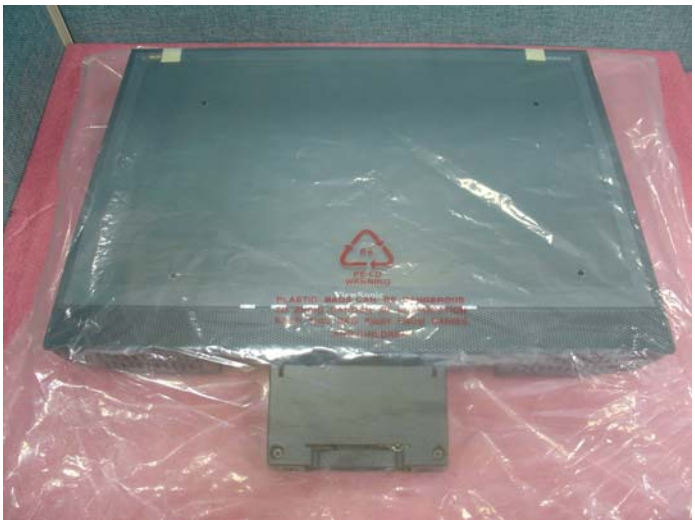
17. Loose the shield	18. Loose the bezel screw

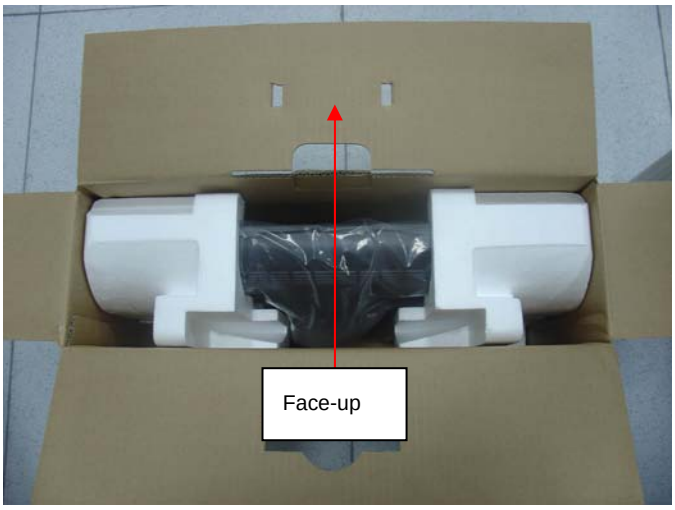


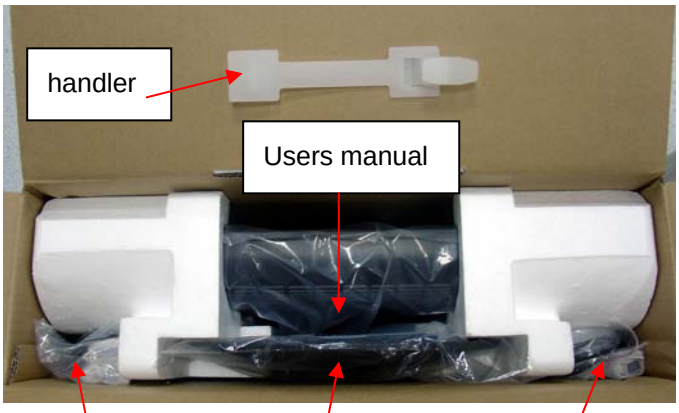
19. Loose the BKT screw L/R	20. Remove the PCBA & mylar
 	

21. Take out PCBA & remove the cables	
	

VA912-4 series packing method

1. Sticker on LCD protection film	2. Put the monitor into the PE or EPE bags
	

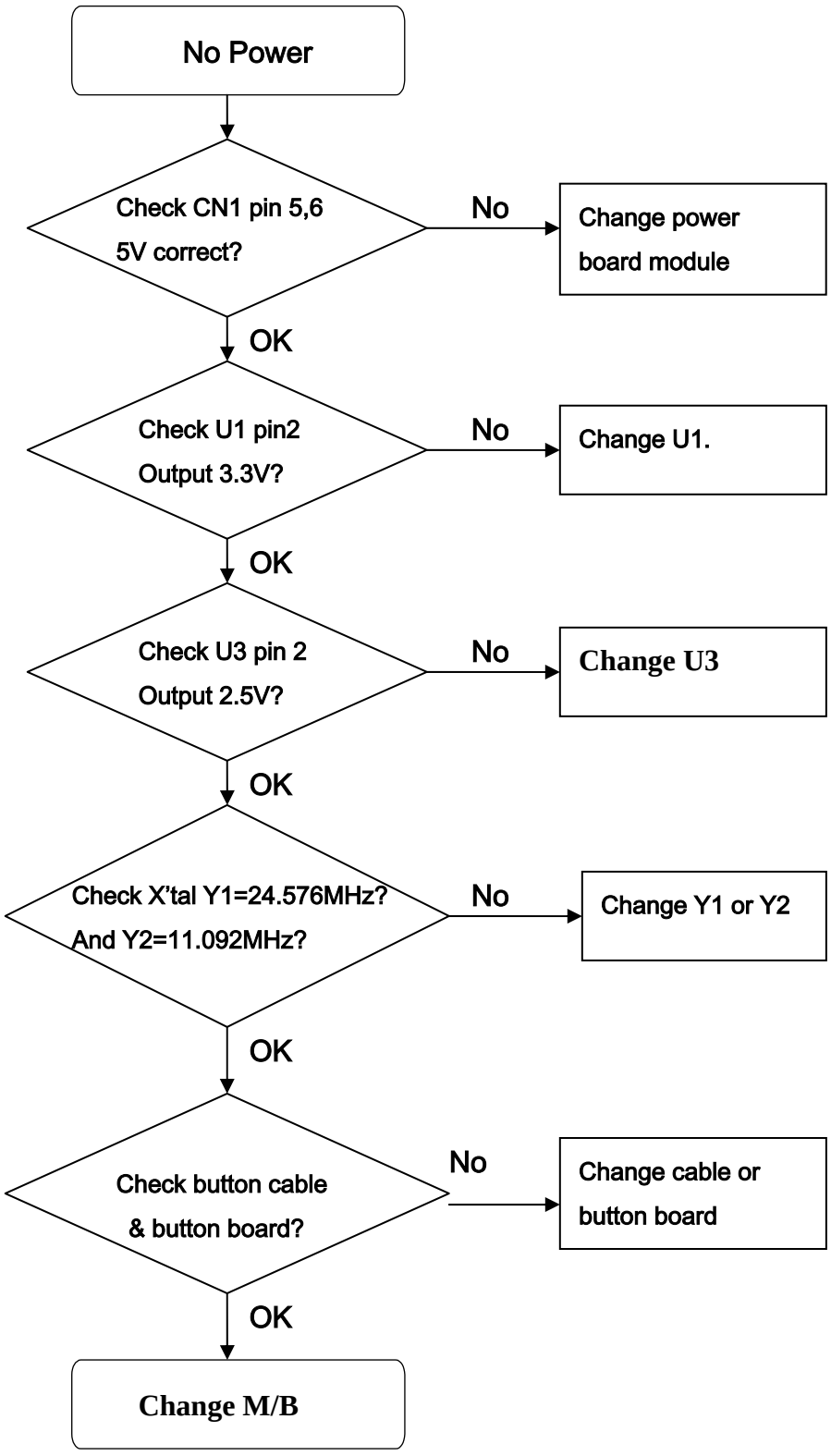
3. Put on the end-cap left / right	4. Put the monitor into carton
	

