Service Manual

ViewSonic VA2012w
VA2012wb

Model No. VS10859

20” Color TFT LCD Display

(VA2012w_VA2012wb_SM Rev. 1a Nov. 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	11/29/05		Initial Release	BonnieT.

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.

VA2012w series handling Notice

Correct Method	Incorrect method
	

Correct Method	Incorrect method
	

Correct Method	Incorrect method
	

Correct Method	Incorrect method
	

Correct Method	Incorrect method
	

2. Specificationtion

GENERAL specification

Test Resolution & Frequency	“1680 X 1050” @ 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-D (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 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	TTL
DDC 1/2B	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, 1280 x 720, 1280 x 1024, 1600 x 1200, 1680 x 1050
Exclusions	Not compatible with interlaced video

POWER SUPPLY

Internal Power Supply	Part Number: EADP-64CF
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	Output current <10A
Leakage Current	3.5mA (Max) at 254VAC / 60Hz
EFFICIENCY	80 % typical at 115VAC Full Load
Fuse	Internal and not user replaceable
Power Dissipation	64 Watts (typ)
Max Input AC Current	1.5 Arms @ 90VAC
INRUSH CURRENT (COLD START)	80 A(max) @230VAC
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 ANSI/IEEE C62.41-1980 6000V 200 ampere ring wave transient test with no damage
Power Supply Line Surge Immunity	Shall be able to withstand 1.5 times nominal line voltage for one cycle 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 AC/DC Power Adapter. Color = Black
European Type Power Cable	Schuko CEE7-7. Length = 1.8m, Connects to AC outlet. Color = Black
Power Saving Operation(Method)	VESA DPMS Signaling
Power Consumption	ON Mode < 50 W (max) / 47 W (typ) ACTIVE OFF < 2W
Recovery Time	ON MODE = N/A, ACTIVE OFF < 3 SEC

ELECTRICAL REQUIREMENT

Horizontal / Vertical Frequency

Horizontal Frequency	ANALOG: 30 – 94 KHZ DIGITAL : 30-82 KHZ
Vertical Refresh Rate	50 – 75 HZ.
Maximum Pixel Clock	Analog: 205 Mhz Digital: 165 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 @ 70Hz, 31.5kHz	Yes	Yes
3.	640 x 480 @ 60Hz, 31.5kHz	Yes	Yes
4.	640 x 480 @ 67Hz, 35.0kHz	Yes	Yes
5.	640 x 480 @ 72Hz, 37.9kHz	Yes	Yes
6.	640 x 480 @ 75Hz, 37.5kHz	Yes	Yes
7.	720 x 400 @ 70Hz, 31.5kHz	Yes	Yes
8.	720 x 480i 59.94/60Hz @ 15.7 kHz	Yes	Yes
9.	720 x 576p 50Hz @ 31.25kHz	Yes	Yes
10.	720 x 576i 50Hz @ 15.62kHz	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.	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.	1280x720p 50Hz @ 37.5kHz	Yes	Yes
21.	1280x 720 @ 60Hz, 45kHz	Yes	Yes
22.	1280 x 1024 @ 60Hz, 63.4kHz	Yes	Yes
23.	1280 x 1024 @ 75Hz, 79.97kHz	Yes	Yes
24.	1600 x 1200 @ 60Hz, 75kHz	Yes	Yes
25.	1600 x 1200 @ 70Hz, 87.5kkHz	Yes	No
26.	1600 x 1200 @ 75Hz, 93.8kHz	Yes	No
27.	1680 x 1050 @ 60Hz, 65.3 kHz	Yes	Yes
28.	1680 x 1050 @ 75Hz, 82.3 kHz	Yes	No
29.	1920 x 1080i @ 50Hz, 56.5kHz	Yes	Yes
30.	1920 x 1080p @ 50Hz, 62.5kHz	Yes	Yes

Primary Presets

"1680 x 1050" @ 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), it should recall factory setting when execute "Auto Adjust"
- The monitor needs to do "Auto Adjust" the first time a new mode is detected (see section "0-Touch™ Function Actions")
- While running Change Mode, Auto Adjust or Memory Recall, the image shall blank

TFT LCD PANEL

Panel Source Identify

(1) ID label - The panel code “Q” for QDI panel and “T” for Hannstar panel should be shown on the lower right side of ID label.
(2) UPC label - The panel code “Q” for QDI panel and “T” for Hannstar panel should be shown on the lower right side of UPC label.
(3) Main board - The panel code “Q” for QDI panel and “T” for Hannstar panel should be shown on the main board by F/W version sticker or silkscreen.

Panel Characteristics :

1st Source Panel e	QDI QD20AL01
Type	TN Technology”
Active Size	433.44 (H) x 270.9 (V)
Pixel Arrangement	RGB Vertical Stripe
Pixel Pitch	0.258 mm
GLASS TREATMENT	Anti Glare (Hard coating 3H)
# OF BACKLIGHTS	6 CCFL edge-light (3 top / 3 bottom)
BACKLIGHT LIFE	40,000 Hours (Min)
Luminance – Condition: CT = 6500K, Contrast = Max, Brightness = Max	300 cd/m2 (Typ after 30 minute warm up) 240 cd/m2 (Min after 30 minute warm up)
Brightness Uniformity	77 % Entire Area (typ)
Contrast Ratio	600:1 (Typ), 400:1 (Min)
Color Depth	16.2 million colors (6 bit panel)
Viewing Angle (Horizontal)	140 deg @ CR>10, ??? deg @ CR>5
VIEWING ANGLE (VERTICAL)	125 deg @ CR>10, ??? deg @ CR>5
Response Time 10%-90% @ Ta=25°C	8 ms (Tr= 2 ms, Tf = 6 ms) (Typ) 16 ms (Tr= XXX ms, Tf = XXX ms) (Max)
Panel Defects	Please see Panel Quality Specifications.

IMAGE PERFORMANCE

Factory Defaults

Item	Defaults	Item	Defaults
Contrast	70%	Sharpness	1
Brightness	100%	OSD H. Position	50%
Volume	50%	OSD V. Position	50%
Balance	50%	OSD Time Out	15 Sec
Bass	50%	OSD Background	On
Treble	50%	OSD PIVOT	Off
Color Temperature	6500K	Resolution Notice	Enabled
		720x400/640x400	720x400

Display Size

Horizontal Display Size, Primary Preset	Full Screen
Vertical Display Size, Primary Preset	Full Screen

Preset Color Temperatures

SRGB	It should meet IEC 61966-2-1 (1999-10) standard
Preset 1 9300K CCT (Max) = 10250K. CCT (Min) = 8500K	Wx= 0.283 +/- 0.02, Wy= 0.298 +/- 0.02
Preset 2 6500K (Primary) CCT (Max) = 6950K CCT (Min) = 6100K	Wx= 0.313 +/- 0.02 Wy= 0.329 +/- 0.02
Preset 3 5400K CCT (Max) = 5915K CCT (Min) = 4935K	Wx= 0.335 +/- 0.02 Wy= 0.350 +/- 0.02
Preset Color Temperature Adjustability	Each color preset shall be adjustable. Red, Green, and Blue shall be individually controlled.

Video Cards Compatibility

Peaking Performance : Peaking is not adjustable

Raster Artifacts

- Video Artifacts : No visible streaking, sag, or smearing artifacts when driven by the specified video cards in the primary mode and after user adjustment to best condition
- Power Supply, and Grounding Artifacts : No visible artifacts in any specified video mode within the horizontal or vertical frequency range of the monitor
- Temperature Drift : Image shall not drift or lose fine-tune adjustment

MECHANICAL

Dimension (Desktop)

Width	479 mm
Height	423 mm
Depth	216 mm
Monitor Weight	5.5 kg / 12.1 lbs

Dimension (Head Only / Wall Mount)

Width	479 mm
Height	350.5 mm
Depth	62.7 mm
Monitor Weight	4.9 kg / 10.78 lbs

Ergonomics

Tilt Up	20 degrees minimum
Tilt Down	-5 degrees
Swivel Right	N/A
Swivel Left	N/A

Vibration Test

- Vibration Frequency : 1 – 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

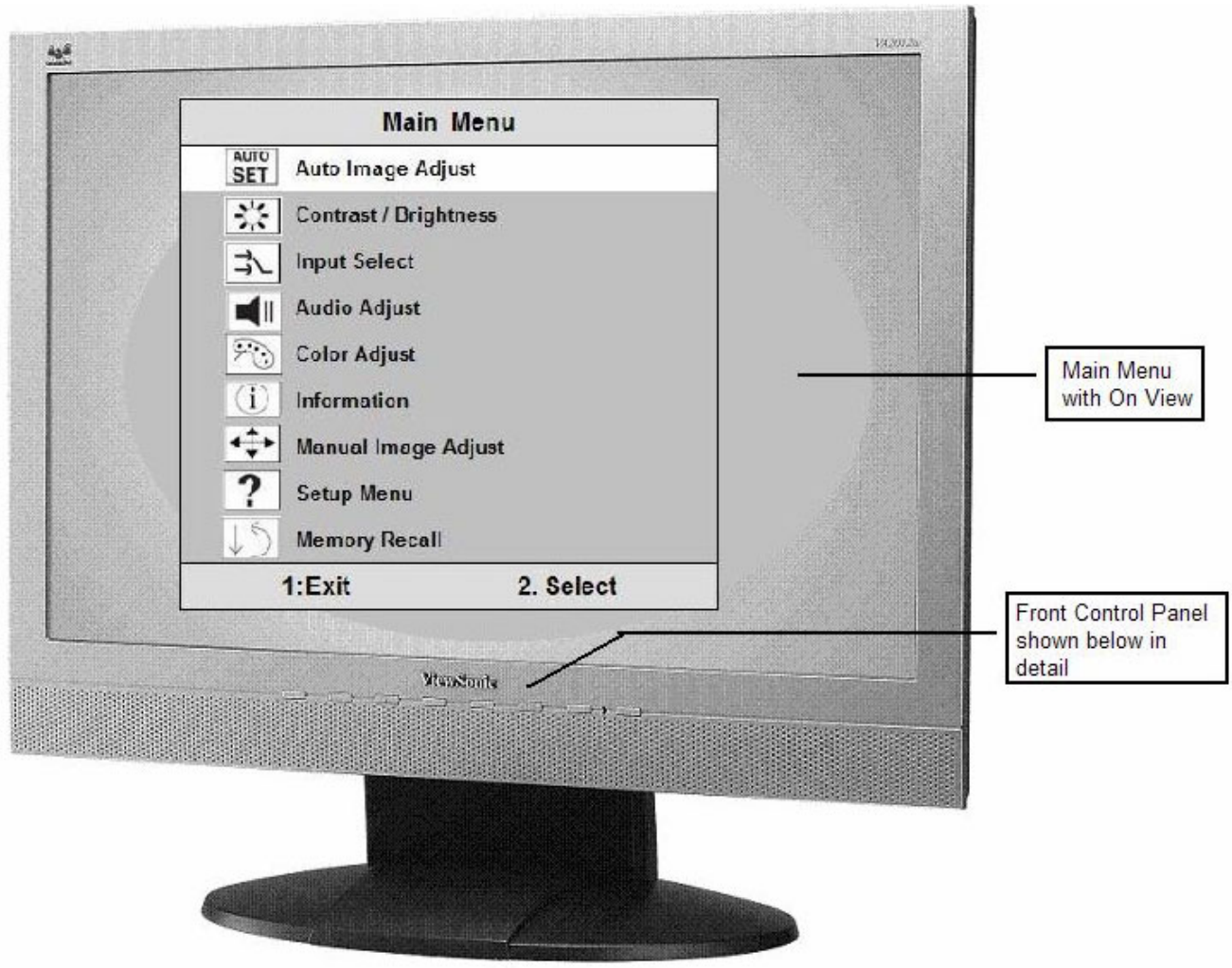
Drop Test (100G)

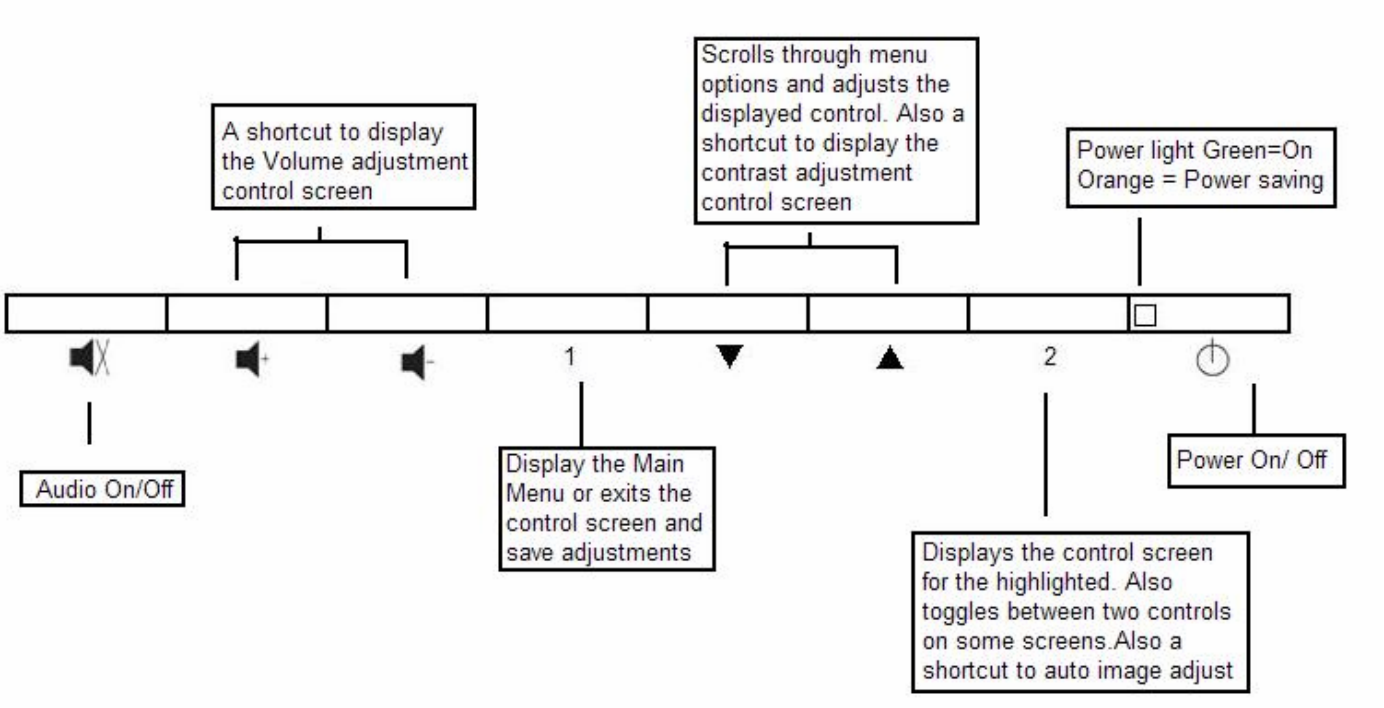
- Weak Corner : 76.2 cm
- Six Faces : 76.2 cm
- 3 Edges Radiating From Weak Corner : 76.2 cm
- Drop Test Data shall be submitted for approval to ViewSonic before Mass Production

4-11 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





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, (2) Enter button, up arrow button, down arrow button, (1) MENU button, Volume "+" button, Volume "-"button and 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.

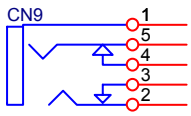
1.5 Audio volume can be controlled with Volume "+" key ,Volume "-" key and UP/DN key when Audio Adjust menu is active.

1.6 Pushing Mute key can disable audio output.

2. CONNECTORS

2.1 AC inlet : CEE22 typed connector

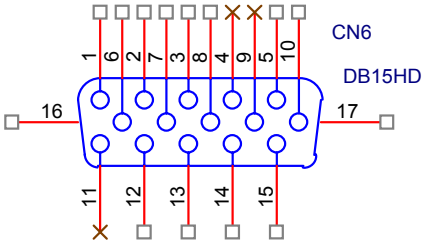
2.2 Audio : Line-in,



Line-in receptacle

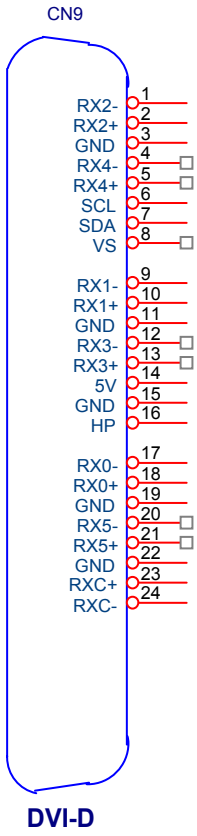
(Line-in receptacle is green)

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	**433.44 x 270.9 mm**
Video Signal	**0.7Vpp**
Contrast	**Default**
Brightness	**Default**
Ambient	**20 +/- 5 ˚C**
Input	**AC**
Warming up	**> 30 min**
Display	**1680 x 1050**

3.2 POWER

3.2.1 Power supply

Input voltage	100~240Vac
Power frequency	50~60Hz
Input current	<1.5Arms@90Vac
Inrush current	80A(Max) at 230Vac(cold start)
Power consumption	47W(typical);50Watts(Max)

3.2.2 Power Management

State	Power	Indicator
On	47Watts	Blue
Standby	< 2Watts	Amber
Off	<2Watts	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: 30~94 KHz (Analog), 30~82KHz (Digital)

Vertical: Sync frequency: 50~75*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 IC4

VA2012wb Analog:

Time: 08:44:23

Date: Wed Sep 07, 2005

VIEWSONIC CORPORATION

EDID Version # 1, Revision # 3

DDCTest For: ViewSonic VA2012wSERIES

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	6A	01	01	01	01	01	0F	01	03
20	08	2B	1B	78	2E	C3	15	A6	56	4A
30	9B	24	16	50	54	BF	EF	80	B3	0F
40	A9	40	90	40	90	4F	81	80	81	40
50	71	4F	A9	4F	21	39	90	30	62	1A
60	27	40	68	B0	36	00	B1	0F	11	00
70	00	1C	00	00	00	FF	00	50	56	57
80	30	35	30	31	30	30	30	30	31	0A
90	00	00	00	FD	00	32	4B	1E	5E	15
100	00	0A	20	20	20	20	20	20	00	00
110	00	FC	00	56	41	32	30	31	32	77
120	53	45	52	49	45	53	00	BA		

(08-09) ID Manufacturer Name _____ = VSC

(11-10) Product ID Code _____ = 6A1C

(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 _____ = 430 mm

(22) Maximum Vertical Image Size _____ = 270 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 - 0.651 Green X - 0.289 Blue X - 0.141 White X - 0.313

Red Y - 0.336 Green Y - 0.608 Blue Y - 0.087 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:

1680 X 1050 @75Hz

1600 X 1200 @60Hz

1400 X 1050 @60Hz

1400 X 1050 @75Hz

1280 X 1024 @60Hz

1280 X 960 @60Hz

1152 X 864 @75Hz

1600 X 1200 @75Hz

(54-71) Detailed Timing / Descriptor Block 1:

1680x1050 Pixel Clock: 146.25 MHz

Horizontal Image Size: 433 mm Vertical Image Size: 271 mm

Refreshed Mode: Non-Interlaced Normal Display - No Stereo

Horizontal:

Active Time: 1680 pixels Blanking Time: 560 pixels

Sync Offset: 104 pixels Sync Pulse Width: 176 pixels

Border: 0 pixels Frequency: 65.29 KHz

Vertical:

Active Time: 1050 lines Blanking Time: 39 lines

Sync Offset: 3 lines Sync Pulse Width: 6 lines

Border: 0 lines Frequency: 59.95 Hz

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

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

Monitor Serial Number:
PVW050100001

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

Monitor Range Limits:
Min Vertical Freq - 50 Hz
Max Vertical Freq - 75 Hz
Min Horiz. Freq - 30 KHz
Max Horiz. Freq - 94 KHz
Pixel Clock - 210 MHz
Secondary GTF - Not Supported

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

Monitor Name:
VA2012wSERIES

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

5.2. Digital EDID: Digital EDID is stored in IC4.

Appendix F : Digital EDID

VA2012wb

Time: 08:45:59

Date: Wed Sep 07, 2005

VIEWSONIC CORPORATION
EDID Version # 1, Revision # 3
DDCTest For: ViewSonic VA2012wSERIES

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	6A	01	01	01	01	01	0F	01	03
20	80	2B	1B	78	2E	C3	15	A6	56	4A

```
 30  |  9B  24  16  50  54  BF  EF  80  B3  0F
 40  |  A9  40  90  4F  90  40  81  80  81  40
 50  |  71  4F  31  0A  21  39  90  30  62  1A
 60  |  27  40  68  B0  36  00  B1  0F  11  00
 70  |  00  1C  00  00  00  FF  00  50  56  57
 80  |  30  35  30  31  30  30  30  30  31  0A
 90  |  00  00  00  FD  00  32  4B  1E  52  11
100  |  00  0A  20  20  20  20  20  20  00  00
110  |  00  FC  00  56  41  32  30  31  32  77
120  |  53  45  52  49  45  53  01  0E
```

(08-09) ID Manufacturer Name _____ = VSC
(11-10) Product ID Code _____ = 6A1C
(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 _____ = 430 mm
(22) Maximum Vertical Image Size _____ = 270 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 - 0.651 Green X - 0.289 Blue X - 0.141 White X - 0.313
Red Y - 0.336 Green Y - 0.608 Blue Y - 0.087 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:
1680 X 1050 @75Hz
1600 X 1200 @60Hz
1400 X 1050 @75Hz
1400 X 1050 @60Hz
1280 X 1024 @60Hz
1280 X 960 @60Hz
1152 X 864 @75Hz
640 X 400 @70Hz

(54-71) Detailed Timing / Descriptor Block 1:
1680x1050 Pixel Clock: 146.25 MHz

Horizontal Image Size: 433 mm Vertical Image Size: 271 mm
Refreshed Mode: Non-Interlaced Normal Display - No Stereo

Horizontal:
Active Time: 1680 pixels Blanking Time: 560 pixels
Sync Offset: 104 pixels Sync Pulse Width: 176 pixels
Border: 0 pixels Frequency: 65.29 KHz

Vertical:
Active Time: 1050 lines Blanking Time: 39 lines
Sync Offset: 3 lines Sync Pulse Width: 6 lines
Border: 0 lines Frequency: 59.95 Hz

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

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

Monitor Serial Number:
PVW050100001

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

Monitor Range Limits:
Min Vertical Freq - 50 Hz
Max Vertical Freq - 75 Hz
Min Horiz. Freq - 30 KHz
Max Horiz. Freq - 82 KHz
Pixel Clock - 170 MHz
Secondary GTF - Not Supported

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

Monitor Name:
VA2012wSERIES

(126) Extension EDID Block(s): 1
(127) CheckSum OK

Time: 08:45:59
Date: Wed Sep 07, 2005

6. THEORY OF OPERATION

This section describes the function of the LCD monitor per functional block.
This monitor includes MB board, power board, Inverter board and button board.

6.1 MB BOARD

The MB board is a two-layer, single-landed. 12V DC power from the power adapter enters the board through connector CN6. Other connectors on the board are for audio speaker 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… NT68563HF (IC2)

The heart of the system board is the scalar chip of NT68563HF. The scaler is a highly integrated flat panel display controller that interfaces analog, digital, and video inputs. It combines a triple ADC, a DVI compliant TMDS receiver, a multi-color on screen display (OSD) controller and many other functions in a single chip. It provides user a simple, flexible and cost-effective solution for various flat panel display products.

The NT68563HF operates at frequencies up to 205MHz (analog only), suitable for LCD monitor up to UXGA resolution. The NT68563HF also build-in noise reduction function to provide more stable video quality, spread spectrum to provide low EMI solution, sRGB for video color space convert, post pattern for manufacture test.

a) Clock Generation:
   This is the input pair to an internal crystal oscillator and corresponding logic. A 12.000 MHz crystal is recommended.
b) Hardware Reset (Pin127):
   Hardware Reset signal is provided by MCU (IC3), it is active high.
c) Analog to Digital Converter:
   The NT68563HF chip has triple ADC's (analog-to-digital converters), one for each color (red, green and blue) .The analog RGB and synchronous signals are connected to NT68563 as described below:

Pin Name	Pin Number
Red +	25
Red -	26
Green +	23
Green -	24
Blue +	20
Blue -	21
H sync	39
V sync	40

d) Internal OSD: Internal SRAM allows up to 2048 characters, with programmable OSD frame size. Width is 64 columns, and Height is 32 row.

e) On chip TMDS receiver: The NT68563HF integrated TMDS receiver, which operates up to 165MHz and can directly connect to all DVI compliant TMDS transmitters. The TMDS signals are connected to NT68563HF as described bellow:

Pin Name	Pin NO.
TX0+	9
TX0-	8
TX1+	6
TX1-	5
TX2+	3
TX2-	2
TXC+	11
TXC-	12

6.1.2 Mcu flash ROM

This is an 8031 CPU core embedded micro-controller, which is design for high-performance low-cost LCD monitor control application. It contains an 8-bit 8031 micro-controller, on-chip 64 K bytes flash-type program ROM, 1,280-bytes internal data memory, four 7-bit resolution A/D Converter, 10-channel 8-bit resolution PWM DAC, two 16-bit timer/counters, and a UART.

a) PWM controlling function (Pin 8, Pin 9): The MCU 68F633 has two GPIO to control audio volume and back light brightness.

b) Serial interface ports pin 25~26(DVI) and pin 27~28(VGA): This serial interface ports communicate with MCU and support up to 400Kbit per second transmit rate.

6.1.2 Power Regulator AIC1563 (U1), AIC1117 (U3, U4, U5): The AIC1563 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 + R121 / R122), in this case, the output voltage are 5 Volts

AIC1117 (U3, U4, U5): 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.

U5 as a 1.8V regulator, desired output voltage are determined by the equation

Volt=1.25 x (1 + R90/R88) = 1.8

U3 as a 3.3V regulator, desired output voltage are determined by the equation

Volt=1.255 x (1+ R86/R85) = 3.3

U4 as a 3.3V regulator, desired output voltage are determined by the equation

Volt=1.255 x (1+ R89/R87) = 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 Inverter Board

This is a specific inverter for VA2012 monitor 40W backlight which converters 20Vdc to drive 6 tubes cold cathode fluorescent tubes. Electrical specification described as below.

6.3.1 Inverter Electrical specification described as below.

INPUT	Rated Input Voltage	20Vdc
	Input Voltage Range	18.5~21.5Vdc
	Input Current	<2A
	Off state Input Power	<0.1W
	On / off control Voltage	2~5.25 for on, 0~0.2 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

6.4 This is a general purpose AC / DC adapter which converter 90~240 Vac to a stabilized DC voltage 20V for inverter and 12V for system board with rated output current of 4.16A

6.4.1 Power Electrical specification described as below.

INPUT	Rated Input Voltage	90~264Vac, 47~63Hz
	Operation Input Voltage	100~240Vac, 50~60Hz
	Input Current	<1.5A@90Vac
	Inrush Current	<80A @ 230Vac(Cold start)
OUTPUT	Output Voltage Regulation	+/-5%
	Output Ripple and Noise	300 mVp-p
	Rated Output Current	<4.16A
	Turn-on Delay	<3 seconds

5. Adjusting 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:

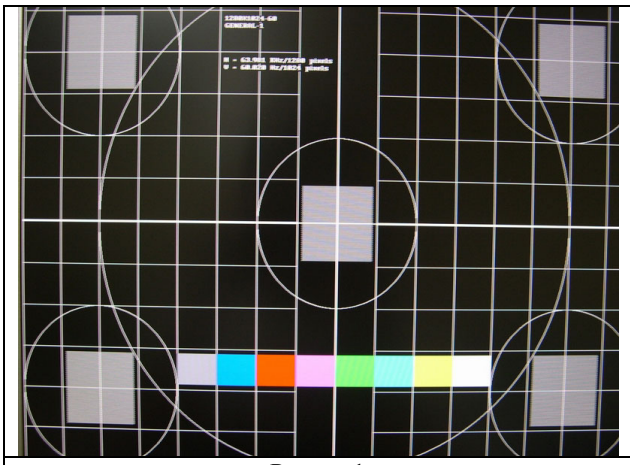
1. Room temperature
2. With full-white screen , RGB , black pattern
3. with cycled display modes.

2. Test display modes

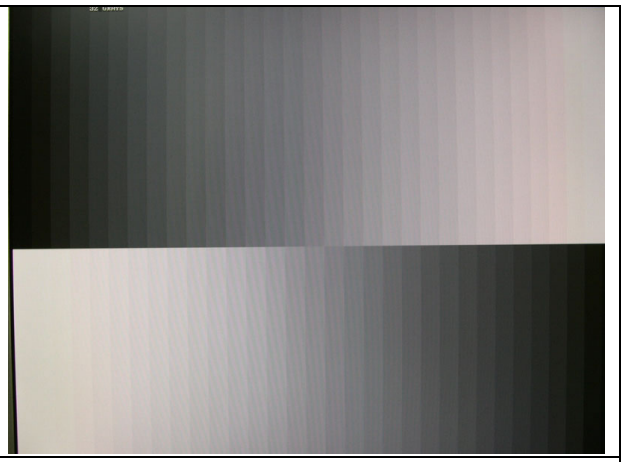
Item	Timing	Analog	Digital
1.	640 x 350 @ 70Hz, 31.5kHz	Yes	Yes
2.	640 x 400 @ 70Hz, 31.5kHz	Yes	Yes
3.	640 x 480 @ 60Hz, 31.5kHz	Yes	Yes
4.	640 x 480 @ 67Hz, 35.0kHz	Yes	Yes
5.	640 x 480 @ 72Hz, 37.9kHz	Yes	Yes
6.	640 x 480 @ 75Hz, 37.5kHz	Yes	Yes
7.	720 x 400 @ 70Hz, 31.5kHz	Yes	Yes
8.	720 x 480i 59.94/60Hz @ 15.7 kHz	Yes	Yes
9.	720 x 576p 50Hz @ 31.25kHz	Yes	Yes
10.	720 x 576i 50Hz @ 15.62kHz	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.	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.	1280x720p 50Hz @ 37.5kHz	Yes	Yes
21.	1280x 720 @ 60Hz, 45kHz	Yes	Yes
22.	1280 x 1024 @ 60Hz, 63.4kHz	Yes	Yes
23.	1280 x 1024 @ 75Hz, 79.97kHz	Yes	Yes
24.	1600 x 1200 @ 60Hz, 75kHz	Yes	Yes
25.	1600 x 1200 @ 70Hz, 87.5kkHz	Yes	No
26.	1600 x 1200 @ 75Hz, 93.8kHz	Yes	No
27.	1680 x 1050 @ 60Hz, 65.3 kHz	Yes	Yes
28.	1680 x 1050 @ 75Hz, 82.3 kHz	Yes	No
29.	1920 x 1080i @ 50Hz, 56.5kHz	Yes	Yes
30.	1920 x 1080p @ 50Hz, 62.5kHz	Yes	Yes

3. Test pattern

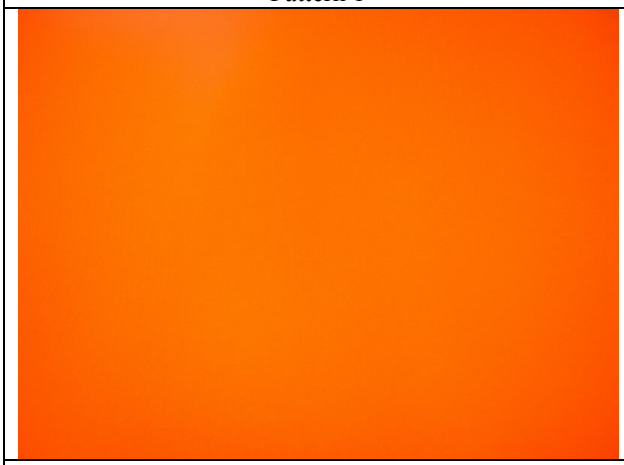
Item	Test condition	Pattern	Specification	Remark
1	Frequency & performance	Cross-hatch pattern	No noise is allowed, all colors must be clear	Pattern 1
2	Monitor saturation	16-gray scale pattern	3 to 4 levels must be saturated when brightness and contrast are set to 100%	Pattern 2
3	RGB color performance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