5. Put all accessories into carton	6. Seal the monitor
	

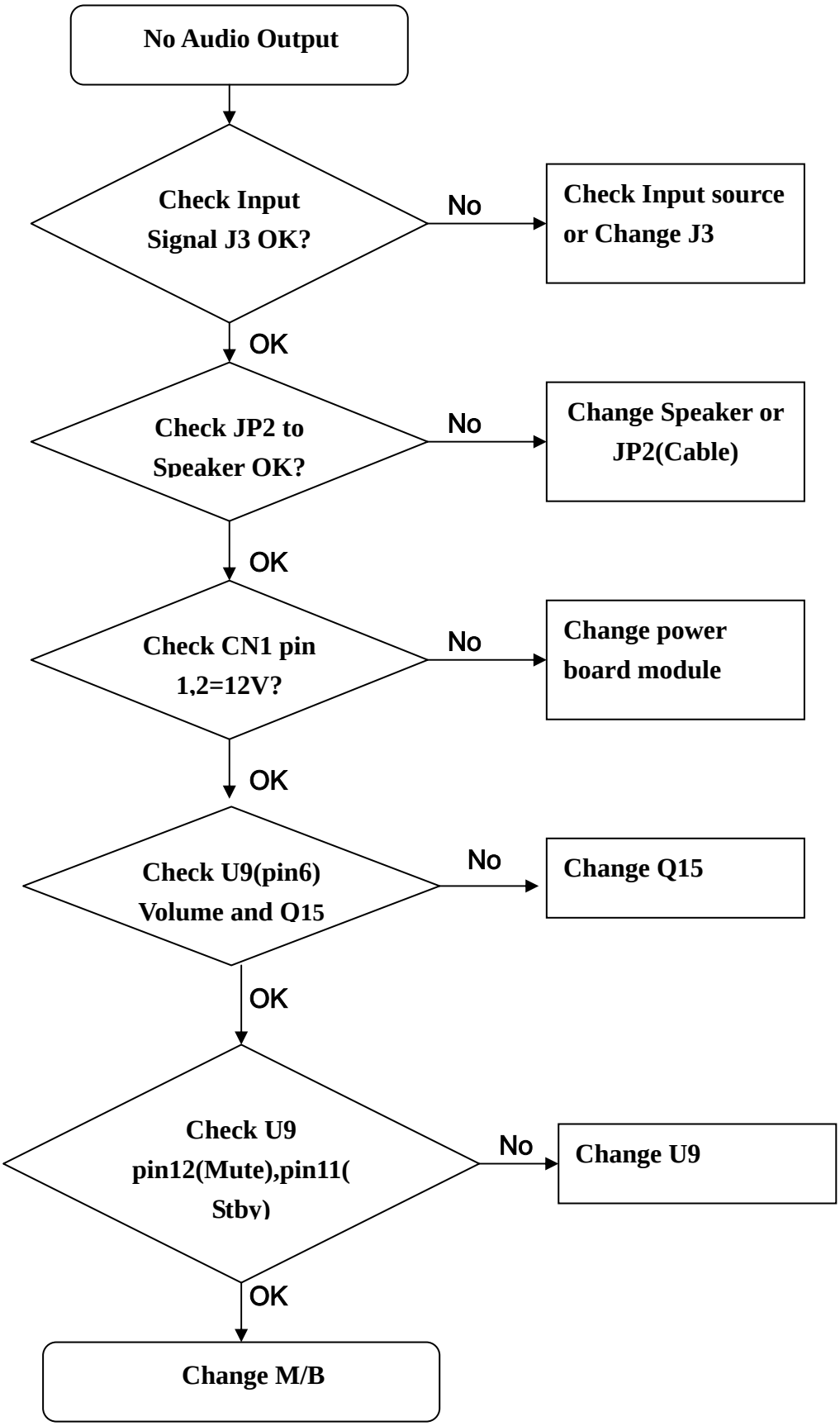
Power cable | Base | VGA & DVI cable

6. Troubleshooting

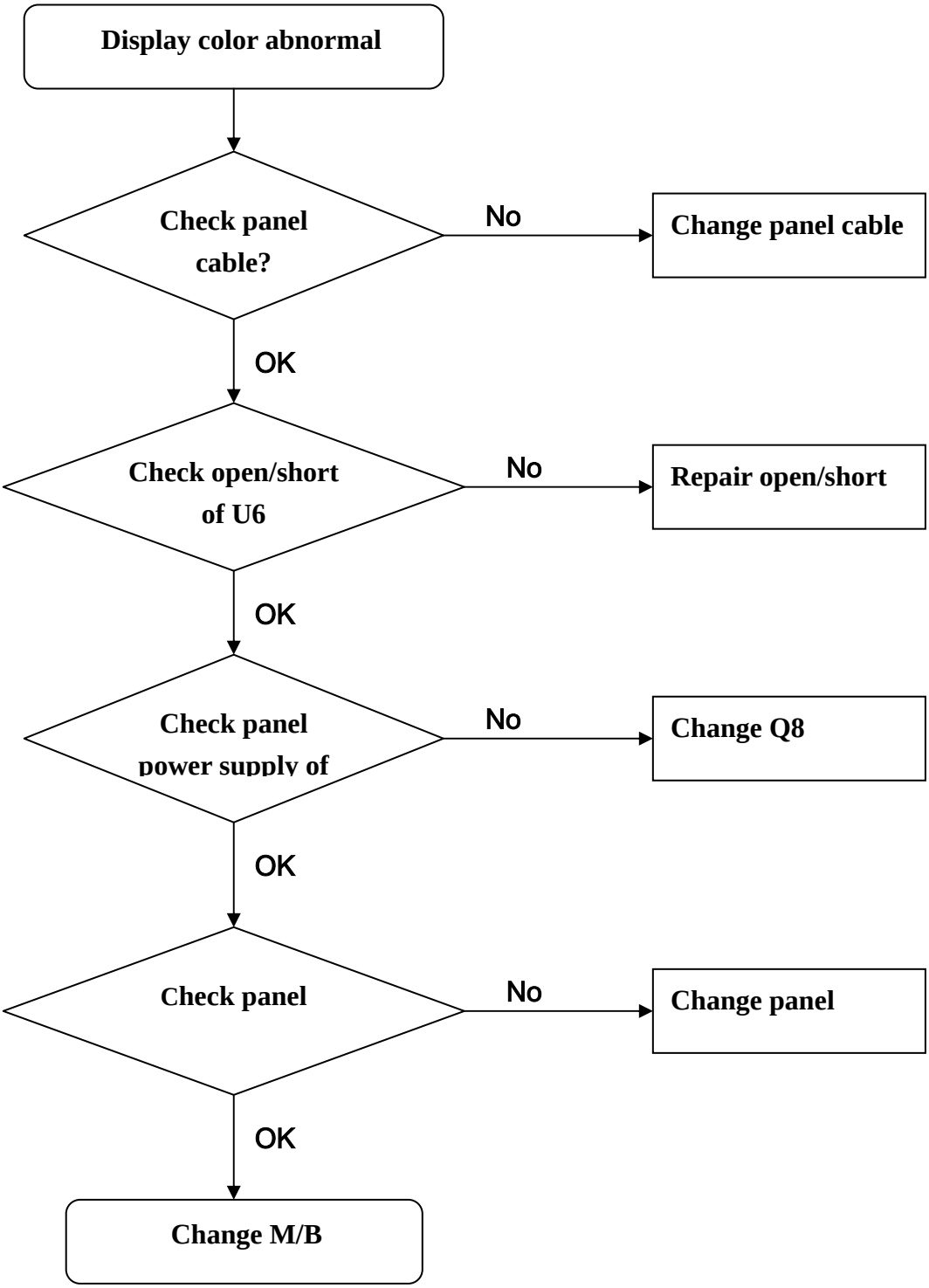
No power



No Audio


No Audio Output
Check Input Signal J3 OK?
No
Check Input source or Change J3
OK
Check JP2 to Speaker OK?
No
Change Speaker or JP2(Cable)
OK
Check CN1 pin 1,2=12V?
No
Change power board module
OK
Check U9(pin6) Volume and Q15
No
Change Q15
OK
Check U9 pin12(Mute),pin11(Stby)
No
Change U9
OK
Change M/B

Display color abnormal:



7. Recommended Spare Parts List

RECOMMENDED SPARE PARTS LIST (VA912-4)

ViewSonic Model Number: VS10867-1`

Rev: 1a

Serial No. Prefix: PW7

Item	Description		ECR/ECN	ViewSonic P/N	Ref. P/N	Location	Universal number#	Q'ty
1	**Accessories:**	Power cable		A-00003642	DM33T181004	Power cable		1
2	**Board Assembly:**	Power board		B-00003993	AS05B312D00	Power board		1
3		Main Board		B-00004169	21L9TAMB090	Main board		1
4		Button board		B-00004170	23L9VABB003	Button board		1
5	**Cabinets:**	Front bezel assy		C-00004171	24L9VALB012	front bezel ass'y		1
6		Base Assembly		C-00004147	38W0VABS010	base assy		1
7		Back Cover Assembly		C-00004172	25L9VALC010	back cover		1
8	**Cables:**	Cable MB-LCD		CB-00002525	DD0L9VLC015	Cable MB-LCD		1
9		Audio cable		CB-00004149	DD0L0TPC007	Audio cable		1
10		VGA cable		CB-00002602	DDL7VDPC005	VGA cable		1
11		Cable MB-BB		CB-00004173	DDL9VABU001	Cable MB-BB		1
12	**Documentation:**	User manual + CD wizard		DC-00004174	HFL9VA02013	User manual		1
13	**Electronic**	19" HSD TFT LCD panel		E-00004175	AA90ME13006	LCD panel (2nd source)		1
14	**Components:**	19" HSD TFT LCD panel		E-00004176	AA90ME13014	LCD panel		1
15		Speaker assy		E-00004177	DN0TE200F00	speaker assy		1
16	**Hardware:**	Screw M3.0*4.0-I(NI) GP		M-SCW-0824-6802	MM30040IBJ9	Screw		8
17		Screw M3.0*6, B(NI) GP		M-SCW-0824-0814	MM30060BBJ3	Screw		6
18		Screw F4.0*14-I(BNI) GP		HW-00004157	MF40140IJ29	Screw		7
19	**Miscellaneous:**	LCD film		M-MS-0808-9682	JXL9V001010	LCD FILM		1
20	**Packing Material:**	EPE bags		M-MS-0808-9158	HAL7V002019	EPE bags		1
21		Carton		P-00004178	HFL9VA02013	carton		1
22		End cap (L)		P-00004179	HBL9VA01013	cushion		1
23		End cap (R)		P-00004180	HBL9VA02010	cushion		1
24	**Plastics:**	Stand assy		PL-00004163	26W0VASA016	Stand ASSY		1

RECOMMENDED SPARE PARTS LIST (VA912b-4)

ViewSonic Model Number: VS10867-1W

Rev: 1a

Serial No. Prefix: PW8

Item	Description		ECR/ECN	ViewSonic P/N	Ref. P/N	Location	Universal number#	Q'ty
1	**Accessories:**	Power cable		A-00003642	DM33T181004	Power cable		1
2	**Board Assembly:**	Power board		B-00003993	AS05B312D00	Power board		1
3		Main Board		B-00004169	21L9TAMB090	Main board		1
4		Button board		B-00004170	23L9VABB003	Button board		1
5	**Cabinets:**	Front bezel assy		C-00004181	24L9VALB004	front bezel ass'y		**1**
6		Base Assy		C-00004165	38W0VABS001	base assy		1
7		Back Cover Assy		C-00004182	25L9VALC001	back cover		**1**
8	**Cables:**	Cable MB-LCD		CB-00002525	DD0L9VLC015	Cable MB-LCD		1
9		Audio cable		CB-00004149	DD0L0TPC007	Audio cable		1
10		VGA cable		CB-00002602	DDL7VDPC005	VGA cable		1
11		Cable MB-BB		CB-00004173	DDL9VABU001	Cable MB-BB		1
12	**Documentation:**	User manual + CD wizard		DC-00004174	HFL9VA02013	User manual		1
13	**Electronic**	19" HSD TFT LCD panel		E-00004175	AA90ME13006	LCD panel (2nd source)		1
14	**Components:**	19" HSD TFT LCD panel		E-00004176	AA90ME13014	LCD panel		1
15		Speaker assy		E-00004177	DN0TE200F00	speaker assy		1
16	**Hardware:**	Screw M3.0*4.0-I(NI) GP		M-SCW-0824-6802	MM30040IBJ9	Screw		8
17		Screw M3.0*6, B(NI) GP		M-SCW-0824-0814	MM30060BBJ3	Screw		6
18		Screw F4.0*14-I(BNI) GP		HW-00004157	MF40140IJ29	Screw		7
19	**Miscellaneous:**	LCD film		M-MS-0808-9682	JXL9V001010	LCD FILM		1
20	**Packing Material:**	PE bags		P-00004159	HAL0T002019	PE bags		**1**
21		Carton		P-00004183	HFL9VA01017	carton		**1**
22		End cap (L)		P-00004179	HBL9VA01013	cushion		1
23		End cap (R)		P-00004180	HBL9VA02010	cushion		1
24	**Plastics:**	Stand assy		PL-00004168	26W0VASA008	Stand ASSY		1

BOM LIST (VA912-4)