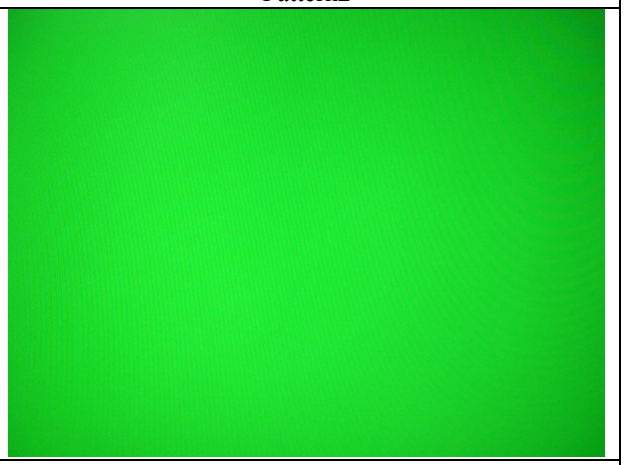
Pattern 1



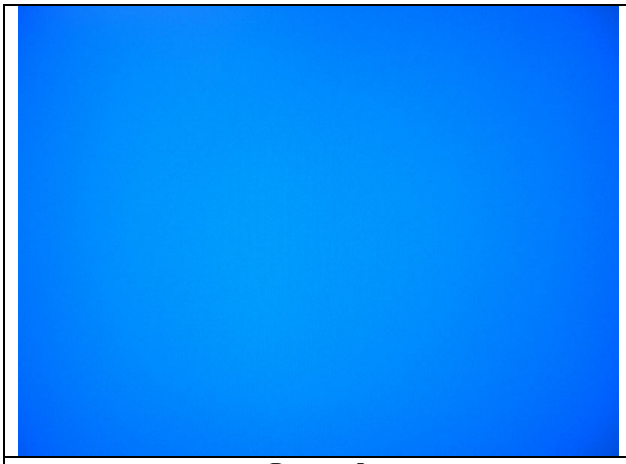
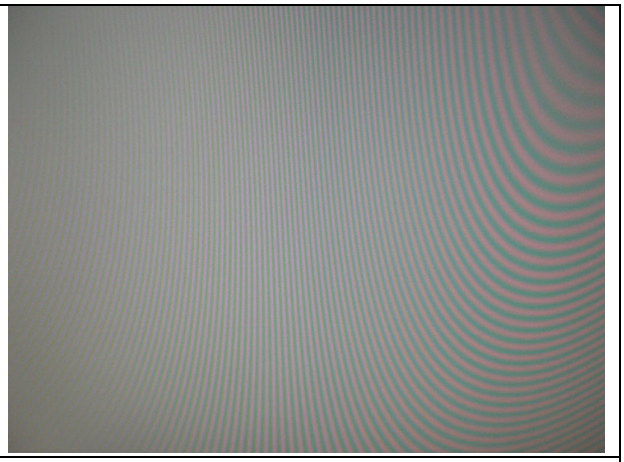
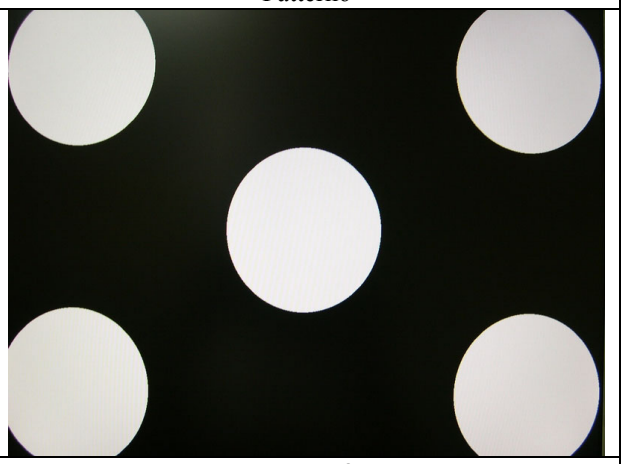
Pattern2



Pattern 3



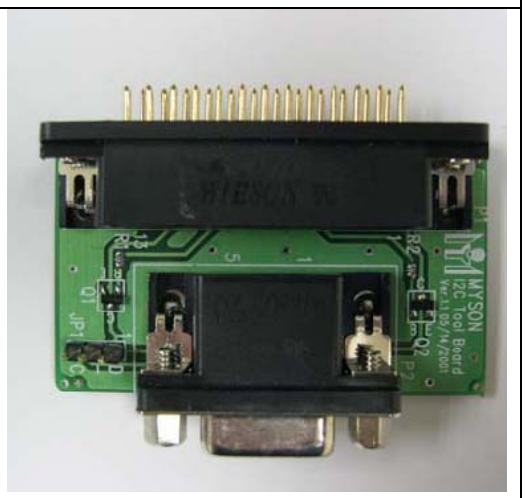
Pattern4

	
Pattern 5	Pattern6
	
Pattern 7	Pattern 8
	
Pattern 9	

Firmware update procedure :

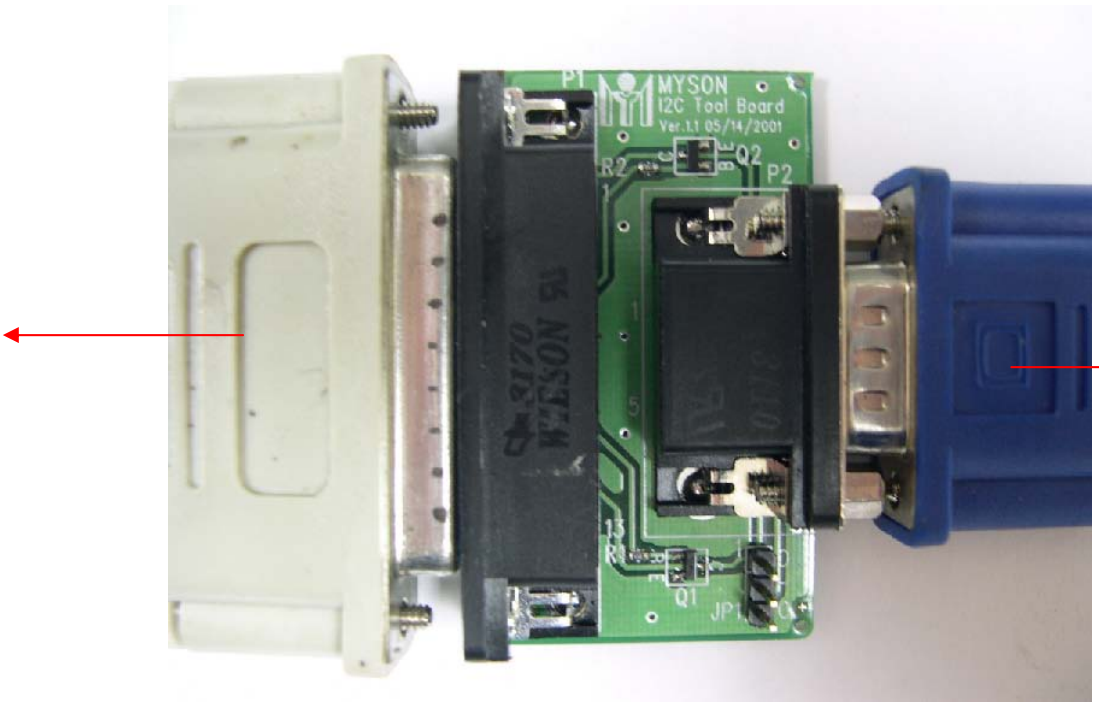
When you received a received monitor , please check whether the firmware version. If not , please following procedure to upgrade to the latest version .

1. Equipment needed :
   - VA2012w/b
   - PC (Personal computer)
   - LPT cable
   - Fixture (LM5ISP)
   - Firmware upgrade program
   -



2. Connection :

To PC



To Monitor

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

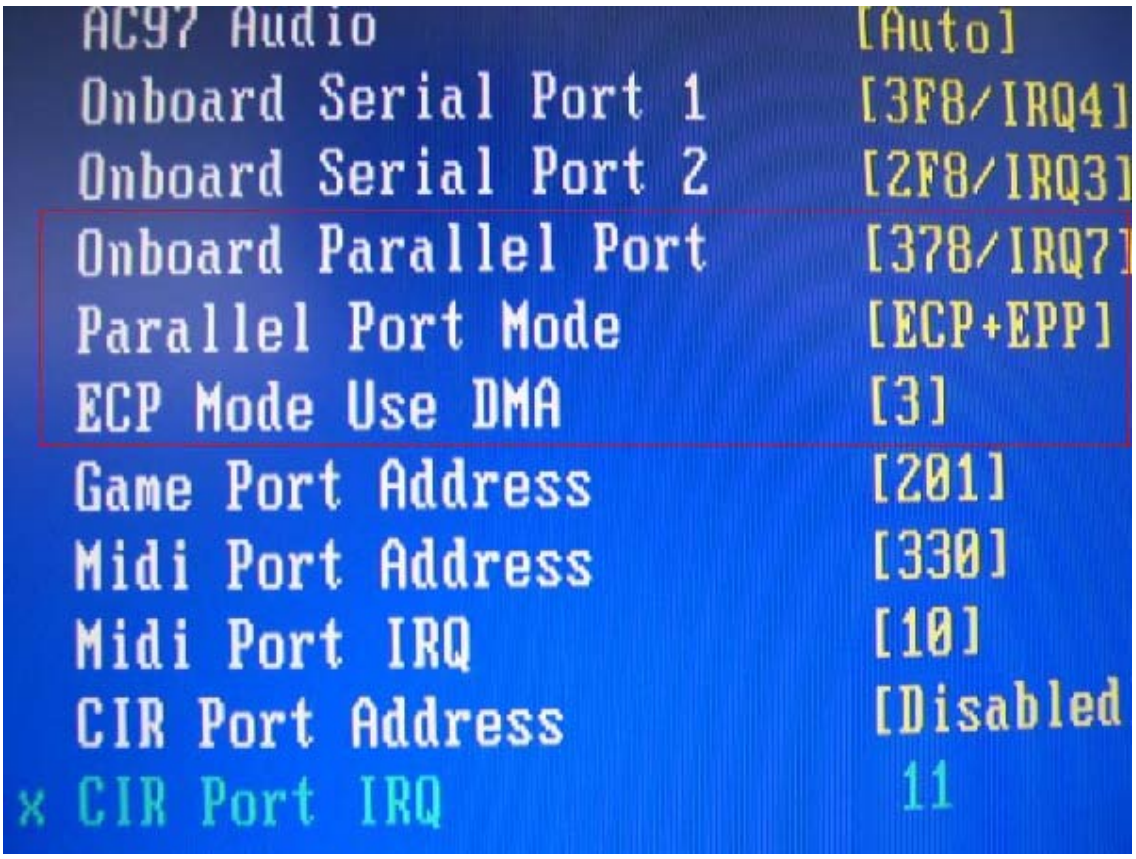


Fig 0.0

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

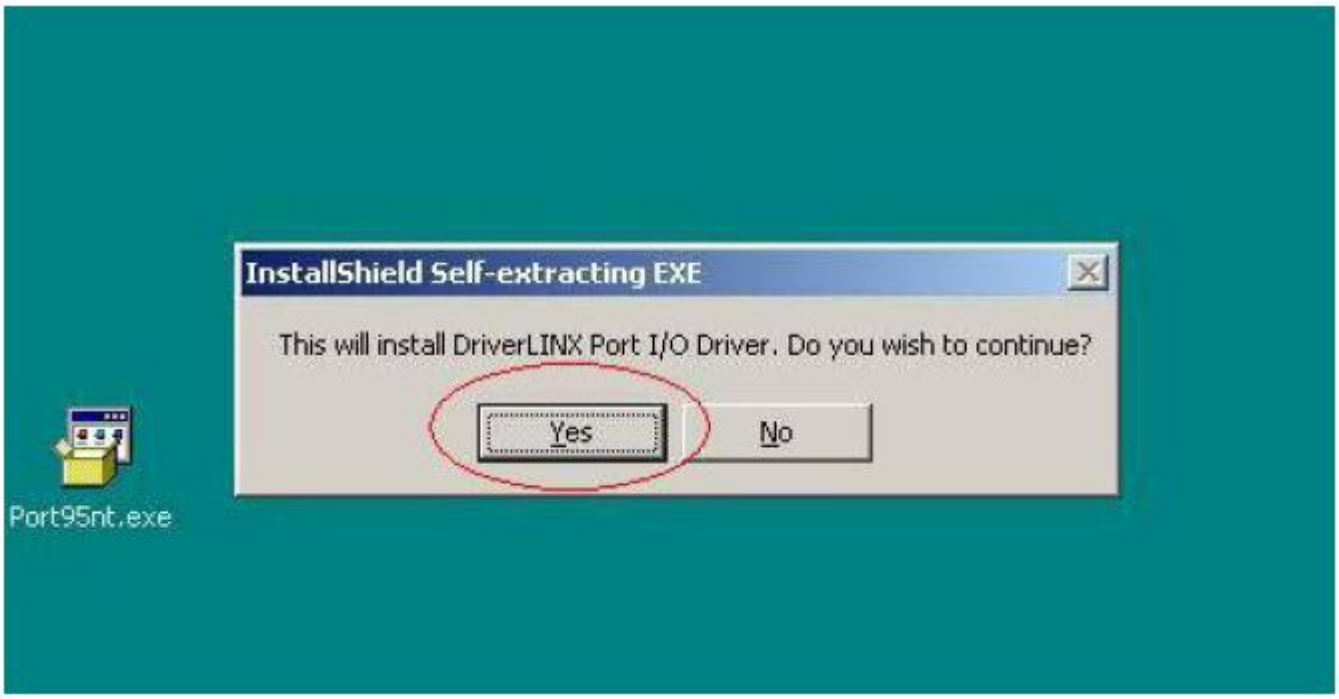


Fig 0.1

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

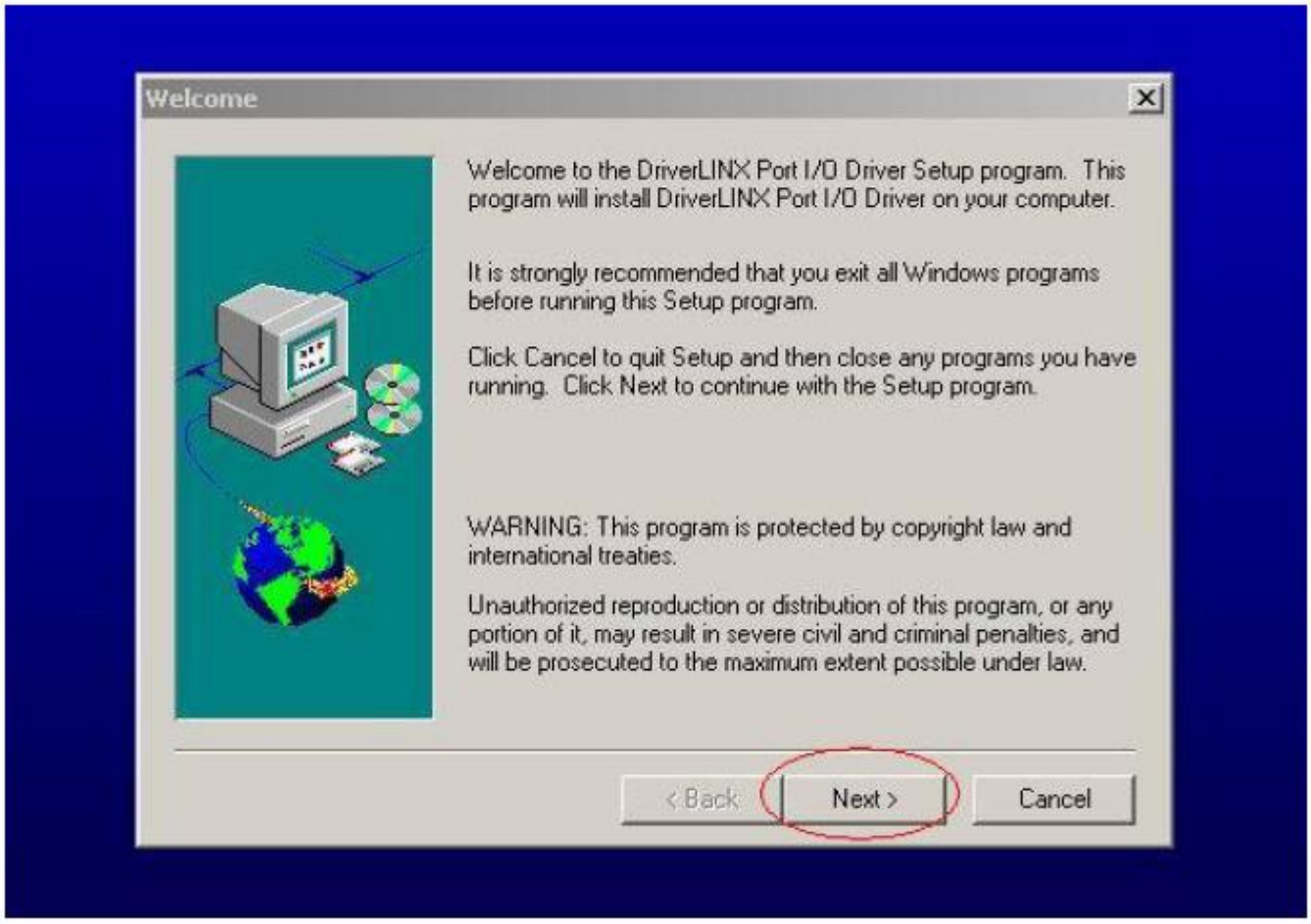


Fig. 0.2

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

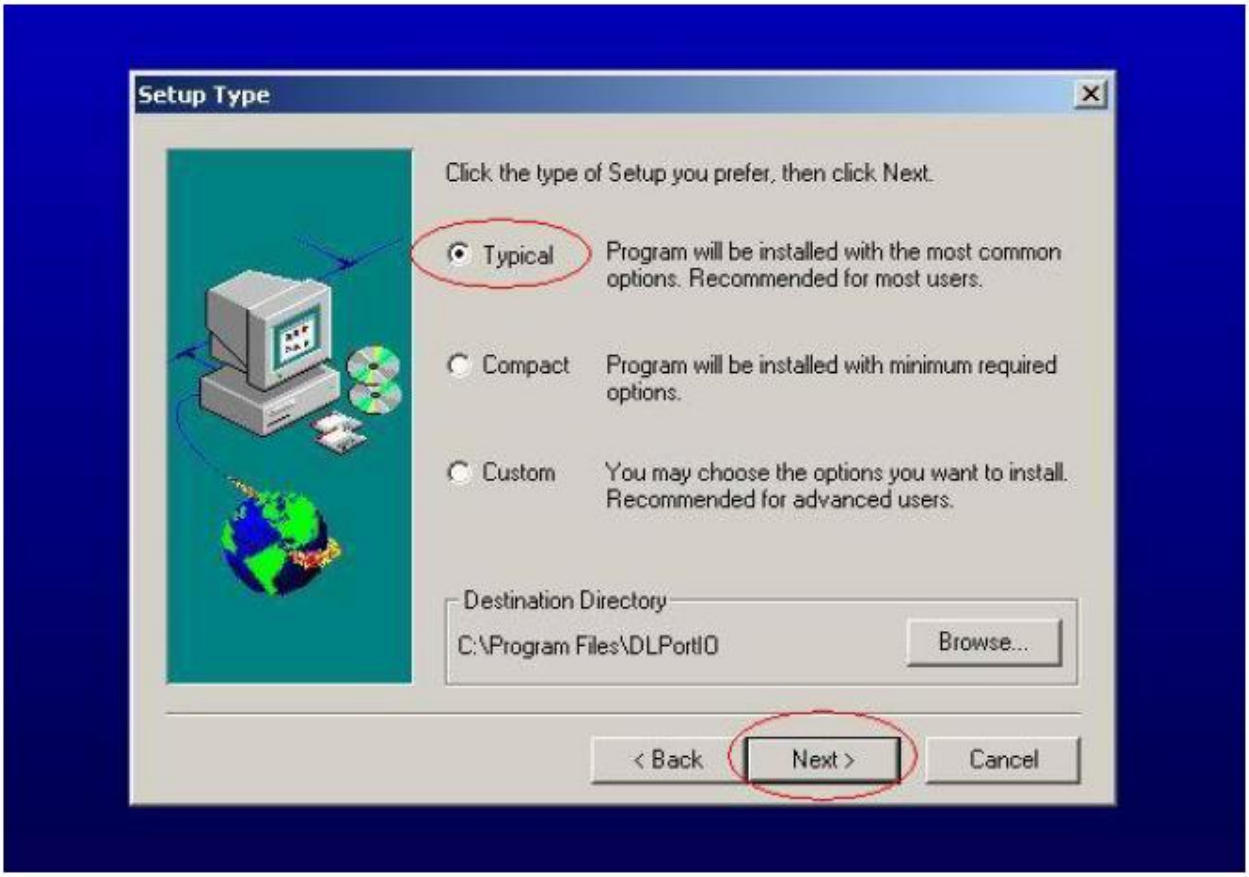


Fig. 0.3

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

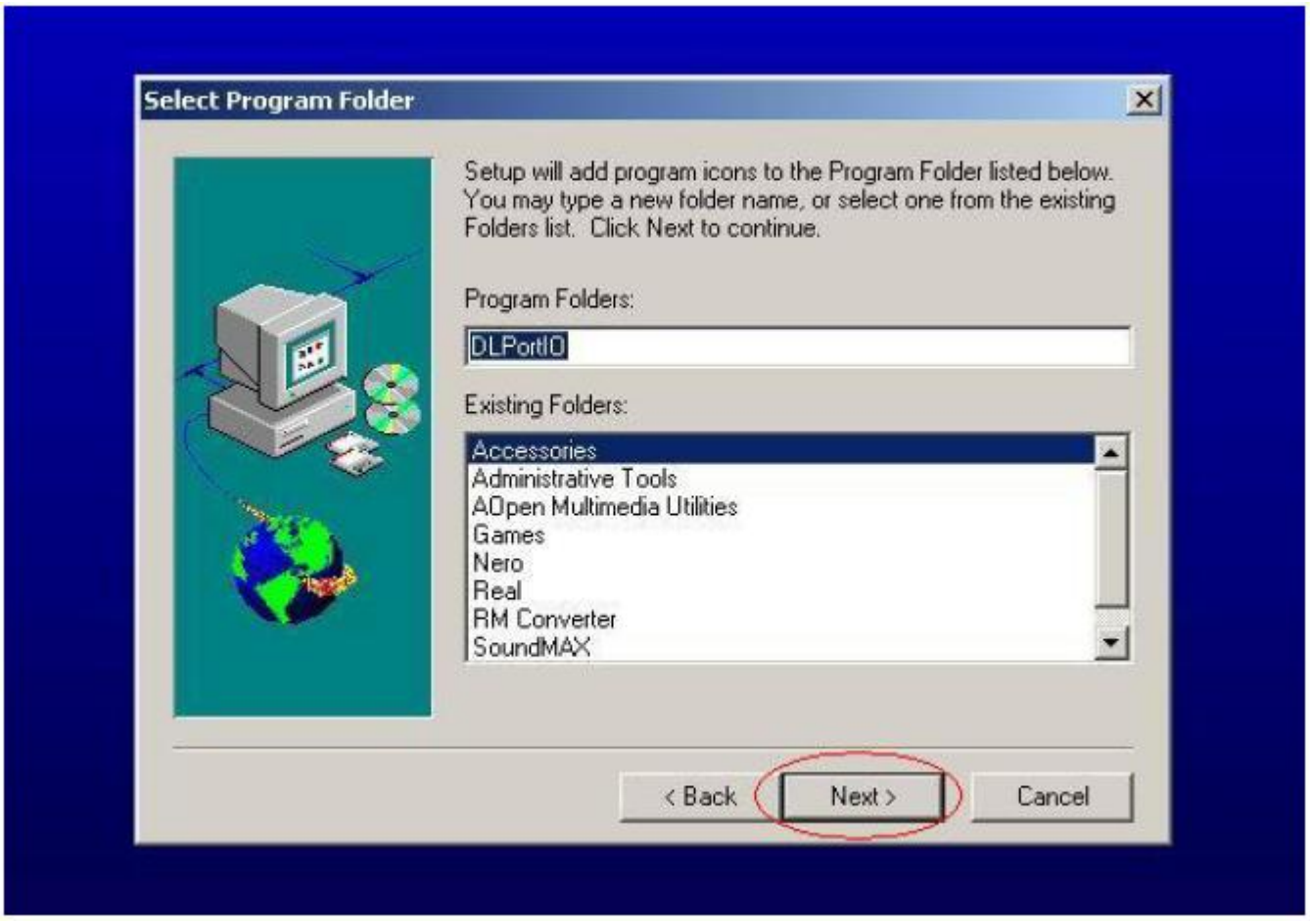


Fig. 0.4

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

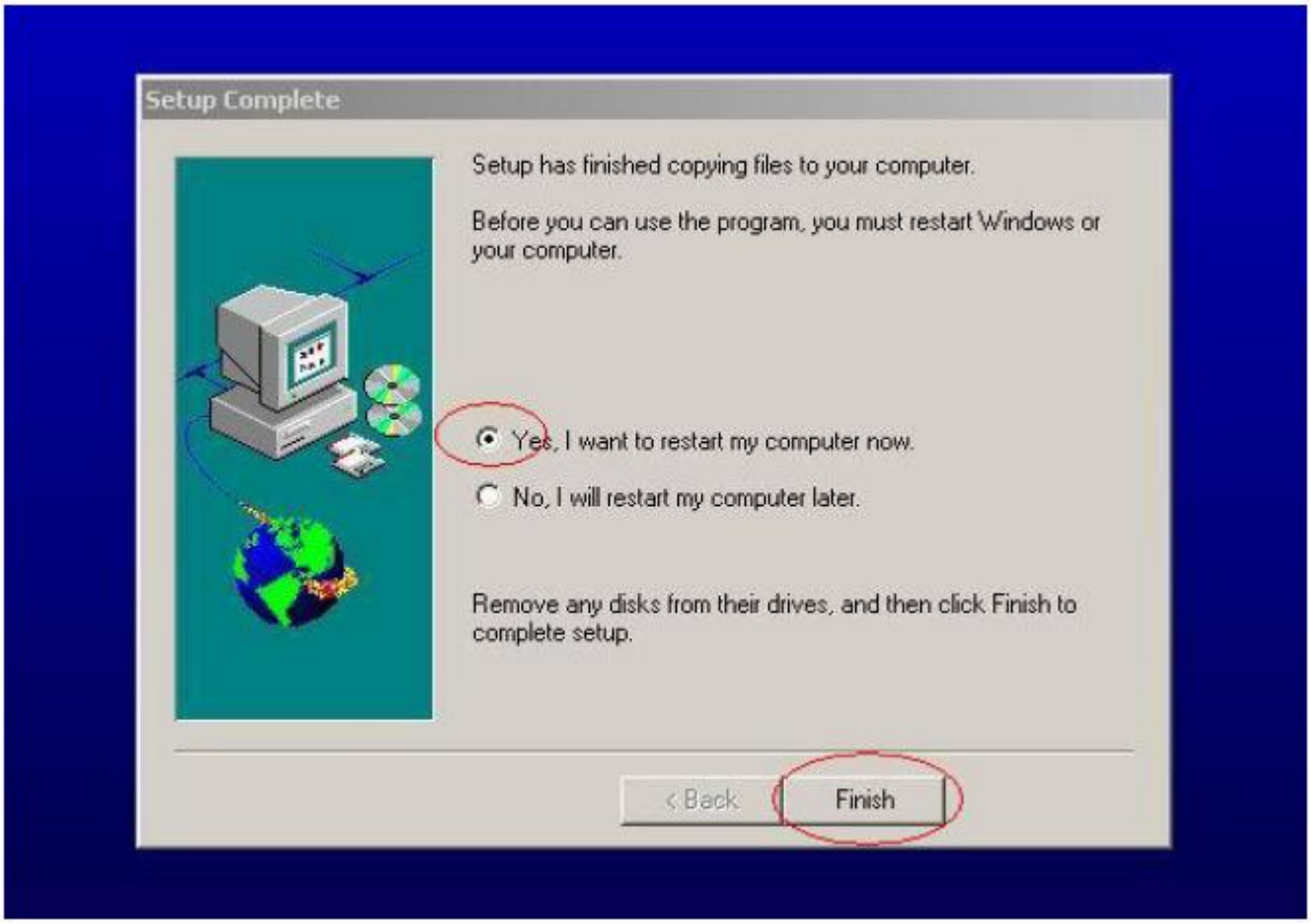


Fig. 0.5

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.