ViewSonic Model Number: VS10867-1W

Rev: 1a

Serial No. Prefix: PW7

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
1	#N/A	1L9VAZXVS09	L9VA LCD MONITOR(USA) GP			
2	B-00004169	21L9TAMB090	L9TA M/B ASSY(RTD2523-LF) GP			1
3	#N/A	31L9TASS079	L9TA M/B S/S ASSY(RTD2523-LF) GP			1
4	#N/A	CC62204MD23	CAP EC 22U 25V(+-20%,105C,5*11,2KHR)GP	C34,C46,C50,C53,C59,C84,EC2,EC3,EC5,EC6		10
5	#N/A	CC71004MD68	CAP EC 100U 25V(+-20%,105C,6*11,LESR) GP	C70		1
6	#N/A	CC73303MD51	CAP EC 330U 16V(+-20%,105C,8*11,2KH)GP	C6,C91,C93,C97,C99,EC1		6
7	#N/A	BG611059327	XTAL DIP 11.0592MHZ(+-30PPM,49/US) GP	Y2		1
8	#N/A	BG624576104	XTAL DIP 24.576MHZ(+-30PPM,49/S) GP	Y1		1
9	#N/A	AL007496D29	IC(20P) UTC TDA7496LK(DIP) GP	U9		1
10	#N/A	DFPJ05FR153	CONN DIP PHONE JACK 5P FR(H10)248C GP	J3		1
11	#N/A	DFHD04MR132	CONN DIP HEADER 4P 1R MR(P2.0,H4.1) GP	JP2		1
12	#N/A	DFHD10MR324	CONN DIP HEADER 10P 1R MR(P2.0,H4.1) GP	CN6		1
13	#N/A	DFHD30MR267	CONN DIP HEADER 30P 2R MR(P2.0,H4.0) GP	CN5		1
14	#N/A	DFHD08FR102	CONN DIP HEADER 8P 2R FR(P2.54,H5.0) GP	CN1		1
15	#N/A	DFDS15FR076	CONN D-SUB 15P 3R FR(P1.15,H12.55) GP	CN2		1
16	#N/A	DFDI24FR108	CONN DIP DVI 24P 3R FR(P1.905,H10.04) GP	CN4		1
17	B-00004170	23L9VABB003	L9VA BUTTON/B ASSY GP			1
18	#N/A	DAL9VATB115	PCB(BUTTON)L9VA TB(1L,204*16,REVA) GP			1
19	#N/A	BEYG0014DA0	LED(DIP) YELLOW/GREEN(L-3WYGW-F01) GP	LED1		1
20	#N/A	DFHD10MR324	CONN DIP HEADER 10P 1R MR(P2.0,H4.1) GP	CN1		1
21	PL-BT-0706-0127	DHP0002B108	SWITCH PUSH BUTTON(PT-002-B1,50MA,12V)GP	SW1,SW2,SW3,SW4,SW5,SW6		6
22	B-00003993	AS05B312D00	ADP/INV,FSP043-2PI01 90~264V GP			1
23	C-00004181	24L9VALB004	L9VA LCD BEZEL ASSY GP			1
24	#N/A	34L9VALB004	L9VA LCD BEZEL SUB ASSY GP			1
25	#N/A	36L9VAPS001	L9VA PCB SHIELDING ASSY GP			1
26	#N/A	FAL9VA01012	LCD BKT-L L9VA(FAL9VA01,REV3A) GP			1
27	#N/A	FAL9VA02019	LCD BKT-R L9VA(FAL9VA02,REV3A) GP			1
28	#N/A	FCL7B001018	POWER BOARD MYLAR			1
29	#N/A	FCM7T004014	AL FOIL M7T(FCM7T004,REV3A) GP			3
30	M-SCW-0824-6802	MM30040IBJ9	SCREW M3.0*4.0-I(NI) GP			8
31	M-SCW-0824-0814	MM30060BBJ3	SCREW M3.0*6,B(NI) GP			6
32	M-MS-0808-8986	MBLI1004018	IO NUT LI1(MBLI1004,REV3A)			4
33	#N/A	MS35080B456	SCREW F3.5*8-B(NI)(WASHER)GP			1
34	CB-00002525	DD0L9VLC015	CABLE MB-LCD(30P,140MM)L9V-5 GP			1
35	CB-00004152	DD0L9VLC023	CABLE LVDS(30P,140MM,LINKTEC,AU)L9VA GP			1
36	CB-00004173	DDL9VABU001	CABLE MB-BUTTON(10P/10P,280MM)L9VA GP			1
37	E-00004177	DN0TE200F00	SPEAK ASSY L9VA FG-TE200 1.5W*2 GP			1
38	#N/A	FCL5M005011	AL FOIL(PANEL) L5M(FCL5M005,REV 3A)			2
39	M-MS-0808-9247	EBL70023013	WIRE MOUNTS L70L-E(EBL70023,REV3A) GP			1
40	#N/A	GAL7TA01016	RUBBER FOOT L7TA(GAL7TA01,REV3A)			2
41	#N/A	25L9VALC001	L9VA LCD COVER ASSY GP			1
42	#N/A	EAL9VA02019	LCD COVER L9VA(EAL9VA02,REV3A) GP			1
43	#N/A	FBL9VA01013	HINGE-PLATE L9VA(FBL9VA01,REV3A) GP			1
44	M-MS-0808-9411	FBL70008014	LOCK METAL L70B(FBL70008,REV3A) GP			1
45	PL-00004168	26W0VASA008	W0VA STAND ASSY GP			1
46	#N/A	EAW0VA03011	STAND-FRONT W0VA(EAW0VA03,REV3A)GP			1
47	#N/A	EAW0VA05013	STAND-BACK W0VA(EAW0VA05,REV4A)GP			1
48	#N/A	FAW0VA04017	HINGE ASSY W0VA(FAW0VA04,REV3A)GP			1
49	#N/A	FBW0VA02015	CONTACT-PLATE W0VA(FBW0VA02,REV3A)GP			1
50	HW-00004157	MF40140IJ29	SCREW F4.0*14-I(BNI) GP			7
51	#N/A	DDL9TATH107	CABLE STAND-HINGE(1P,150MM) GP			1
52	M-SCW-0824-6895	MF40080IBJ1	SCREW F4.0*8-I(NI)GP			1
53	#N/A	27L9VACS001	L9VA CHASSIS ASSY GP			1
54	#N/A	EBL9VA02010	HINGE COVER L9VA(EBL9VA02,REV3A) GP			1
55	#N/A	GAW0VA02014	RUBBER PLUG VESA (GAW0VA02,R3A)GRAY GP			4
56	M-SCW-0824-6797	MF40080BJ29	SCREW F4.0*8-B(BNI) GP			2
57	#N/A	MM40100BL61	SCREW M4*10.0-B(BNI,NYLOK) GP			6
58	#N/A	2AL9VAPTU02	L9VA PANEL KIT ASSY(HSD 8MS) GP			1
59	E-00004175	AA90ME13006	LCD(TFT) HSD190ME13-A02(8MS)GP			1
60	E-00004176	AA90ME13014	LCD(TFT)19" HSD190ME13-A03 GP			1
61	#N/A	AZL9VA0U001	L9VA SW BIOS IMAGE (W/AUDIO) FOR HSD			1
62	#N/A	28L9VAPK008	L9VA PACKING ASSY GP			1
63	C-00004165	38W0VABS001	W0VA BASE SUB ASSY GP			1
64	CB-00002602	DDL7VDPC005	CABLE MB-VGA (15/15P,1.8M)L7VD GP			1
65	CB-00003440	DD0L0TTH108	CABLE ASSY L0T MB-DVI(24P,REV2A) GP			1
66	CB-00004149	DD0L0TPC007	CABLE AUDIO(ST,1.8M)BLACK L0T GP			1
67	P-00004179	HBL9VA01013	END CAP-L L9VA(HBL9VA01,REV3A) GP			1
68	P-00004180	HBL9VA02010	END CAP-R L9VA(HBL9VA02,REV3A) GP			1
69	M-LB-0813-0747	HCL7V004013	CORE LABEL(HCL7V004,REV3A)			1

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
70	#N/A	HCL9VA01014	ID LABEL L9VA(HCL9VA01,REV3A) GP			1
71	M-LB-0813-0745	HCL7V002011	SERIAL LEBAL L7V(HCL7V002,REV3A) GP			1
72	#N/A	HCL9VA02011	CARTON LABEL(4) L9VA(HCL9VA02,R3A) GP			1
73	P-00004183	HFL9VA01017	CARTON L9VA(HFL9VA01,REV3A) GP			1
74	#N/A	HGL9VA01018	CD+QSG L9VA(HGL9VA01,REV3A) GP			1
75	#N/A	JXLM5003011	HANDLE LM5S(JXLM5003,REV 3B) GP			1
76	M-MS-0808-9682	JXL9V001010	LCD FILM L9V(JXL9V001,REV3A) GP			1
77	M-LB-0813-1043	HCL70021011	HI-POT LABEL L70L(HCL70021,REV3A)			1
78	#N/A	HFL9T002018	SPACE PLATE L9T(HFL9T002,REV3A)			0.027
79	P-00004159	HAL0T002019	PE BAG L0T(HAL0T002,REV3A)			1
80	#N/A	HDL7VC01019	SERVICR PAPER L7VC(HDL7VC01,REV3A) GP			1
81	DC-00003536	HCL9V009011	HG LABEL L9VD(HCL9V009,REV3A)			1
82	A-PC-0106-0224	DM333181G97	POWER CORD 3P 1.8M(USA)V04VS350012180 GP			1

BOM LIST (VA912b-4)