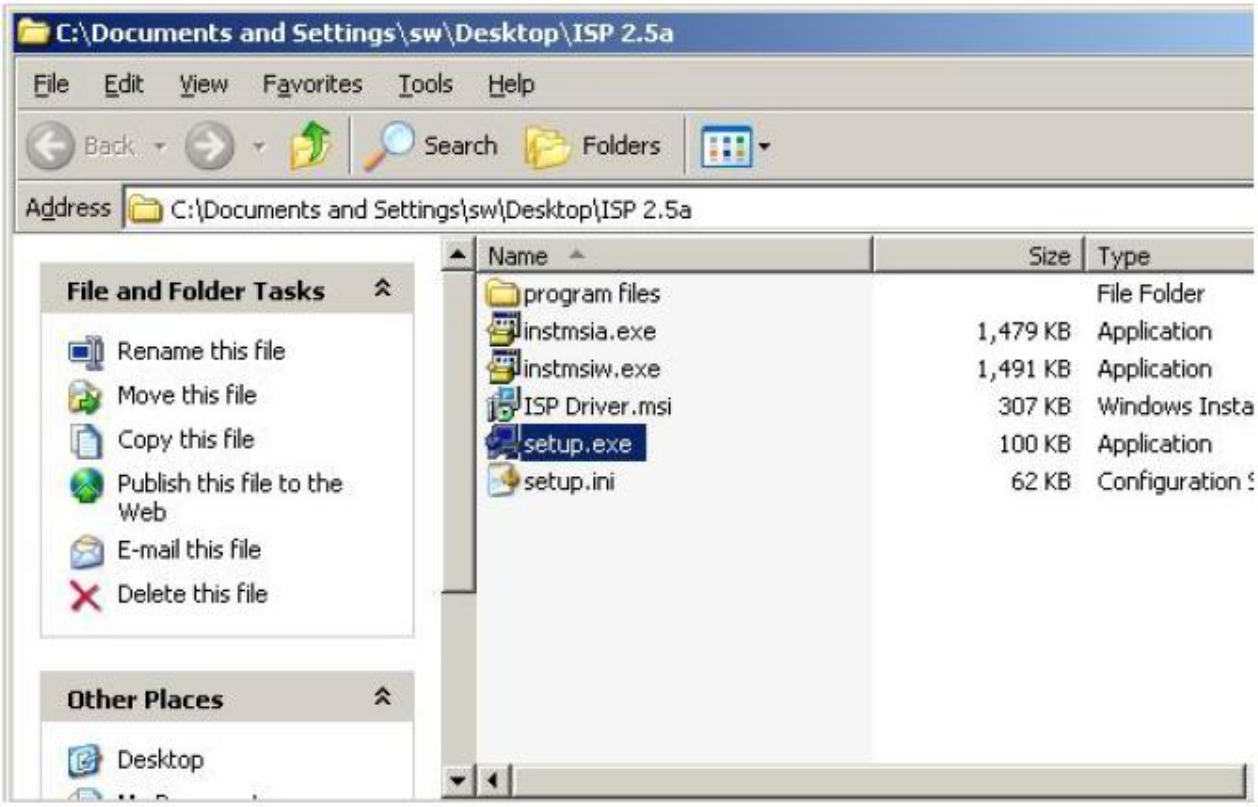


Fig 1.0

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

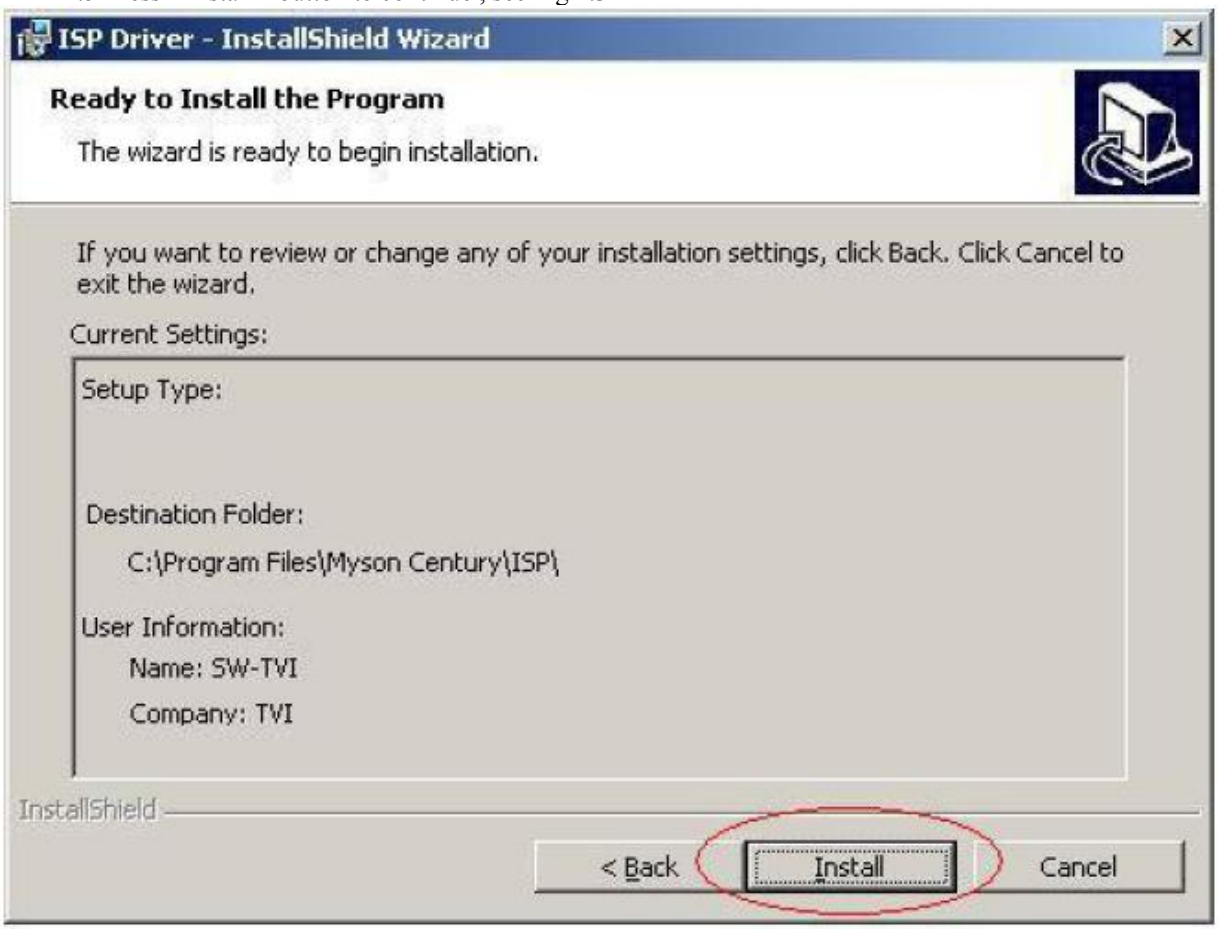


Fig. 1.3

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

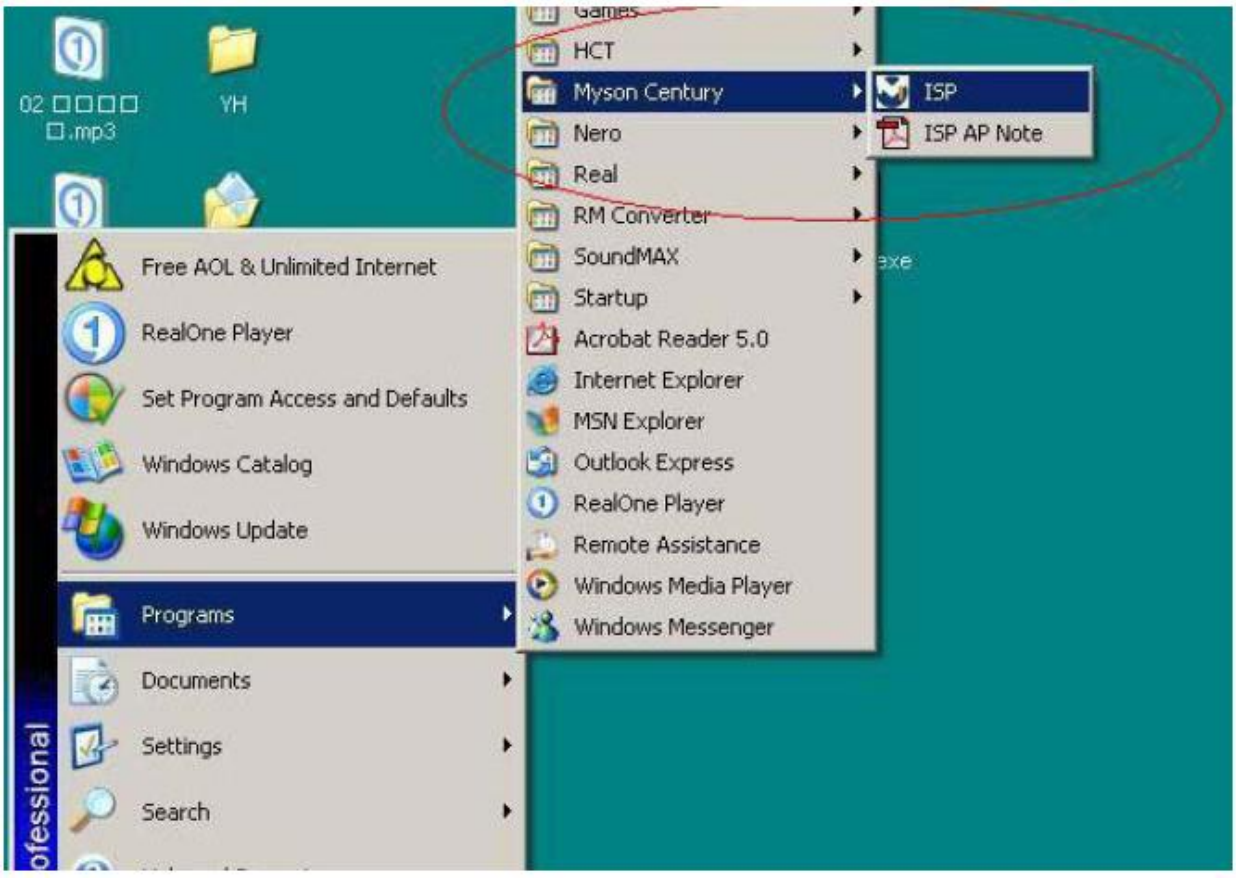


Fig. 2.1

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 .

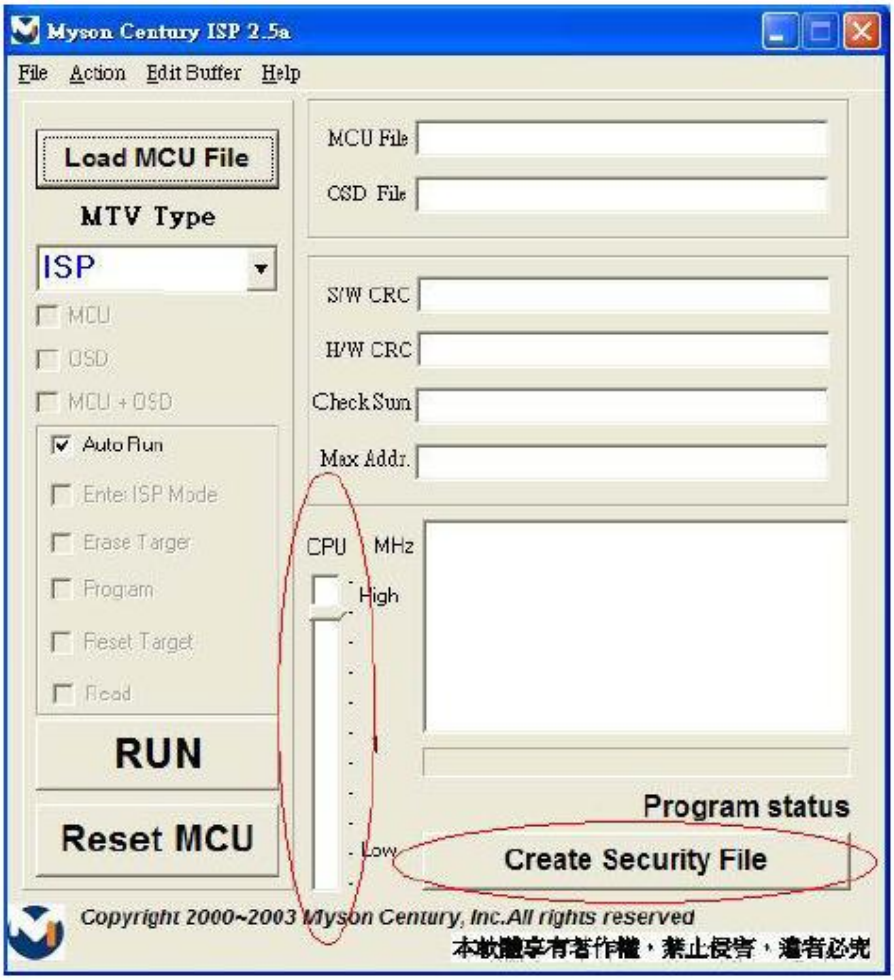


Fig. 2.5

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

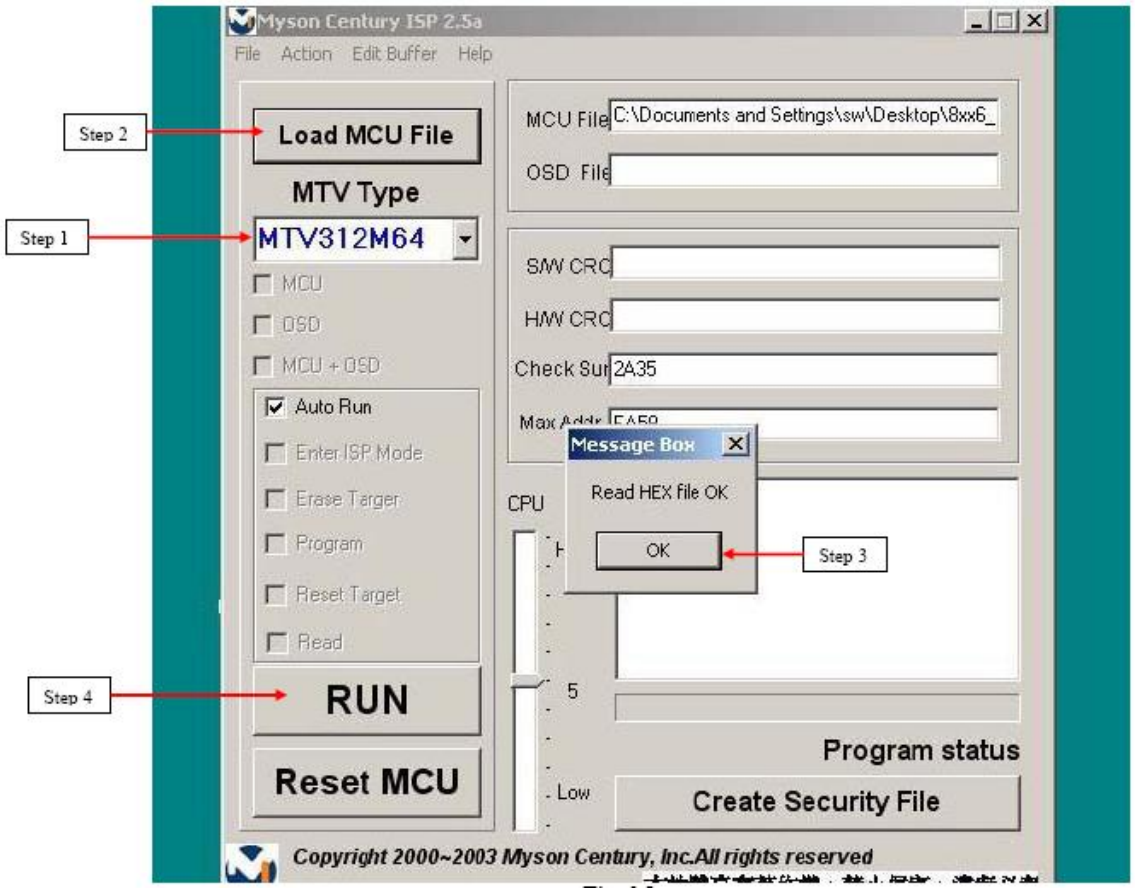


Fig. 3.1

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

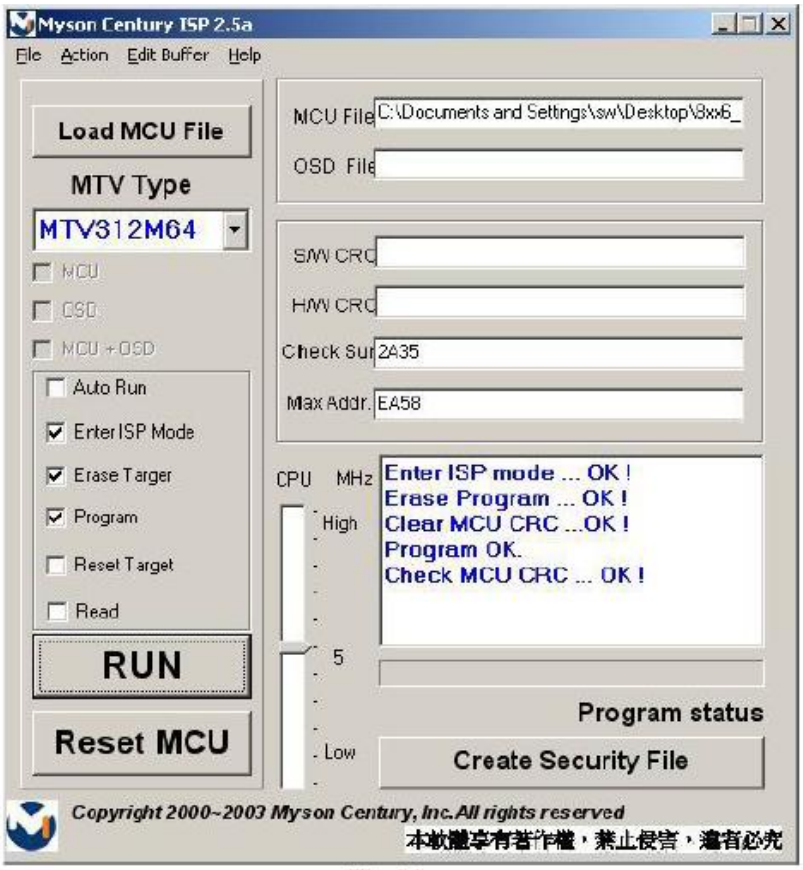


Fig. 3.2

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

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

5) 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

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

5) 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.

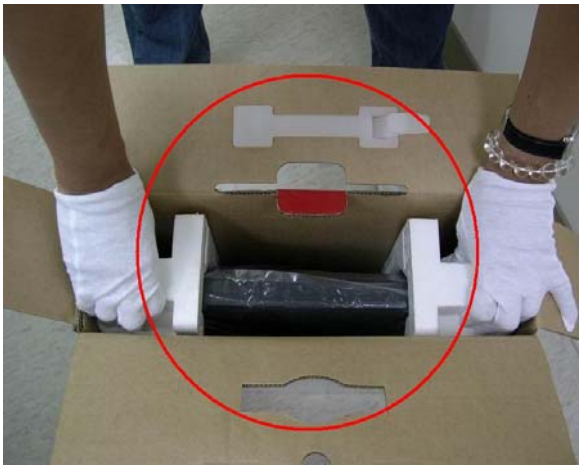
Activating Factory Mode and Burn Mode:

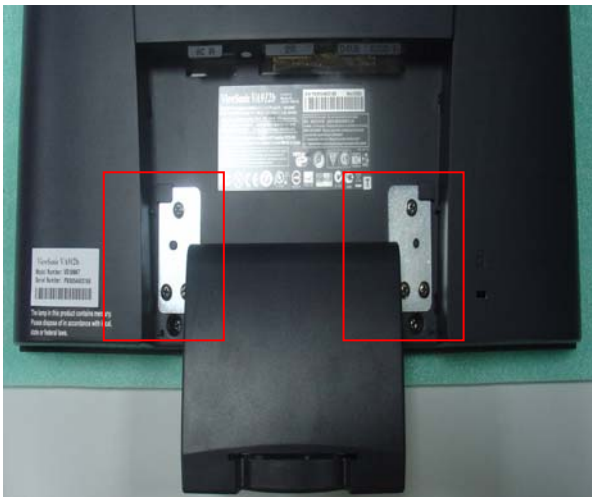
While the device is in standby, press the [2] button, then press the power button to enter Factory Mode. While Factory Mode is active, an additional menu page titled "Factory Menu" will be accessible. Press the [2] button to enter the Factory Menu page, then press the [2] button to enter Burn Mode.

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"

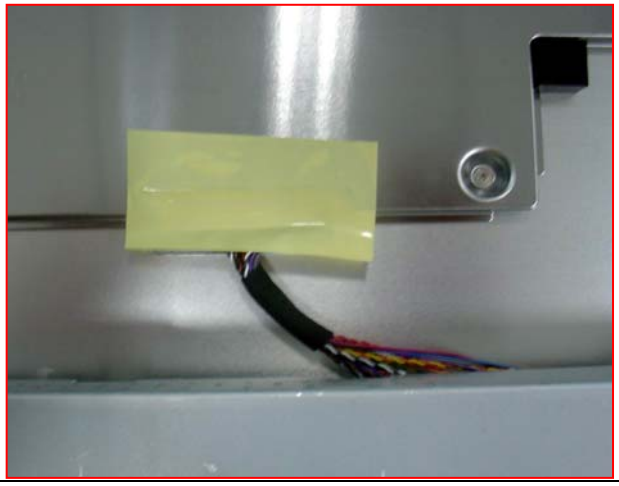
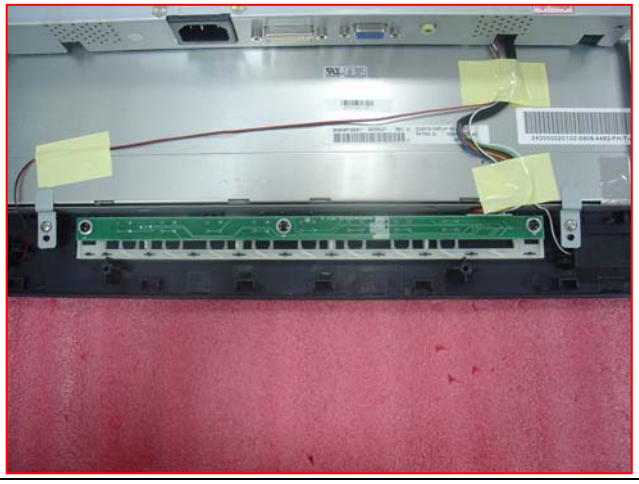
VA2012w series de-assembling procedure

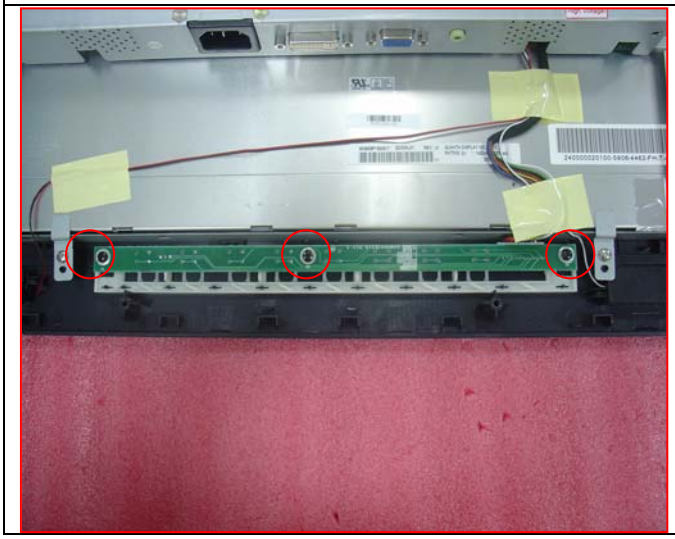
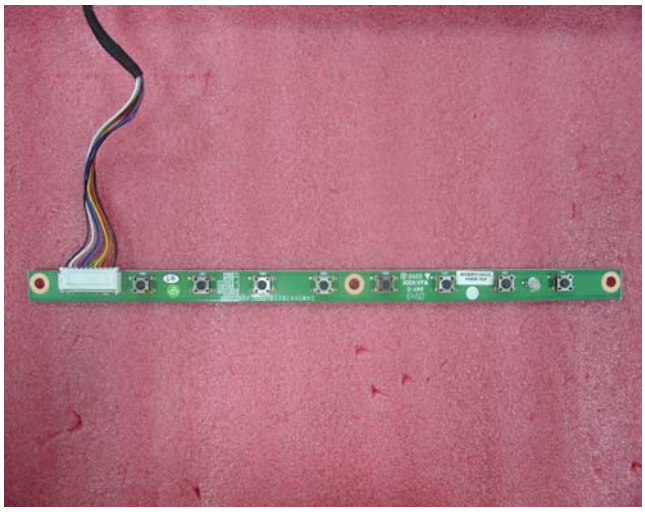
1. Move the monitor our from carton	2. Put the monitor on desk & face down
	

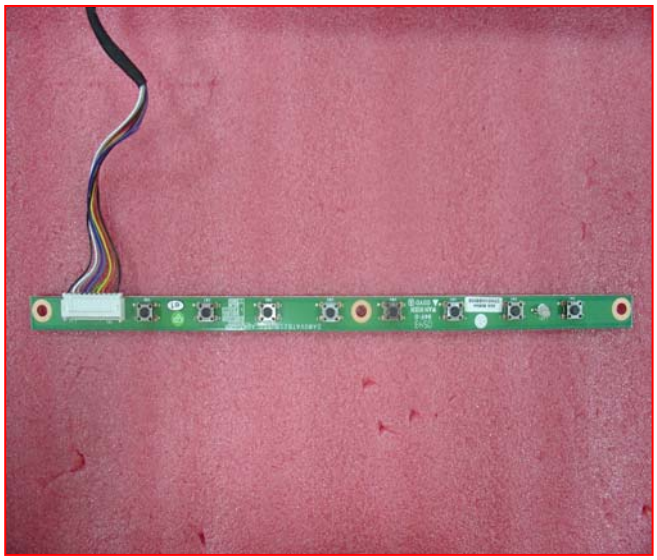
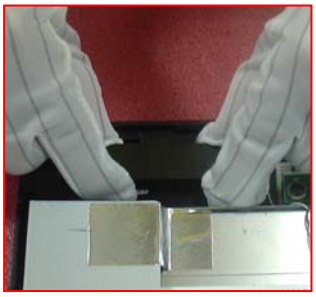
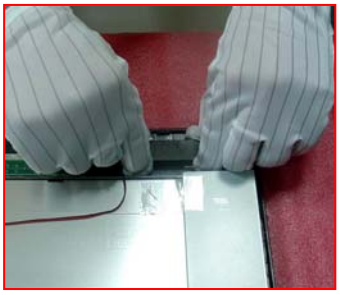
3. Remove the I/O cover	4. Loose the screws & remove the stand
	

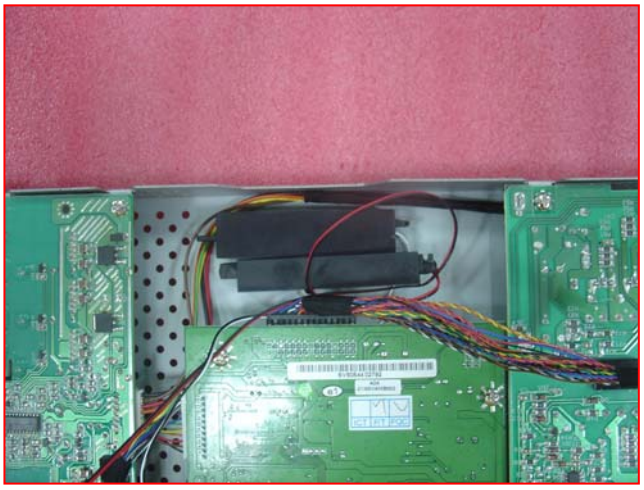
5. Separate the hook by tool (coin or screw-driver)	6. Remove the bezel & cover & AL-Foil
	

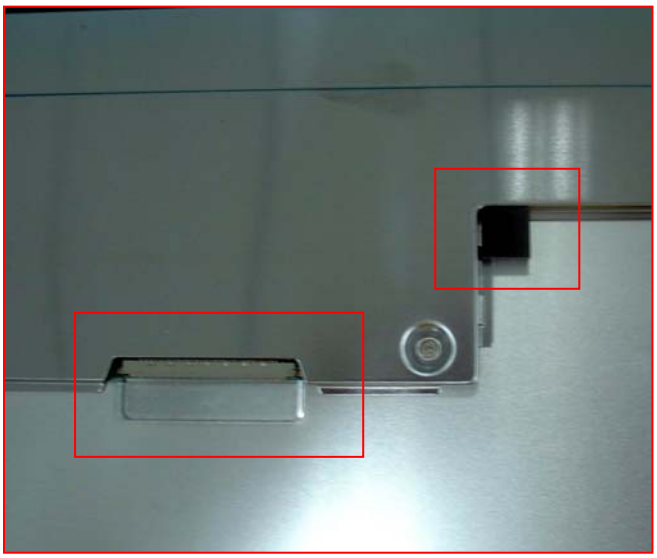
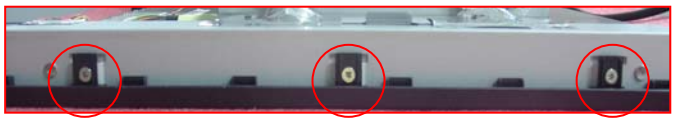
7. Pull out the CCFL cables	8. Loose the shielding screw
	

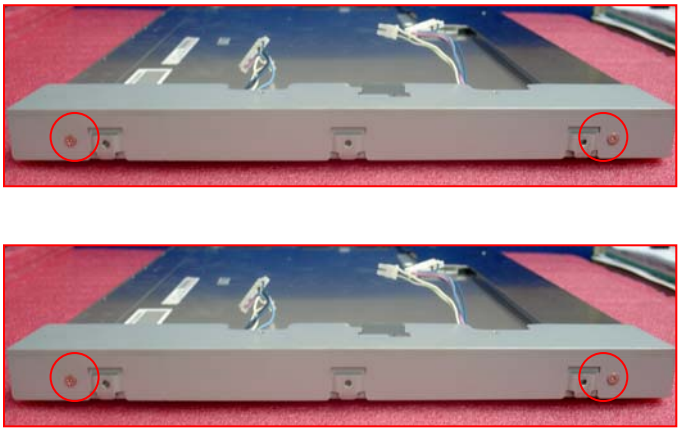
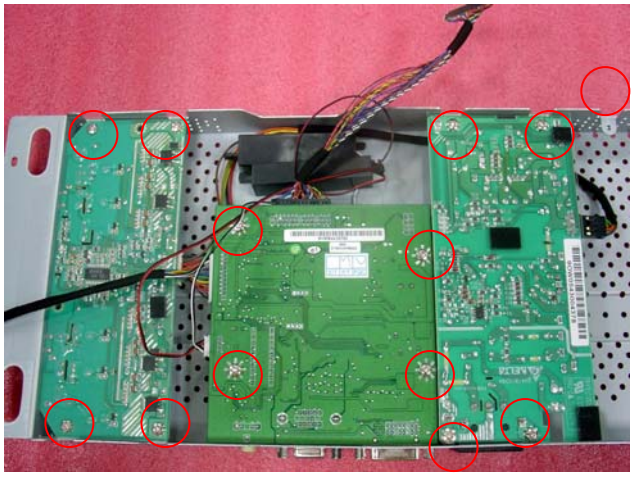
9. Tear off the yellow tape	10. Tear off the yellow tape
	

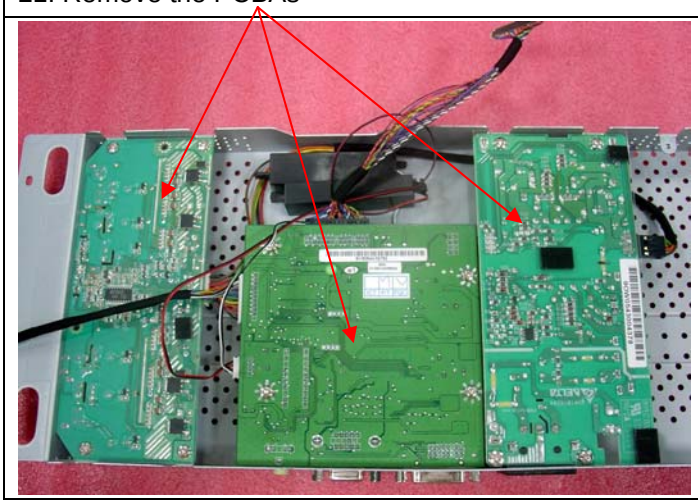
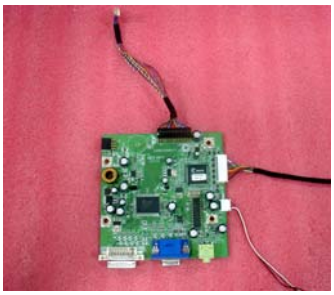
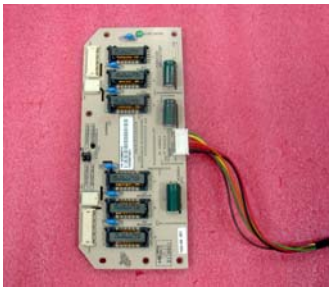
11. Loose the Button/B screw	12. Move the Button board
	

13. Remove the B/B cable	14. Remove speaker
	 

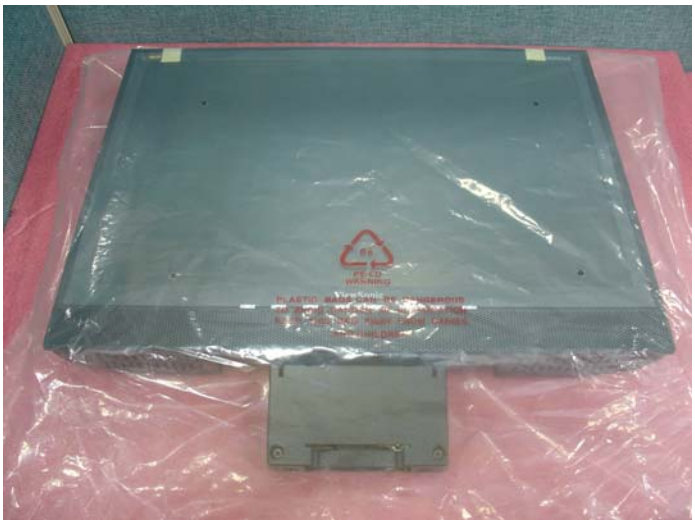
15. Remove the shielding ass'y	16.Remove the AL-Foil
	