ViewSonic Model Number: VS10867-1W

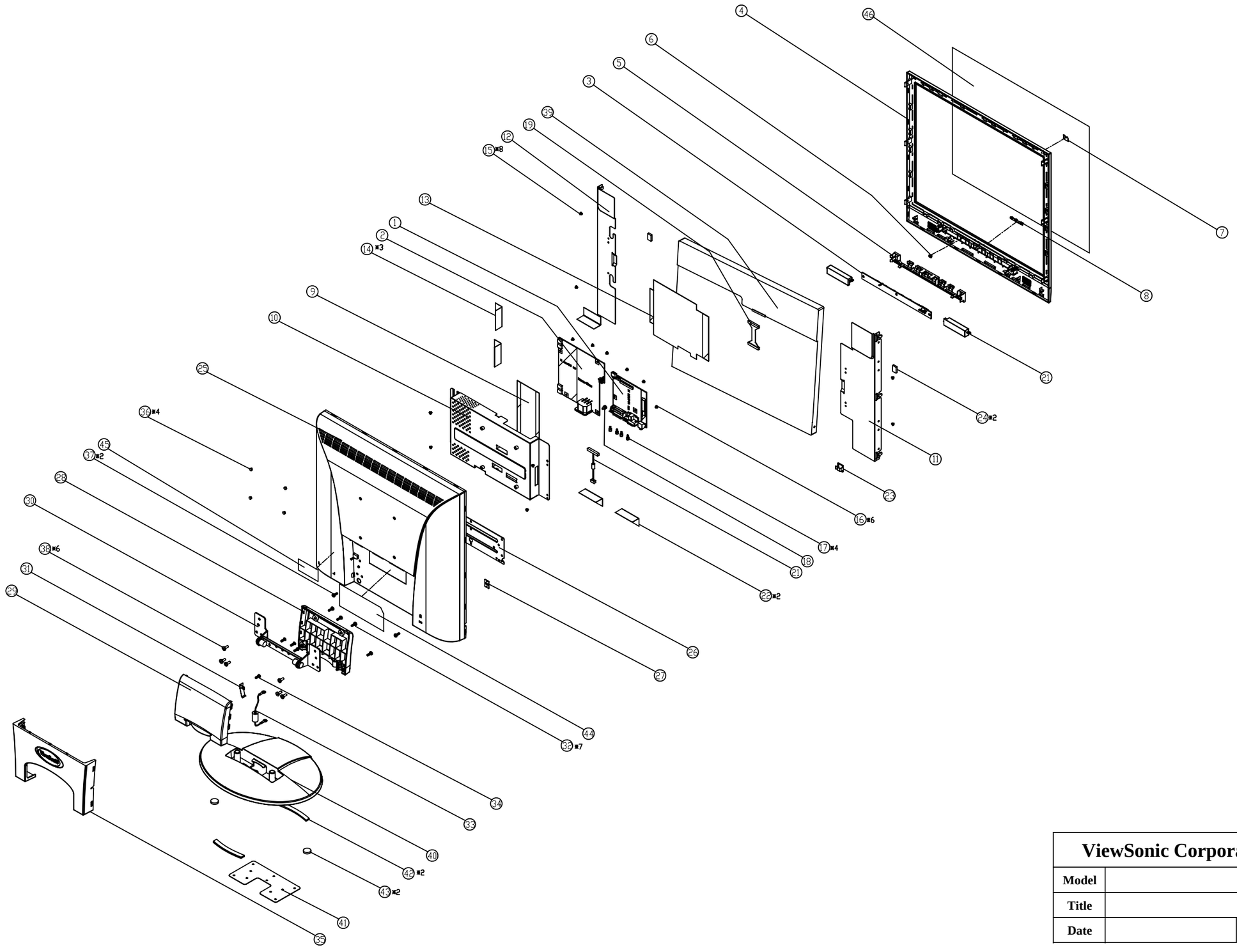
Rev: 1a

Serial No. Prefix: PW8

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
1	#N/A	1L9VAZXVS92	L9VA LCD MONITOR(TWN)S/B GP			
2	B-00004169	21L9TAMB090	L9TA M/B ASSY(RTD2523-LF) GP			1
3	#N/A	31L9TASS079	L9TA M/B S/S ASSY(RTD2523-LF) GP			1
4	#N/A	CC62204MD23	CAP EC 22U 25V(+-20%,105C,5*11,2KHR)GP	C34,C46,C50,C53,C59, C84,EC2,EC3,EC5,EC6		10
5	#N/A	CC71004MD68	CAP EC 100U 25V(+-20%,105C,6*11,LESR) GP	C70		1
6	#N/A	CC73303MD51	CAP EC 330U 16V(+-20%,105C,8*11,2KH)GP	C6,C91,C93,C97,C99,E		6
7	#N/A	BG611059327	XTAL DIP 11.0592MHZ(+-30PPM,49/US) GP	Y2		1
8	#N/A	BG624576104	XTAL DIP 24.576MHZ(+-30PPM,49/S) GP	Y1		1
9	#N/A	AL007496D29	IC(20P) UTC TDA7496LK(DIP) GP	U9		1
10	#N/A	DFPJ05FR153	CONN DIP PHONE JACK 5P FR(H10)248C GP	J3		1
11	#N/A	DFHD04MR132	CONN DIP HEADER 4P 1R MR(P2.0,H4.1) GP	JP2		1
12	#N/A	DFHD10MR324	CONN DIP HEADER 10P 1R MR(P2.0,H4.1) GP	CN6		1
13	#N/A	DFHD30MR267	CONN DIP HEADER 30P 2R MR(P2.0,H4.0) GP	CN5		1
14	#N/A	DFHD08FR102	CONN DIP HEADER 8P 2R FR(P2.54,H5.0) GP	CN1		1
15	#N/A	DFDS15FR076	CONN D-SUB 15P 3R FR(P1.15,H12.55) GP	CN2		1
16	#N/A	DFDI24FR108	CONN DIP DVI 24P 3R FR(P1.905,H10.04) GP	CN4		1
17	B-00004170	23L9VABB003	L9VA BUTTON/B ASSY GP			1
18	#N/A	DAL9VATB115	PCB(BUTTON)L9VA TB(1L,204*16,REVA) GP			1
19	#N/A	BEYG0014DA0	LED(DIP) YELLOW/GREEN(L-3WYGW-F01) GP	LED1		1
20	#N/A	DFHD10MR324	CONN DIP HEADER 10P 1R MR(P2.0,H4.1) GP	CN1		1
21	PL-BT-0706-0127	DHP0002B108	SWITCH PUSH BUTTON(PT-002-B1,50MA,12V)GP	SW1,SW2,SW3,SW4,SW5,SW6		6
22	B-00003993	AS05B312D00	ADP/INV,FSP043-2PI01 90~264V GP			1
23	C-00004171	24L9VALB012	L9VA-U LCD BEZEL ASSY (S/B) GP			1
24	#N/A	34L9VALB012	L9VA-U LCD BEZEL SUB ASSY (S/B) GP			1
25	#N/A	EAL9VA01021	LCD BEZEL L9VA S(EAL9VA01,R3A) GP			1
26	#N/A	EBL9VA01013	FUNCTION BUTTON L9VA(EBL9VA01,REV3A)			1
27	#N/A	EBW0VA02015	LENS W0VA(EBW0VA02,REV3A)GP			1
28	M-MS-0808-9244	FEL7V004015	BIRD LOGO-10MM L7VC(FEL7V004,REV3A)			1
29	M-MS-0808-9243	FEL7V003019	LOGO FRONT-VSC-38MM			1
30	#N/A	36L9VAPS001	L9VA PCB SHIELDING ASSY GP			1
31	#N/A	FCL7TA01018	SHIELDING MYLAR L7TA(FCL7TA01,R3A)GP			1
32	#N/A	FAL7TA08011	SHIELDING L9VA(FAL7TA08,REV3A)DUAL GP			1
33	#N/A	FAL9VA01012	LCD BKT-L L9VA(FAL9VA01,REV3A) GP			1
34	#N/A	FAL9VA02019	LCD BKT-R L9VA(FAL9VA02,REV3A) GP			1
35	#N/A	FCL7B001018	POWER BOARD MYLAR			1
36	#N/A	FCM7T004014	AL FOIL M7T(FCM7T004,REV3A) GP			3
37	M-SCW-0824-6802	MM30040IBJ9	SCREW M3.0*4.0-I(NI) GP			8
38	M-SCW-0824-0814	MM30060BBJ3	SCREW M3.0*6,B(NI) GP			6
39	M-MS-0808-8986	MBLI1004018	IO NUT LI1(MBLI1004,REV3A)			4
40	#N/A	MS35080B456	SCREW F3.5*8-B(NI)(WASHER)GP			1
41	CB-00002525	DD0L9VLC015	CABLE MB-LCD(30P,140MM)L9V-5 GP			1
42	CB-00004152	DD0L9VLC023	CABLE LVDS(30P,140MM,LINKTEC,AU)L9VA			1
43	CB-00004173	DDL9VABU001	CABLE MB-BUTTON(10P/10P,280MM)L9VA GP			1
44	E-00004177	DN0TE200F00	SPEAK ASSY L9VA FG-TE200 1.5W*2 GP			1
45	#N/A	FCL5M005011	AL FOIL(PANEL) L5M(FCL5M005,REV 3A)			2
46	M-MS-0808-9247	EBL70023013	WIRE MOUNTS L70L-E(EBL70023,REV3A) GP			1
47	#N/A	GAL7TA01016	RUBBER FOOT L7TA(GAL7TA01,REV3A)			2
48	C-00004172	25L9VALC010	L9VA-U LCD COVER ASSY (S/B) GP			1
49	#N/A	EAL9VA02027	LCD COVER L9VA B(EAL9VA02,R3A) GP			1
50	#N/A	FBL9VA01013	HINGE-PLATE L9VA(FBL9VA01,REV3A) GP			1
51	M-MS-0808-9411	FBL70008014	LOCK METAL L70B(FBL70008,REV3A) GP			1
52	PL-00004163	26W0VASA016	W0VA STAND ASSY (S/B) GP			1
53	#N/A	EAW0VA03029	STAND FRONT W0VA(EAW0VA03,R3A)BK GP			1
54	#N/A	EAW0VA05021	STAND-BACK W0VA(EAW0VA05,R3A)BK GP			1
55	#N/A	FAW0VA04017	HINGE ASSY W0VA(FAW0VA04,REV3A)GP			1
56	#N/A	FBW0VA02015	CONTACT-PLATE W0VA(FBW0VA02,REV3A)GP			1
57	HW-00004157	MF40140IJ29	SCREW F4.0*14-I(BNI) GP			7
58	#N/A	DDL9TATH107	CABLE STAND-HINGE(1P,150MM) GP			1
59	#N/A	27L9VACS019	L9VA-U CHASSIS ASSY (S/B) GP			1
60	#N/A	EBL9VA02028	HINGE COVER L9VA B(EBL9VA02,R3A) GP			1
61	M-MS-0808-9815	GAL9V002014	RUBBER PLUG VESA L9V(GAL9V002,REV3A)			4
62	M-SCW-0824-6797	MF40080BJ29	SCREW F4.0*8-B(BNI) GP			2
63	#N/A	MM40100BL61	SCREW M4*10.0-B(BNI,NYLOK) GP			6
64	#N/A	2AL9VAPTU02	L9VA PANEL KIT ASSY(HSD 8MS) GP			1
65	E-00004175	AA90ME13006	LCD(TFT) HSD190ME13-A02(8MS)GP			1

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
66	E-00004176	AA90ME13014	LCD(TFT)19" HSD190ME13-A03 GP			1
67	#N/A	AZL9VA0U001	L9VA SW BIOS IMAGE (W/AUDIO) FOR HSD			1
68	#N/A	28L9VAPK016	L9VA-U PACKING ASSY (S/B) GP			1
69	C-00004147	38W0VABS010	W0VA BASE SUB ASSY (S/B) GP			1
70	M-MS-0808-9158	HAL7V002019	EPE BAG L7VX(HAL7V002,REV3A) GP			1
71	P-00004179	HBL9VA01013	END CAP-L L9VA(HBL9VA01,REV3A) GP			1
72	P-00004180	HBL9VA02010	END CAP-R L9VA(HBL9VA02,REV3A) GP			1
73	M-LB-0813-0747	HCL7V004013	CORE LABEL(HCL7V004,REV3A)			1
74	#N/A	HCL9VA03017	ID LABEL(S) L9VA(HCL9VA03,REV3A) GP			1
75	M-LB-0813-0745	HCL7V002011	SERIAL LEBAL L7V(HCL7V002,REV3A) GP			1
76	DC-00004174	HFL9VA02013	CARTON(S) L9VA(HFL9VA02,REV3A) GP			1
77	#N/A	HGL9VA01018	CD+QSG L9VA(HGL9VA01,REV3A) GP			1
78	#N/A	JXLM5003011	HANDLE LM5S(JXLM5003,REV 3B) GP			1
79	M-MS-0808-9682	JXL9V001010	LCD FILM L9V(JXL9V001,REV3A) GP			1
80	M-LB-0813-1043	HCL70021011	HI-POT LABEL L70L(HCL70021,REV3A)			1
81	#N/A	HFL9T002018	SPACE PLATE L9T(HFL9T002,REV3A)			0.027
82	M-00002264	HCL7V028010	8MS STICKER L7VC(HCL7V028,REV3A)			1
83	CB-00002602	DDL7VDPC005	CABLE MB-VGA (15/15P,1.8M)L7VD GP			1
84	CB-00004149	DD0L0TPC007	CABLE AUDIO(ST,1.8M)BLACK L0T GP			1
85	#N/A	HCL9VA02011	CARTON LABEL(4) L9VA(HCL9VA02,R3A) GP			1
86	A-00003642	DM33T181004	POWER CORD SP-305+IS-14 3P 1.8M(TWN)B GP			1

8. Exploded Diagram and Exploded Parts List



ViewSonic Corporation		
Model		
Title		
Date		Rev:

EXPLODED PARTS LIST (VA912-4)

ViewSonic Model Number: VS10867-1

Rev: 1a

Serial No. Prefix: PW7

Item	ViewSonic P/N	Ref. P/N	Description	Q'ty
1	B-00004169	21L9TAMB090	L9TA M/B ASSY(RTD2523-LF) GP	1
2	B-00003993	AS05B312D00	ADP/INV,FSP043-2PI01 90~264V GP	1
3	B-00004170	23L9VABB003	L9VA BUTTON/B ASSY GP	1
4	#N/A	EAL9VA01012	LCD BEZEL L9VA GP	1
5	#N/A	EBL9VA01013	FUNCTION BUTTON L9VA GP	1
6	#N/A	EBW0VA02015	LENS W0VA GP	1
7	M-MS-0808-9244	FEL7V004015	BIRD LOGO-10MM L7VC	1
8	M-MS-0808-9243	FEL7V003019	LOGO FRONT-VSC-38MM L7VC	1
9	#N/A	FCL7TA01018	SHIELDING MYLAR L7TAGP	1
10	#N/A	FAL7TA08011	SHIELDING L9VA DUAL GP	1
11	#N/A	FAL9VA01012	LCD BKT-L L9VA GP	1
12	#N/A	FAL9VA02019	LCD BKT-R L9VA GP	1
13	#N/A	FCL7B001018	POWER BOARD MYLAR L7B GP	1
14	#N/A	FCM7T004014	AL FOIL M7T GP	3
15	M-SCW-0824-6802	MM30040IBJ9	SCREW M3.0*4.0-I(NI) GP	8
16	M-SCW-0824-0814	MM30060BBJ3	SCREW M3.0*6,B(NI) GP	6
17	M-MS-0808-8986	MBLI1004018	IO NUT LI1 GP	4
18	#N/A	MS35080B456	SCREW F3.5*8-B(NI)(WASHER)	1
19	CB-00002525	DD0L9VLC015	CABLE MB-LCD(30P,140MM)L9V-5 GP	1
20	CB-00004173	DDL9VABU001	CABLE MB-BUTTON(10P/10P,280MM)L9VA GP	1
21	E-00004177	DN0TE200F00	SPEAK ASSY L9VA FG-TE200 1.5W*2 GP	1
22	#N/A	FCL5M005011	AL FOIL(PANEL) L5M	2
23	M-MS-0808-9247	EBL70023013	WIRE MOUNTS L70L-E GP	1
24	#N/A	GAL7TA01016	RUBBER FOOT L7TA	2
25	#N/A	EAL9VA02019	LCD COVER L9VA GP	1
26	#N/A	FBL9VA01013	HINGE-PLATE L9VA GP	1
27	M-MS-0808-9411	FBL70008014	LOCK METAL L70B GP	1
28	#N/A	EAW0VA03011	STAND-FRONT W0VA GP	1
29	#N/A	EAW0VA05013	STAND-BACK W0VA GP	1
30	#N/A	FAW0VA04017	HINGE ASSY W0VA GP	1
31	#N/A	FBW0VA02015	CONTACT-PLATE W0VA GP	1
32	HW-00004157	MF40140IJ29	SCREW F4.0*14-I(BNI) GP	7
33	#N/A	DDL9TATH107	CABLE STAND-HINGE(1P,150MM) GP	1
34	M-SCW-0824-6895	MF40080IBJ1	SCREW F4.0*8-I(NI) GP	1
35	#N/A	EBL9VA02010	HINGE COVER L9VA GP	1
36	#N/A	GAW0VA02014	RUBBER PLUG VESA W0VA GRAY GP	4
37	M-SCW-0824-6797	MF40080BJ29	SCREW F4.0*8-B(BNI)GP	2
38	#N/A	MM40100BL61	SCREW M4*10.0-B(BNI,NYLOK) GP	6
39	#N/A	EAW0VA04017	BASE W0VA GP	1
40	E-00004175	AA90ME13006	LCD(TFT)HSD 190ME13-A02(8MS) A GP	1
41	#N/A	FBW0VA03011	BASE-PLATE W0VA GP	1
42	#N/A	GAW0VA03011	RUBBER FOOT-C W0VA GP	2
43	#N/A	GAW0VA01018	RUBBER FOOT W0VA GP	2
44	#N/A	HCL9VA01014	ID LABEL L9VA GP	1
45	M-LB-0813-0745	HCL7V002011	SERIAL LABAL L7V GP	1
46	M-MS-0808-9682	JXL9V001010	LCD FILM L9V GP	1