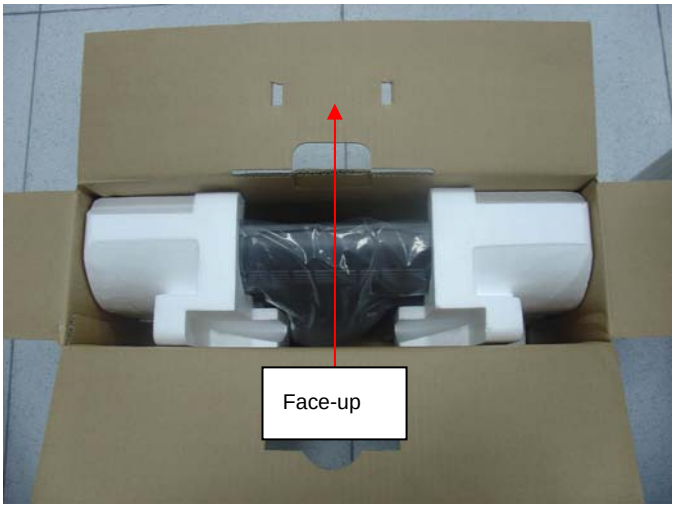
17. remove the mylar & rubber	18. Loose the bezel screw
	 

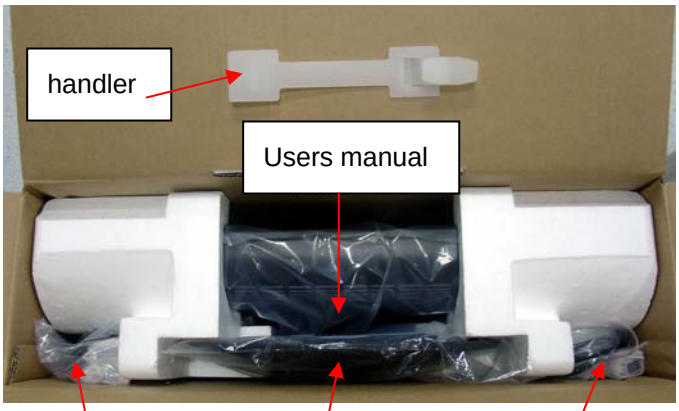
19. Loose the BKT screw L/R	20. Remove the PCBA
	

21. Remove the PCBAs	22. Remove the cables from PCBAs
	 

VA2012w series packing method

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

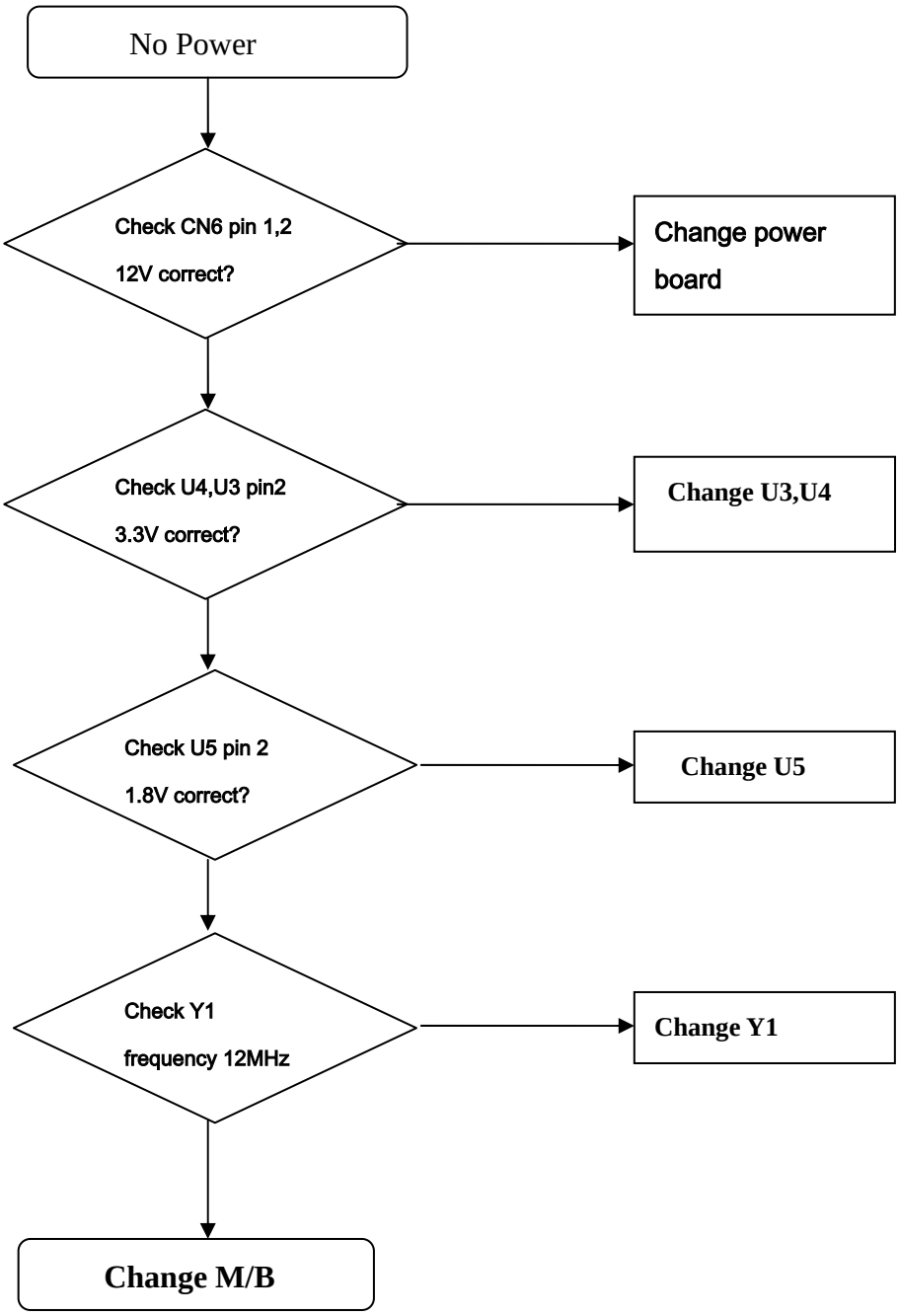
3. Put on the end-cap left / right	4. Put the monitor into carton
	

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

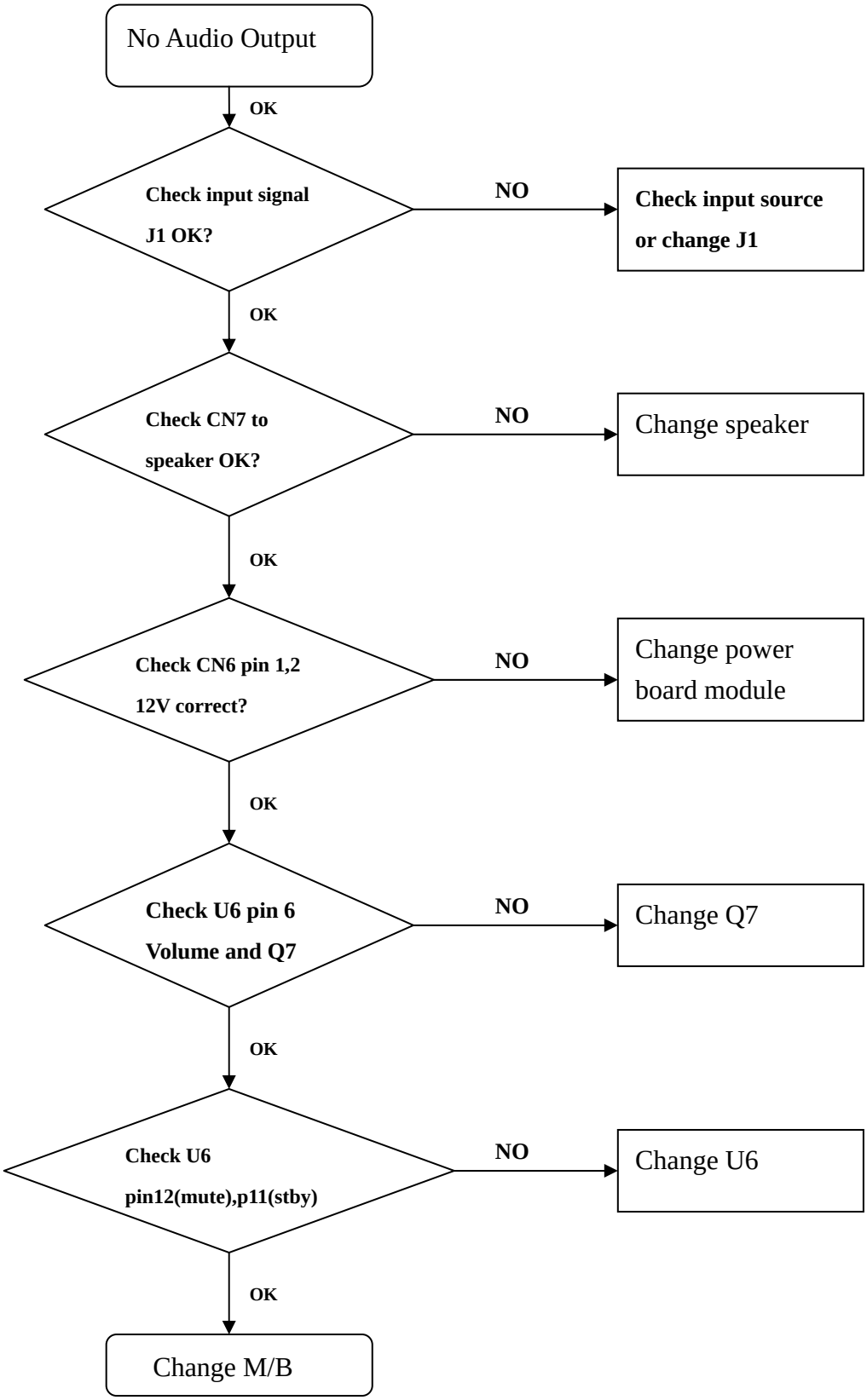
Power cable Base VGA & DVI cable

6. Troubleshooting Flow Chart

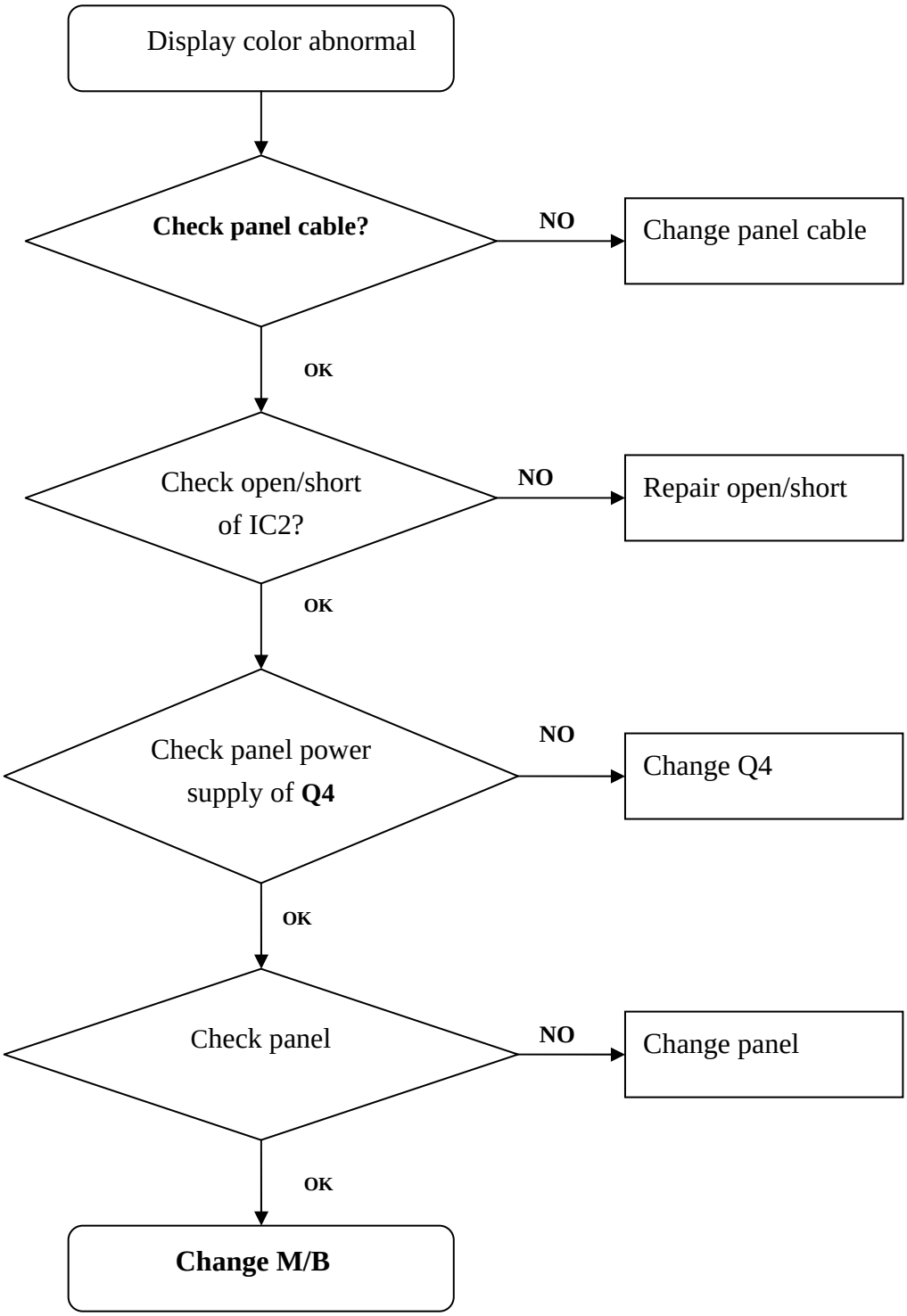
No Power



No Audio


No Audio Output
OK
Check input signal
J1 OK?
NO
Check input source
or change J1
OK
Check CN7 to
speaker OK?
NO
Change speaker
OK
Check CN6 pin 1,2
12V correct?
NO
Change power
board module
OK
Check U6 pin 6
Volume and Q7
NO
Change Q7
OK
Check U6
pin12(mute),p11(stby)
NO
Change U6
OK
Change M/B

Display color abnormal



7. Recommended Spare Parts List

RECOMMENDED SPARE PARTS LIST (VA2012w-1)

ViewSonic Model Number: VS10859-1W

Rev: 1a

Serial No. Prefix: PXC

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:**	Button board		B-00004142	23W0VABB009	Button board		1
3		Inverter board		B-00004143	AS022360D18	Inverter board		1
4		Main Board		B-00004144	21W0VAMB002	Main board		1
5		Power board		B-00004145	AS08B532009	Power board		1
6	**Cabinets:**	Back Cover Assy		C-00004146	25W0VALC015	back cover assy		**1**
7		Base Assy		C-00004147	38W0VABS010	base assy		1
8		Front Bezel Assy		C-00004148	24W0VALB018	front bezel ass'y		**1**
9	**Cables:**	Audio cable		CB-00004149	DD0L0TPC007	Audio cable		1
10		Cable MB-BB		CB-00004150	DDW0VABU007	Cable MB-BB		1
11		Cable MB-INV		CB-00004151	DD0W0EIV008	Cable MB-INV		1
12		Cable MB-LCD		CB-00004152	DD0L9VLC023	Cable MB-LCD		1
13		VGA cable		CB-00002602	DDL7VDPC005	VGA cable		1
14	**Documentation:**	User manual + CD wizard		DC-00004153	HGW0VA01013	User manual		1
15	**Electronic**	20"W QDI TFT LCD panel		E-00004154	AA20AL01004	LCD panel		1
16	**Components:**	Speaker assy		E-00004155	DN0TE130F01	speaker assy		1
17	**Hardware:**	Screw F 3.0*4.0-I(MC) GP		HW-00004156	MF30040IJB3	Screw		**10**
18		Screw M3.0*6, B(NI) GP		M-SCW-0824-0813	MF30060BBJ6	Screw		**10**
19		Screw F4.0*14-I(BNI) GP		HW-00004157	MF40140IJ29	Screw		7
20	**Miscellaneous:**	LCD film		M-00004158	JXW0ZB01019	LCD FILM		1
21	**Packing Material:**	EPE bags		P-00004159	HAL0T002019	EPE bags		**1**
22		Carton		P-00004160	HFW0VA03015	carton		**1**
23		End cap (L)		P-00004161	HBW0VA01019	cushion		**1**
24		End cap (R)		P-00004162	HBW0VA02015	cushion		**1**
25	**Plastics:**	Stand assy		PL-00004163	26W0VASA016	Stand ASSY		1