EXPLODED PARTS LIST (VA912b-4)

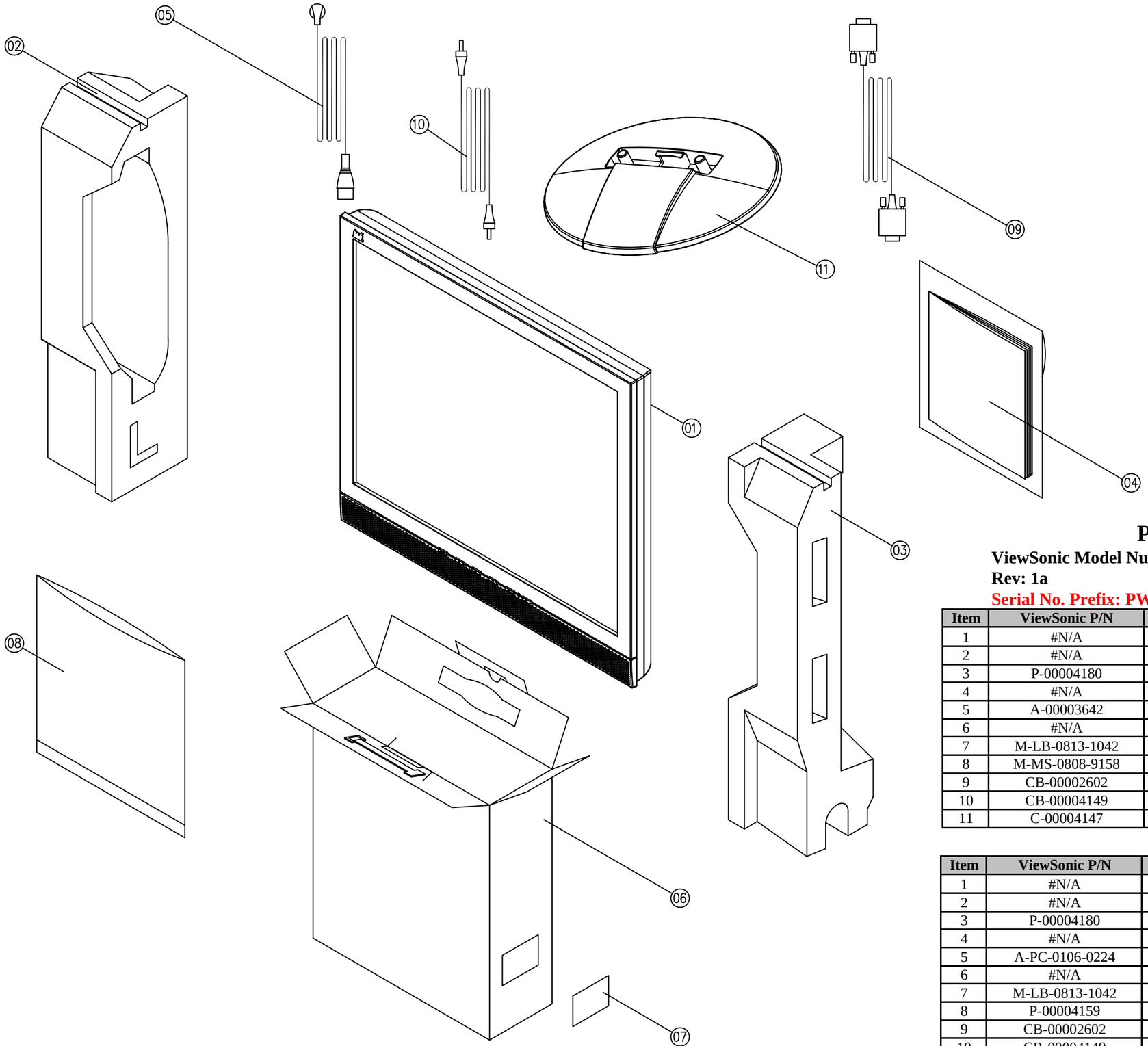
ViewSonic Model Number: VS10867-1W

Rev: 1a

Serial No. Prefix: PW8

Item	ViewSonic P/N	Ref. P/N	Description	Q'ty
1	B-00004169	21L9TAMB090	L9TA M/B ASSY(RTD2523-LF) GP	1
2	B-00003993	AS05B312D00	ADP/INV,FSP043-2PI01 90~264V GP	1
3	B-00004170	23L9VABB003	L9VA BUTTON/B ASSY GP	1
4	#N/A	EAL9VA01021	LCD BEZEL L9VA S(EAL9VA01,R3A) GP	1
5	#N/A	EBL9VA01013	FUNCTION BUTTON L9VA GP	1
6	#N/A	EBW0VA02015	LENS W0VA GP	1
7	M-MS-0808-9244	FEL7V004015	BIRD LOGO-10MM L7VC	1
8	M-MS-0808-9243	FEL7V003019	LOGO FRONT-VSC-38MM L7VC	1
9	#N/A	FCL7TA01018	SHIELDING MYLAR L7TAGP	1
10	#N/A	FAL7TA08011	SHIELDING L9VA DUAL GP	1
11	#N/A	FAL9VA01012	LCD BKT-L L9VA GP	1
12	#N/A	FAL9VA02019	LCD BKT-R L9VA GP	1
13	#N/A	FCL7B001018	POWER BOARD MYLAR L7B GP	1
14	#N/A	FCM7T004014	AL FOIL M7T GP	3
15	M-SCW-0824-6802	MM30040IBJ9	SCREW M3.0*4.0-I(NI) GP	8
16	M-SCW-0824-0814	MM30060BBJ3	SCREW M3.0*6,B(NI) GP	6
17	M-MS-0808-8986	MBLI1004018	IO NUT LI1 GP	4
18	#N/A	MS35080B456	SCREW F3.5*8-B(NI)(WASHER)	1
19	CB-00002525	DD0L9VLC015	CABLE MB-LCD(30P,140MM)L9V-5 GP	1
20	CB-00004173	DDL9VABU001	CABLE MB-BUTTON(10P/10P,280MM)L9VA GP	1
21	E-00004177	DN0TE200F00	SPEAK ASSY L9VA FG-TE200 1.5W*2 GP	1
22	#N/A	FCL5M005011	AL FOIL(PANEL) L5M	2
23	M-MS-0808-9247	EBL70023013	WIRE MOUNTS L70L-E GP	1
24	#N/A	GAL7TA01016	RUBBER FOOT L7TA	2
25	#N/A	EAL9VA02027	LCD COVER L9VA B(EAL9VA02,R3A) GP	1
26	#N/A	FBL9VA01013	HINGE-PLATE L9VA GP	1
27	M-MS-0808-9411	FBL70008014	LOCK METAL L70B GP	1
28	#N/A	EAW0VA03029	STAND FRONT W0VA(EAW0VA03,R3A)BK GP	1
29	#N/A	EAW0VA05021	STAND-BACK W0VA(EAW0VA05,R3A)BK GP	1
30	#N/A	FAW0VA04017	HINGE ASSY W0VA GP	1
31	#N/A	FBW0VA02015	CONTACT-PLATE W0VA GP	1
32	HW-00004157	MF40140IJ29	SCREW F4.0*14-I(BNI) GP	7
33	#N/A	DDL9TATH107	CABLE STAND-HINGE(1P,150MM) GP	1
34	M-SCW-0824-6895	MF40080IBJ1	SCREW F4.0*8-I(NI) GP	1
35	#N/A	EBL9VA02028	HINGE COVER L9VA B(EBL9VA02,R3A) GP	1
36	M-MS-0808-9815	GAL9V002014	RUBBER PLUG VESA L9V(GAL9V002,REV3A)	4
37	M-SCW-0824-6797	MF40080BJ29	SCREW F4.0*8-B(BNI)GP	2
38	#N/A	MM40100BL61	SCREW M4*10.0-B(BNI,NYLOK) GP	6
39	#N/A	EAW0VA04025	BASE W0VA(EAW0VA04,REV3A)BK GP	1
40	E-00004175	AA90ME13006	LCD(TFT)HSD 190ME13-A02(8MS) A GP	1
41	#N/A	FBW0VA03011	BASE-PLATE W0VA GP	1
42	#N/A	GAW0VA03011	RUBBER FOOT-C W0VA GP	2
43	#N/A	GAW0VA01018	RUBBER FOOT W0VA GP	2
44	#N/A	HCL9VA01014	ID LABEL L9VA GP	1
45	M-LB-0813-0745	HCL7V002011	SERIAL LABAL L7V GP	1
46	M-MS-0808-9682	JXL9V001010	LCD FILM L9V GP	1

Packing for Shipping



PACKING PARTS LIST (VA912b-4)

ViewSonic Model Number: VS10867-1W

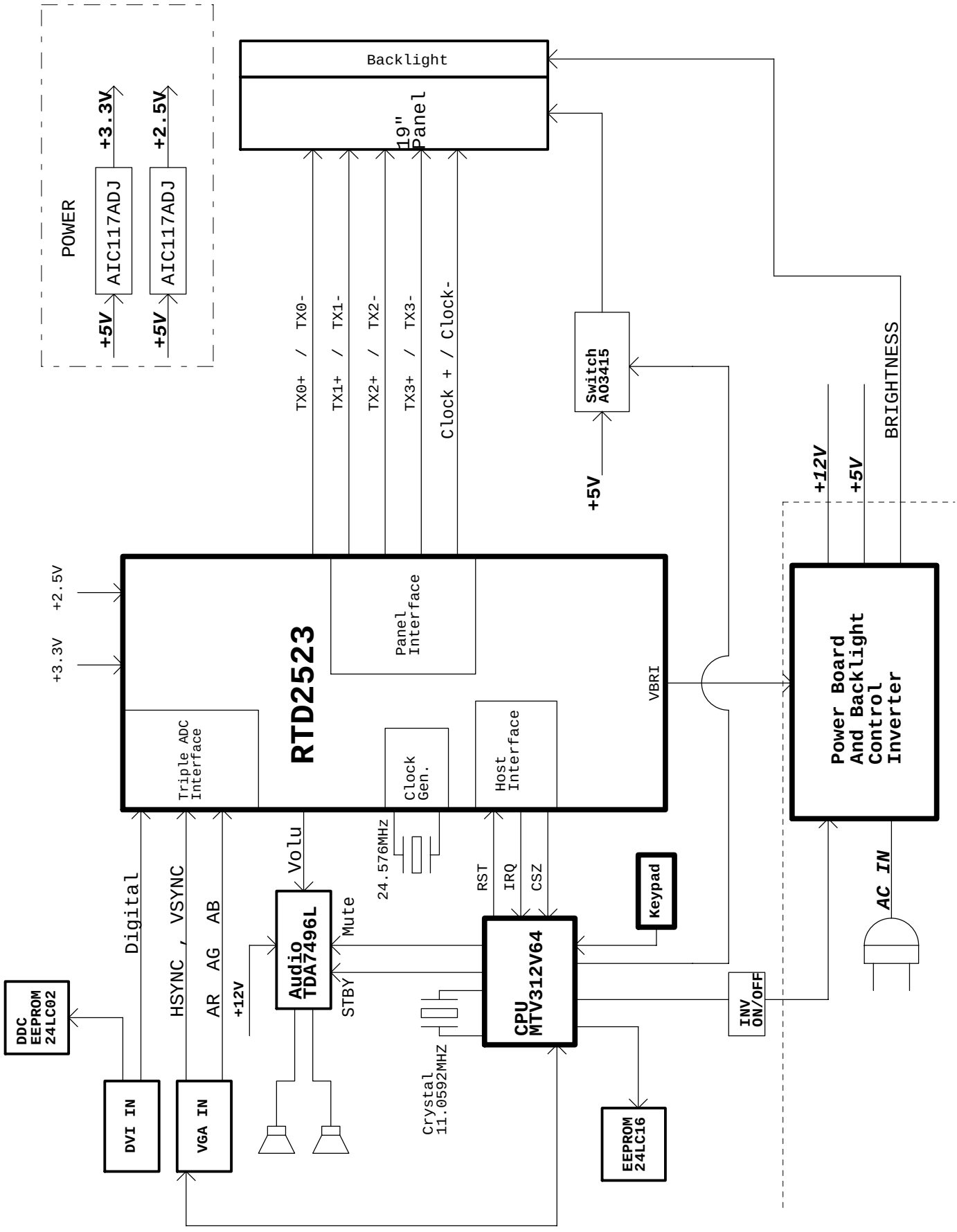
Rev: 1a

Serial No. Prefix: PW8

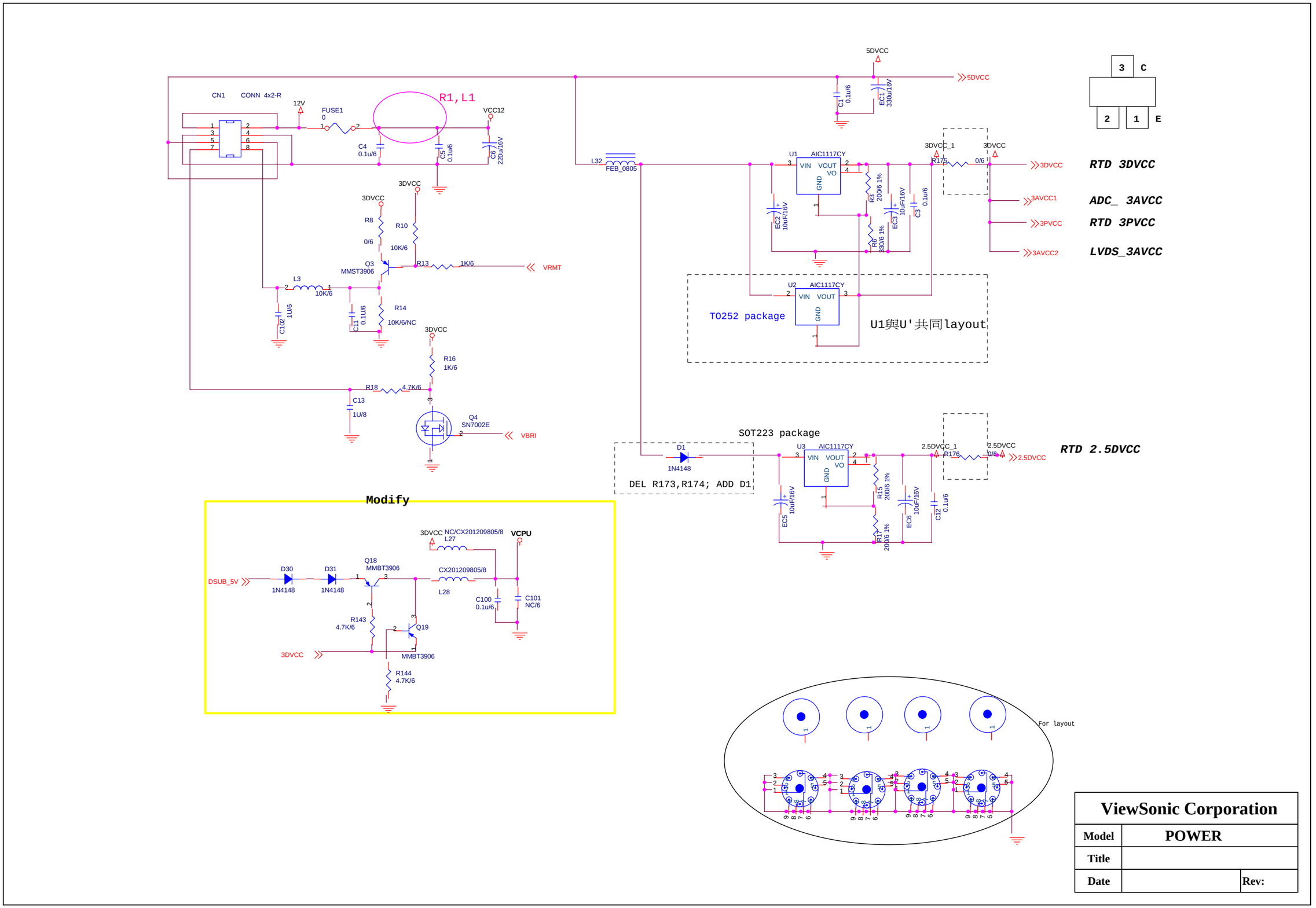
Item	ViewSonic P/N	Ref. P/N	Description	Q'ty
1	#N/A	1L9VAZXVS92	VA912 monitor	1
2	#N/A	HBL9VA010013	END CAP (L)	1
3	P-00004180	HBL9VA02010	END CAP (R)	1
4	#N/A	HGL9VA010018	USER'S MANUAL & CD	1
5	A-00003642	DM33T181004	POWER CORD 3P 1.8M	1
6	#N/A	HCL9VA02013	CARTON	1
7	M-LB-0813-1042	HCL7V019011	CARTON LABEL	1
8	M-MS-0808-9158	HAL7V002019	EPE BAG	1
9	CB-00002602	DDL7VDPC005	VGA CABLE	1
10	CB-00004149	DD0L0TPC007	AUDIO CABLE	1
11	C-00004147	38W0VABS010	Base assy	1

Item	ViewSonic P/N	Ref. P/N	Description	Q'ty
1	#N/A	1L9VAZXVS09	VA912 monitor	1
2	#N/A	HBL9VA010013	END CAP (L)	1
3	P-00004180	HBL9VA02010	END CAP (R)	1
4	#N/A	HGL9VA010018	USER'S MANUAL & CD	1
5	A-PC-0106-0224	DM333181G97	POWER CORD 3P 1.8M	1
6	#N/A	HCL9VA01017	CARTON	1
7	M-LB-0813-1042	HCL7V019011	CARTON LABEL	1
8	P-00004159	HAL0T002019	PE BAG	1
9	CB-00002602	DDL7VDPC005	VGA CABLE	1
10	CB-00004149	DD0L0TPC007	AUDIO CABLE	1
11	C-00004165	38W0VABS001	Base assy	1

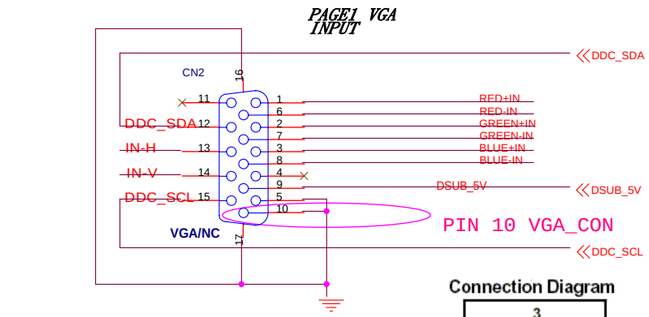
9. Block Diagram

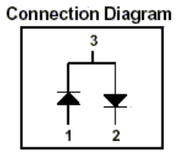


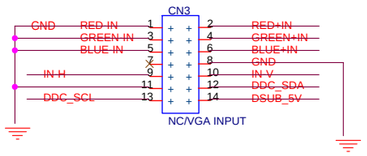
10. Schematic Diagrams

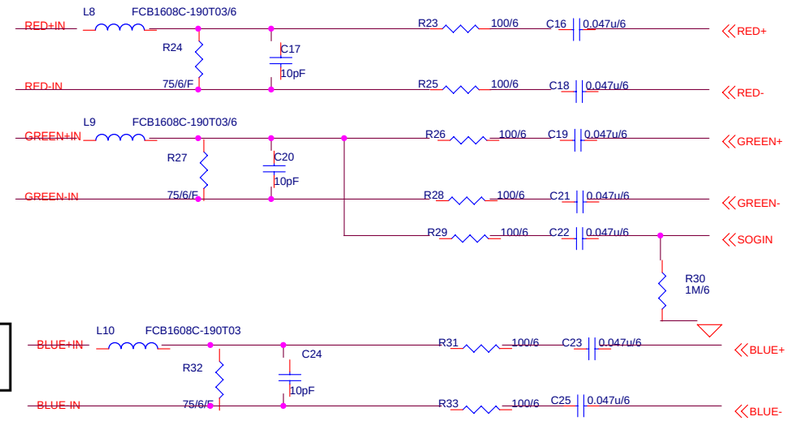


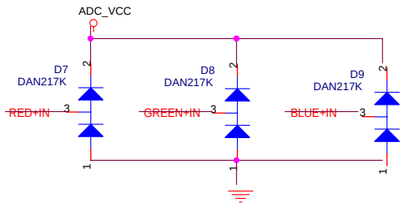
ViewSonic Corporation		
Model	POWER	
Title		
Date		Rev:

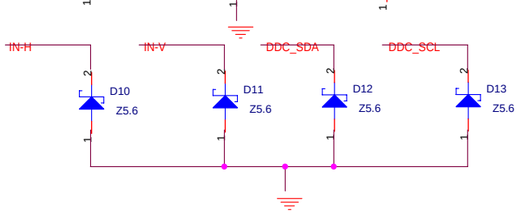


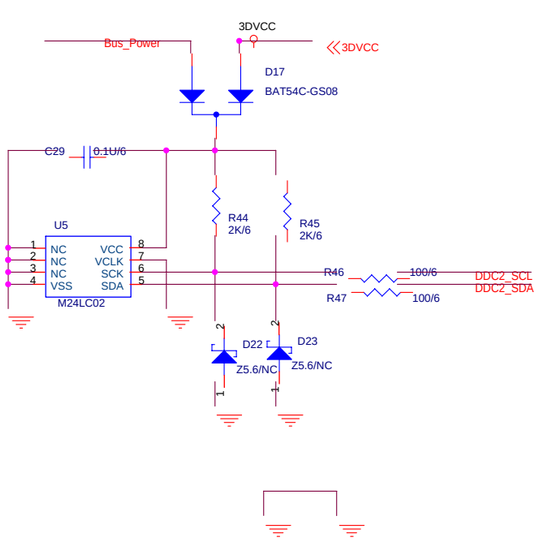


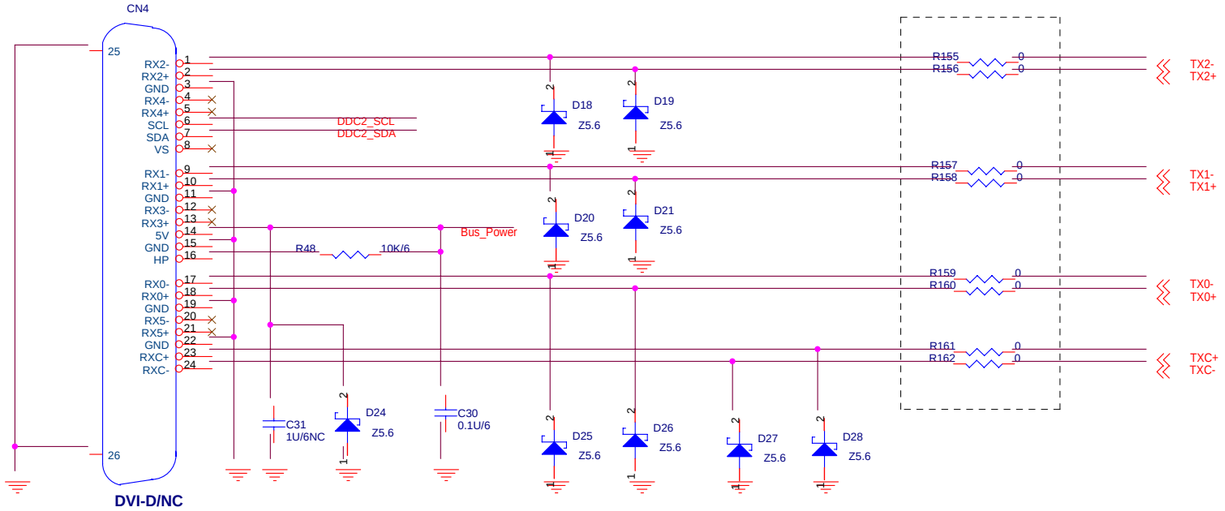




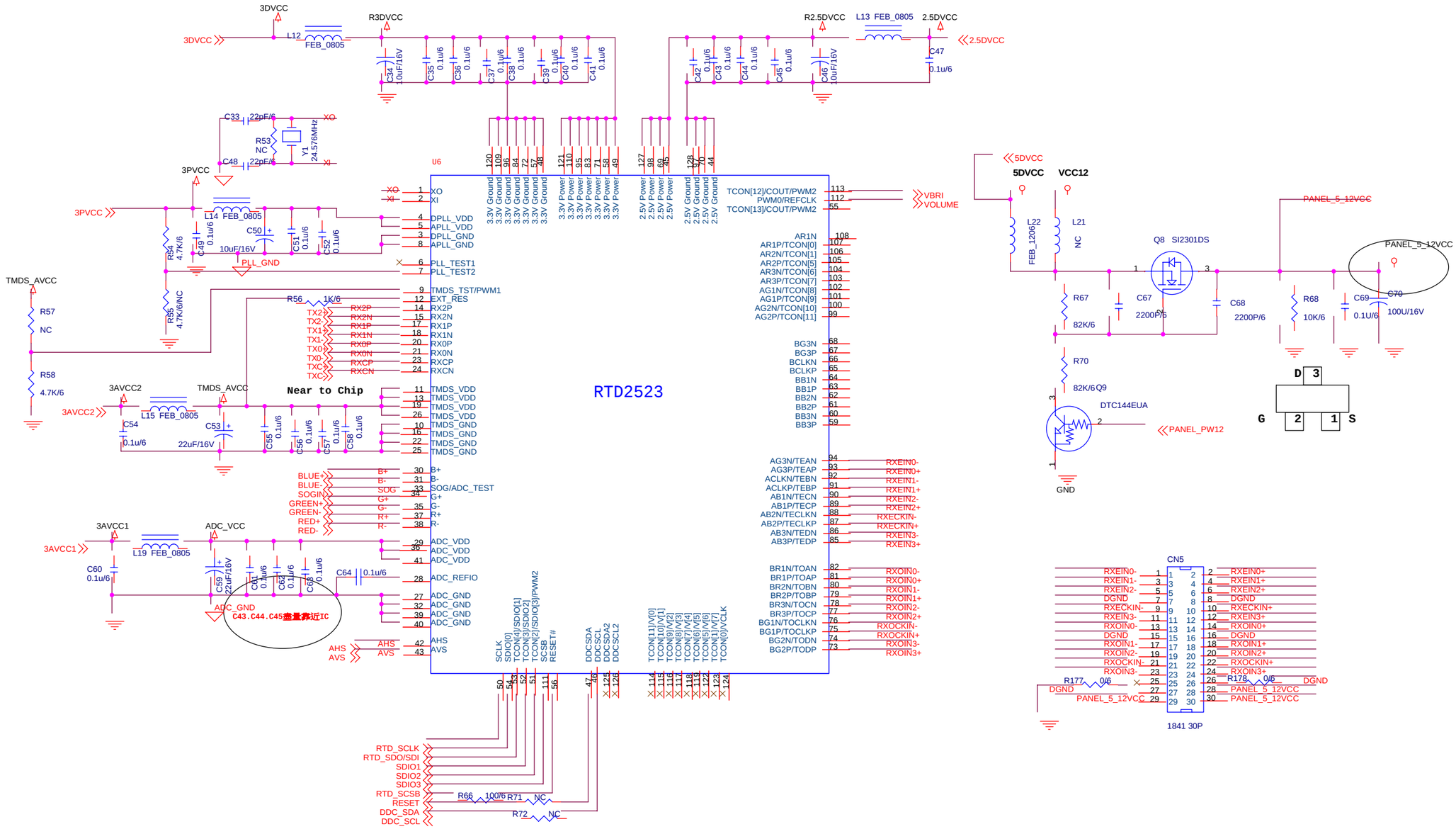




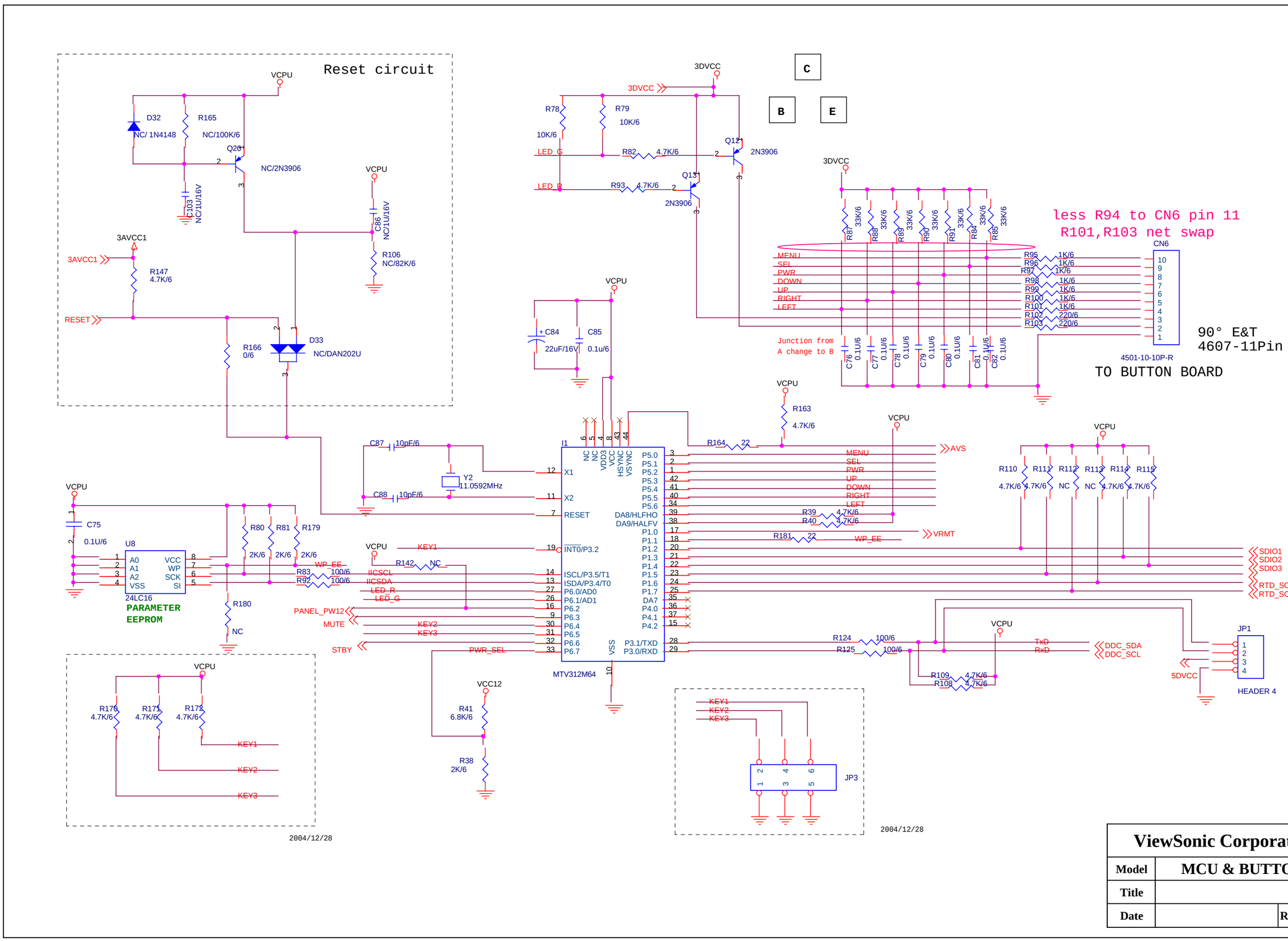




ViewSonic Corporation		
Model	VGA AND DVI INPUT	
Title		
Date		Rev:

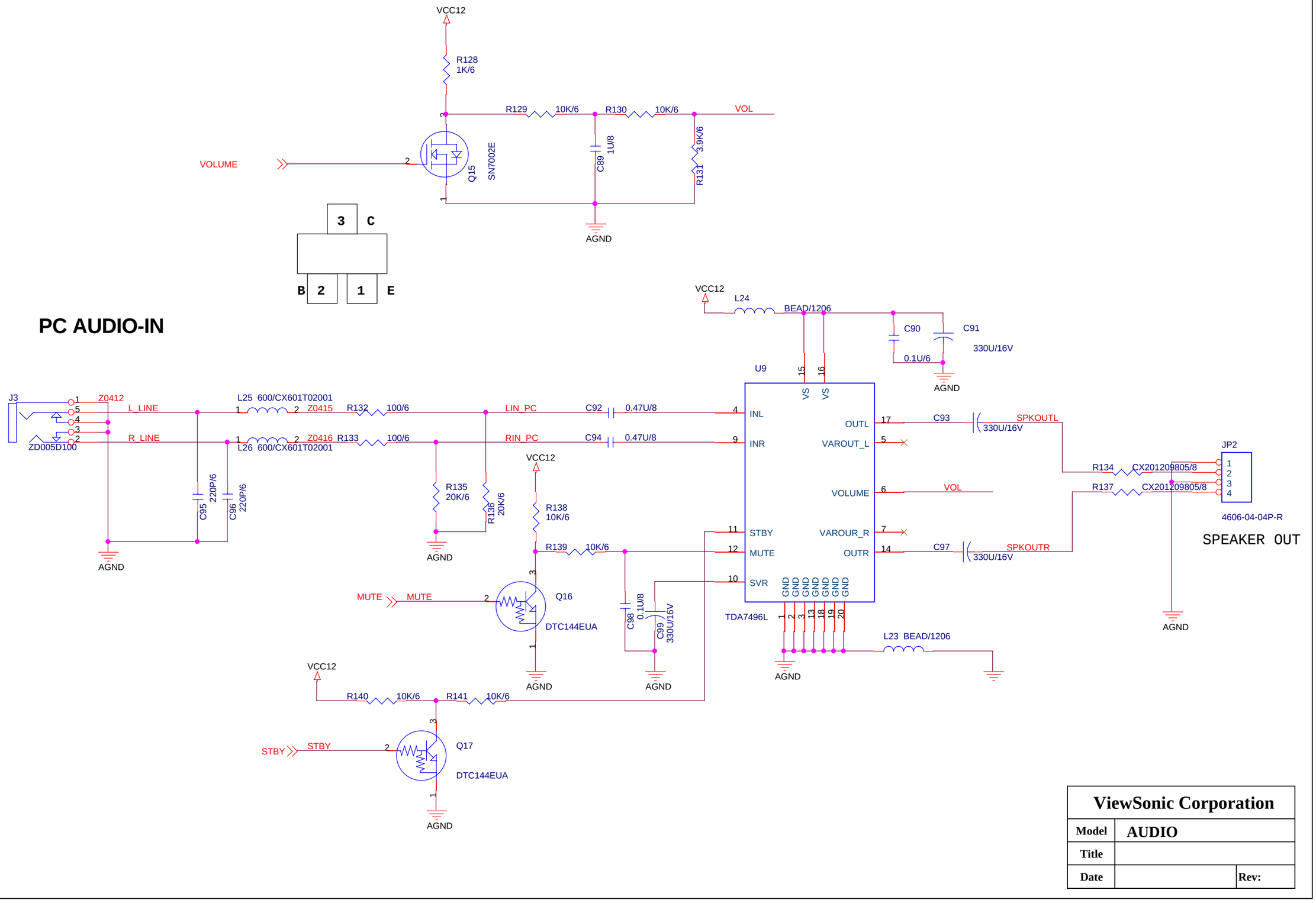


ViewSonic Corporation		
Model	RTD2523	
Title		
Date		Rev:



ViewSonic Corporation		
Model	MCU & BUTTON	
Title		
Date		Rev:

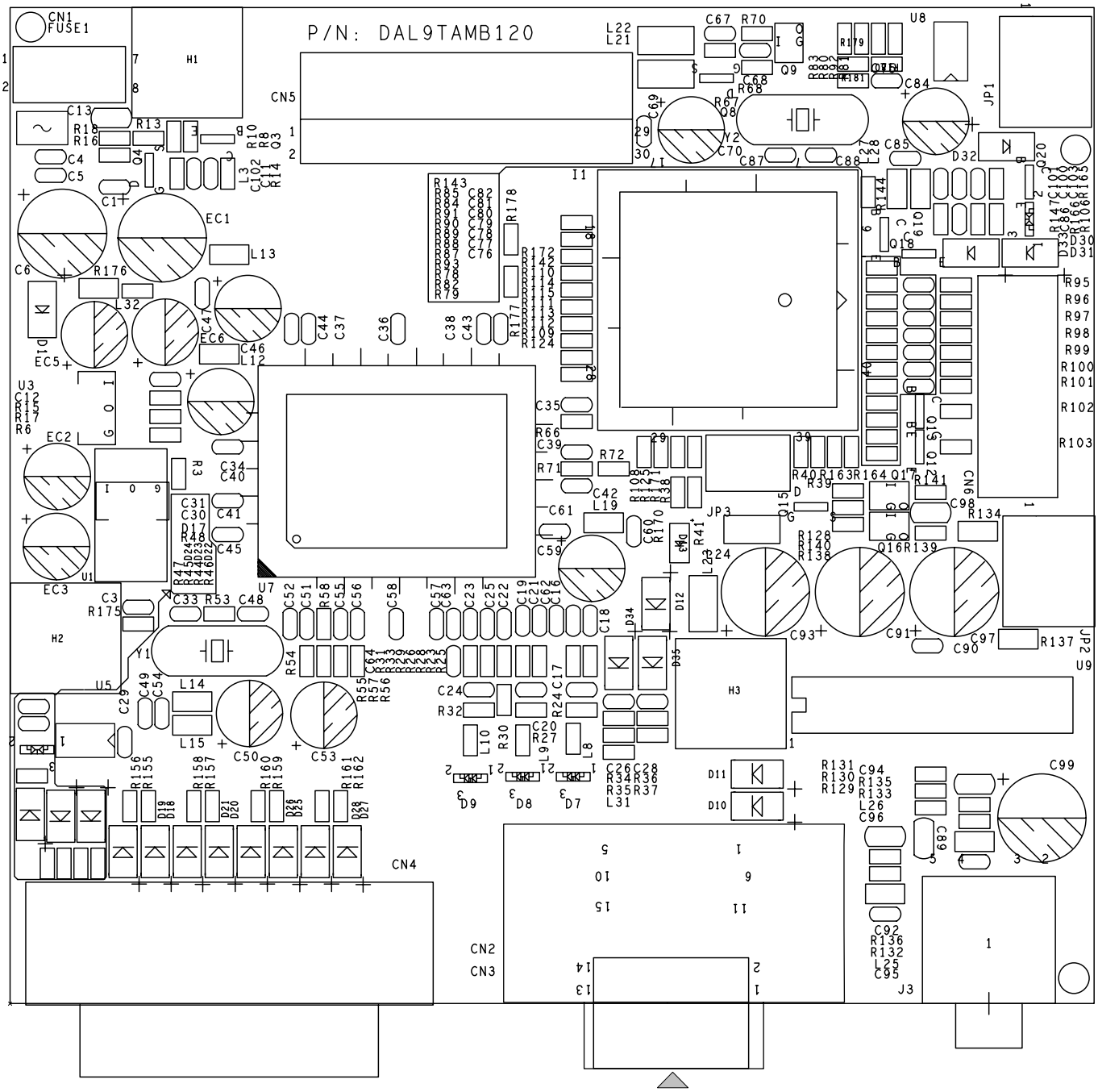
PC AUDIO-IN

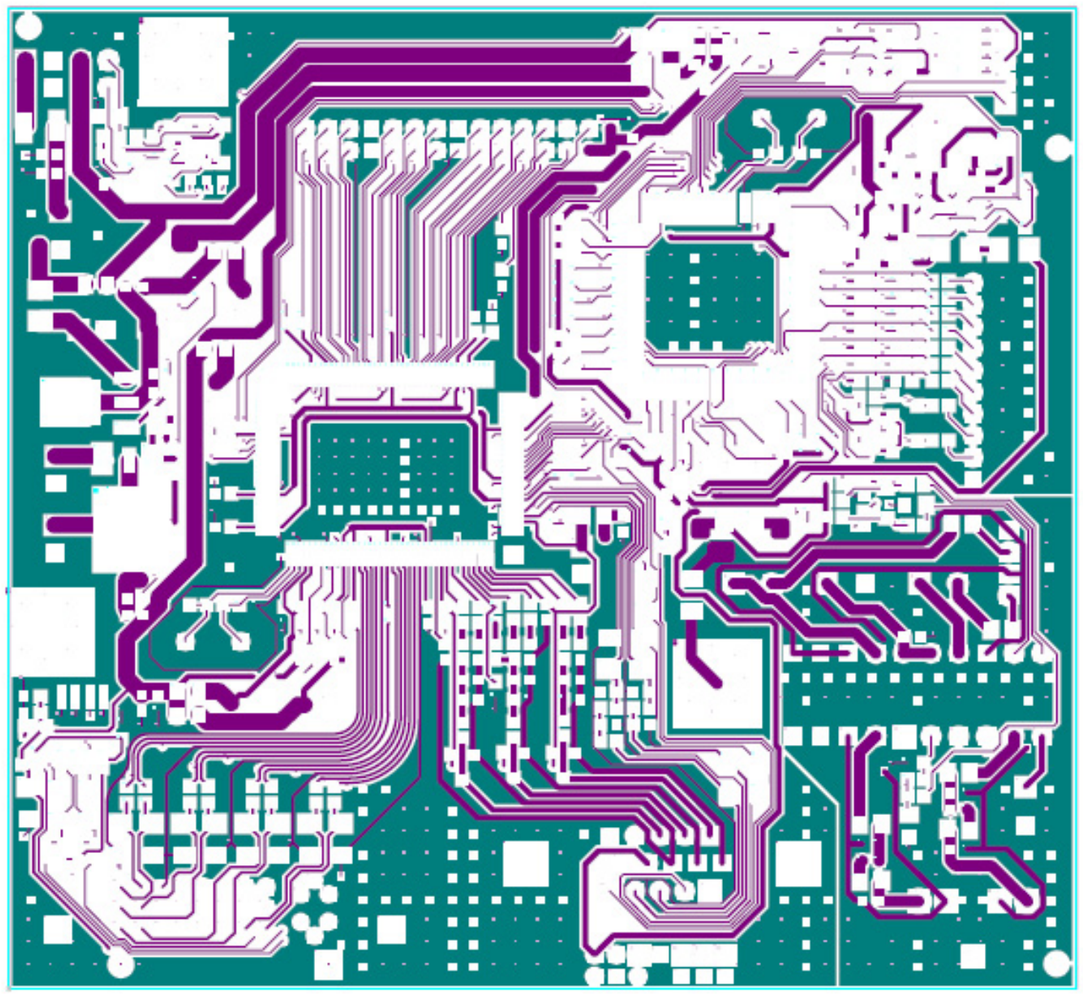


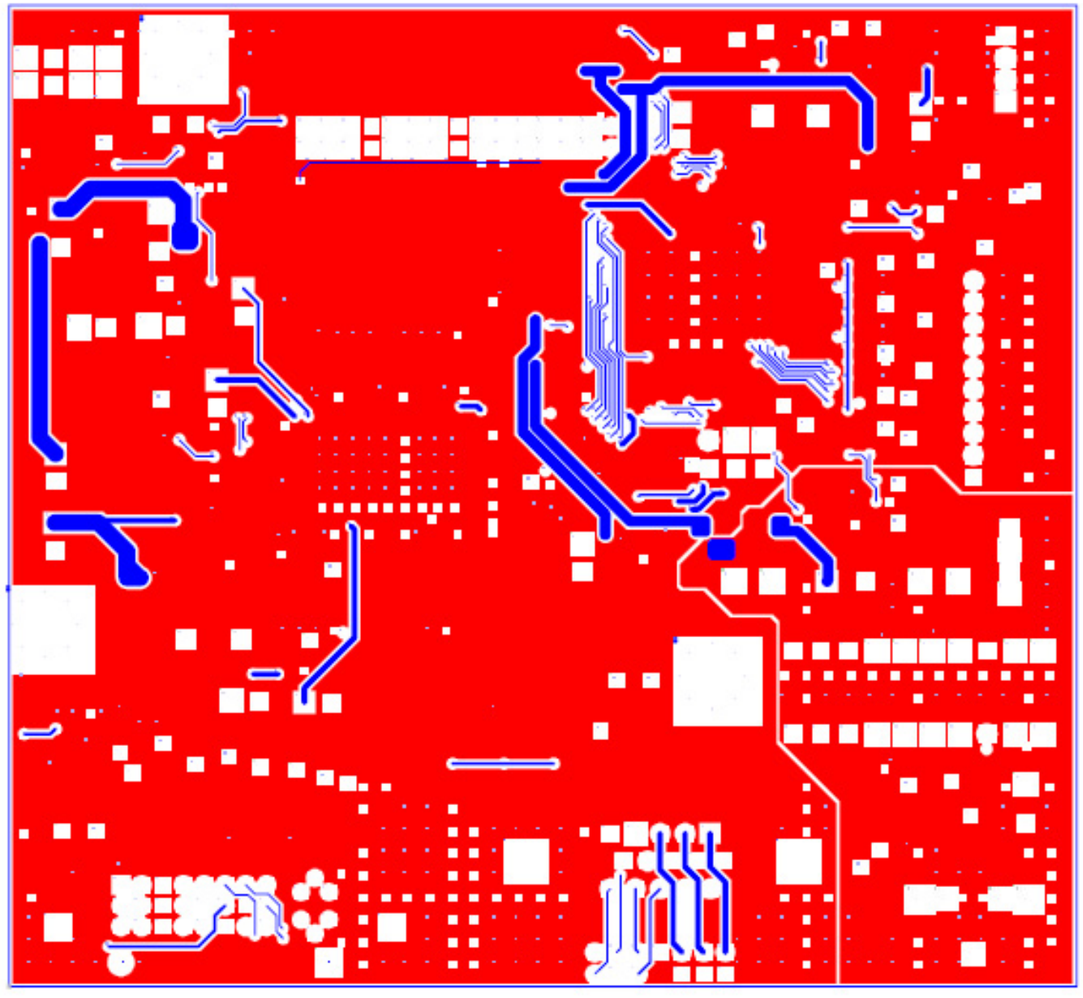
ViewSonic Corporation		
Model	AUDIO	
Title		
Date		Rev:

11. PCB Layout Diagrams

MB TOP







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 of this Service Manual?

Unit	*Excellent*	*Good*	*Fair*	*Bad*
1. Precautions and Safety Notices				
2. Specification				
3. Front Panel Function Control Description				
4. Circuit Description				
5. Adjustment Procedure				
6. Troubleshooting Flow Chart				
7. Recommended Spare Parts List				
8. Exploded Diagram and Exploded Parts List				
9. Block Diagram				
10. Schematic Diagrams				
11. PCB Layout Diagrams				

B. Are you satisfied with this Service Manual?

Item	*Excellent*	*Good*	*Fair*	*Bad*
1. Service Manual Content				
2. Service Manual Layout				
3. The form and listing				

C. Do you have any other opinions or suggestions regarding this service manual?

Reader's basic data:

Name:		Title:	
Company:			
Add.:			
Tel:		Fax:	
E-mail:			

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)