RECOMMENDED SPARE PARTS LIST (VA2012wb-1)

ViewSonic Model Number: VS10859-1V

Rev: 1a

Serial No. Prefix: PVW

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:**	Button board		B-00004142	23W0VABB009	Button board		1
3		Inverter board		B-00004143	AS022360D18	Inverter board		1
4		Main Board		B-00004144	21W0VAMB002	Main board		1
5		Power board		B-00004145	AS08B532009	Power board		1
6	**Cabinets:**	back cover assy		C-00004164	25W0VALC007	back cover assy		**1**
7		base assy		C-00004165	38W0VABS001	base assy		1
8		Front bezel assy		C-00004166	24W0VALB000	front bezel ass'y		**1**
9	**Cables:**	Audio cable		CB-00004149	DD0L0TPC007	Audio cable		1
10		Cable MB-BB		CB-00004150	DDW0VABU007	Cable MB-BB		1
11		Cable MB-INV		CB-00004151	DD0W0EIV008	Cable MB-INV		1
12		Cable MB-LCD		CB-00004152	DD0L9VLC023	Cable MB-LCD		1
13		VGA cable		CB-00002602	DDL7VDPC005	VGA cable		1
14	**Documentation:**	User manual + CD wizard		DC-00004153	HGW0VA01013	User manual		1
15	**Electronic**	20"W QDI TFT LCD panel		E-00004154	AA20AL01004	LCD panel		1
16	**Components:**	Speaker assy		E-00004155	DN0TE130F01	speaker assy		1
17	**Hardware:**	Screw F 3.0*4.0-I(MC) GP		HW-00004156	MF30040IJB3	Screw		**10**
18		Screw M3.0*6, B(NI) GP		M-SCW-0824-0813	MF30060BBJ6	Screw		**10**
19		Screw F4.0*14-I(BNI) GP		HW-00004157	MF40140IJ29	Screw		7
20	**Miscellaneous:**	LCD film		M-00004158	JXW0ZB01019	LCD FILM		1
21	**Packing Material:**	EPE bags		P-00004159	HAL0T002019	EPE bags		**1**
22		Carton		P-00004167	HFW0VA01012	carton		**1**
23		End cap (L)		P-00004161	HBW0VA01019	cushion		**1**
24		End cap (R)		P-00004162	HBW0VA02015	cushion		**1**
25	**Plastics:**	Stand assy		PL-00004168	26W0VASA008	Stand ASSY		1

BOM LIST (VA2012w-1)

ViewSonic Model Number: VS10859-1W

Rev: 1a

Serial No. Prefix: PXC

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
1	#N/A	1LW0VAXVS99	W0VA LCD MONITOR(TWN)S/B GP			
2	B-00004144	21W0VAMB002	W0VA M/B ASSY (NOVATEK 68563) GP			1
3	#N/A	31W0VASS008	W0VA M/B S/S ASSY (NOVATEK 68563) GP			1
4	#N/A	DFDS15FR076	CONN D-SUB 15P 3R FR(P1.15,H12.55) GP	CN1		1
5	#N/A	DFDI24FR108	CONN DIP DVI 24P 3R FR(P1.905,H10.04) GP	CN2		1
6	#N/A	DFHD11MR001	CONN DIP HEADER 11P 1R MR(P2.0,H4.1) GP	CN3		1
7	#N/A	DFHD30MR267	CONN DIP HEADER 30P 2R MR(P2.0,H4.0) GP	CN4		1
8	#N/A	DFHD08FR102	CONN DIP HEADER 8P 2R FR(P2.54,H5.0) GP	CN6		1
9	#N/A	DFHD04MR132	CONN DIP HEADER 4P 1R MR(P2.0,H4.1) GP	CN7		1
10	#N/A	CC647T1MD05	CAP EC 47U 10V(+-20%,105C,5*11,2000H)GP	C37		1
11	#N/A	CC71004MD68	CAP EC 100U 25V(+-20%,105C,6*11,LESR) GP	C68,C69,C70,C72		4
12	#N/A	CC73303MD51	CAP EC 330U 16V(+-20%,105C,8*11,2KH)GP	C24,C30,C46,C53,C66,C67,C74,C76,C80,C		10
13	#N/A	CC810T1MD05	CAP EC 1000U6.3V(+-20%,105C,8*11.5) GP	C61		1
14	#N/A	BG612000202	XTAL DIP 12MHZ(+-30PPM,HC-49/S TYPE) GP	Y2		1
15	#N/A	DFPJ05FR153	CONN DIP PHONE JACK 5P FR(H10)248C GP	J2		1
16	#N/A	DC04725K011	CHOKE COIL 47UH(2.5A,+-10%,T07473 GP) GP	L15		1
17	#N/A	AL007496D29	IC(20P) UTC TDA7496LK(DIP) GP	U6		1
18	B-00004142	23W0VABB009	W0VA BUTTON/B ASSY GP			1
19	B-00004145	AS08B532009	PWR MODULE(DTA)EADP-64CF B,90~264V GP			1
20	#N/A	AS023360D18	INV MODULE(SEL)W0E(20V,I=6MA) GP			1
21	C-00004148	24W0VALB018	W0VA LCD BEZEL ASSY (S/B) GP			1
22	#N/A	34W0VALB018	W0VA LCD BEZEL SUB ASSY (S/B) GP			1
23	#N/A	36W0VAPS006	W0VA PCB SHIELDING ASSY GP			1
24	#N/A	FAW0VA02014	LCD BKT-L W0VA(FAW0VA02,REV3A)GP			1
25	#N/A	FAW0VA03011	LCD BKT-R W0VA(FAW0VA03,REV3A)GP			1
26	#N/A	FCW0E002016	POWER MYLAR W0E-A1(FAW0E002, REV3A)GP			1
27	#N/A	FCL70007019	MYLAR SCALAR/LCD L70L-A(FCL70007,R3A)GP			1
28	#N/A	FCM7T004014	AL FOIL M7T(FCM7T004,REV3A) GP			2
29	M-SCW-0824-6761	MM30030IBJ4	SCREW M3*3-I-NI GP			4
30	HW-00004156	MF30040IJB3	SCREW F3.0*4.0-I(MC) GP			10
31	M-SCW-0824-0813	MF30060BBJ6	SCREW F3.0*6-B(NI)GP			10
32	M-MS-0808-8986	MBLI1004018	IO NUT LI1(MBLI1004,REV3A)			4
33	M-SCW-0824-0814	MM30060BBJ3	SCREW M3.0*6,B(NI) GP			1
34	#N/A	MS35080B456	SCREW F3.5*8-B(NI)(WASHER)GP			1
35	#N/A	FCL7TA03011	AL-(50*25) L7TA(FCL7TA03,REV3B)GP			2
36	CB-00002525	DD0L9VLC015	CABLE MB-LCD(30P,140MM)L9V-5 GP			1
37	CB-00004152	DD0L9VLC023	CABLE LVDS(30P,140MM,LINKTEC,AU)L9VA GP			1
38	CB-00004150	DDW0VABU007	CABLE MB-BUTTON(11P/11P,240MM)W0VA GP			1
39	CB-00004151	DD0W0EIV008	CABLE MB-INV(7P/8P,320MM)W0E GP			1
40	E-00004155	DN0TE130F01	SPEAK ASSY L9T FG-TE130 1.5W*2 GP			1
41	C-00004146	25W0VALC015	W0VA LCD COVER ASSY (S/B) GP			1
42	#N/A	EAW0VA02022	LCD COVER W0VA(EAW0VA02,R3A)BKGP			1
43	M-MS-0808-9411	FBL70008014	LOCK METAL L70B(FBL70008,REV3A) GP			1
44	#N/A	FBW0VA01019	HINGE-PLATE W0VA(FBW0VA01,REV3A)GP			1
45	PL-00004163	26W0VASA016	W0VA STAND ASSY (S/B) GP			1
46	#N/A	EAW0VA03029	STAND FRONT W0VA(EAW0VA03,R3A)BK GP			1
47	#N/A	EAW0VA05021	STAND-BACK W0VA(EAW0VA05,R3A)BK 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	#N/A	27W0VACS014	W0VA CHASSIS ASSY S/B GP			1
53	#N/A	EBW0VA03020	HINGE COVER W0VA(EBW0VA03,R3A)BK GP			1
54	#N/A	GAW0VA02014	RUBBER PLUG VESA (GAW0VA02,R3A)GRAY			4
55	#N/A	ME40200PJ28	SCREW T4.0*20.0-P(BNI) GP			2
56	#N/A	MM40100BL61	SCREW M4*10.0-B(BNI,NYLOK) GP			4
57	#N/A	2AW0VAPTQ01	W0VA PANEL DEPENDENT KIT ASSY(QDI) GP			1
58	E-00004154	AA20AL01004	LCD(TFT) 20" QD20AL01 REV.01 GP			1
59	#N/A	AZW0VA0Q005	W0VA SW BIOS(NOVATEK,W/AUDIO)FOR QDI			1
60	#N/A	28W0VAPK011	W0VA PACKING ASSY (S/B) GP			1
61	C-00004147	38W0VABS010	W0VA BASE SUB ASSY (S/B) GP			1
62	CB-00002602	DDL7VDPC005	CABLE MB-VGA (15/15P,1.8M)L7VD GP			1
63	CB-00004149	DD0L0TPC007	CABLE AUDIO(ST,1.8M)BLACK L0T GP			1
64	CB-00003440	DD0L0TTH108	CABLE ASSY L0T MB-DVI(24P,REV2A) GP			1
65	P-00004161	HBW0VA01019	END CAP(L) W0VA(HBL7TA01,REV3A) GP			1
66	P-00004162	HBW0VA02015	END CAP(R) W0VA(HBL7TA02,REV3A) GP			1
67	M-LB-0813-0747	HCL7V004013	CORE LABEL(HCL7V004,REV3A)			1
68	#N/A	HCW0VA02016	ID LABEL(S) W0VA(HCW0VA02,REV3A) GP			1
69	M-LB-0813-0745	HCL7V002011	SERIAL LEBAL L7V(HCL7V002,REV3A) GP			1
70	M-LB-0813-1042	HCL7V019011	CARTON LABEL L7VC(HCL7V019,REV3B) GP			1

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
71	P-00004160	HFW0VA03015	CARTON(S) W0VA(HFW0VA03,REV3A) GP			1
72	DC-00004153	HGW0VA01013	CD+QSG W0VA(HGW0VA01,REV3A) GP			1
73	#N/A	JXLM5003011	HANDLE LM5S(JXLM5003,REV 3B) GP			1
74	M-00004158	JXW0ZB01019	LCD FILM W0ZB-A1(JXW0ZB01,REV3A)GP			1
75	M-LB-0813-1043	HCL70021011	HI-POT LABEL L70L(HCL70021,REV3A)			1
76	#N/A	HFW0VA02019	SPACE PLATE W0VA(HFW0VA02,REV3A) GP			0.042
77	P-00004159	HAL0T002019	PE BAG L0T(HAL0T002,REV3A)GP			1
78	A-00003642	DM33T181004	POWER CORD SP-305+IS-14 3P 1.8M(TWN)B GP			1

BOM LIST (VA2012wb-1)

ViewSonic Model Number: VS10859-1W

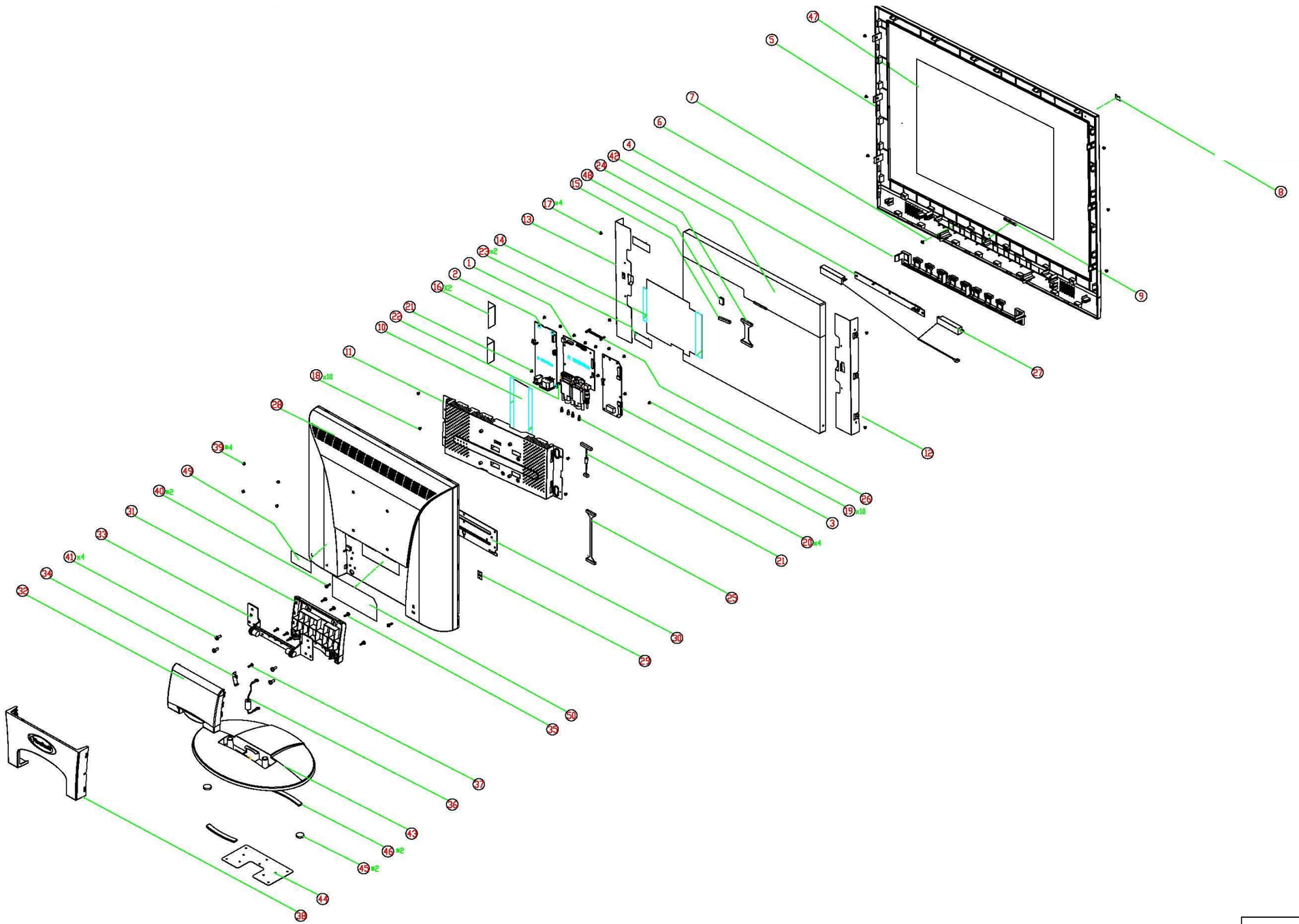
Rev: 1a

Serial No. Prefix: PVW

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
1	#N/A	1LW0VAXVS05	W0VA LCD MONITOR(USA) GP			
2	B-00004144	21W0VAMB002	W0VA M/B ASSY (NOVATEK 68563) GP			1
3	#N/A	31W0VASS008	W0VA M/B S/S ASSY (NOVATEK 68563) GP			1
4	#N/A	DFDS15FR076	CONN D-SUB 15P 3R FR(P1.15,H12.55) GP	CN1		1
5	#N/A	DFDI24FR108	CONN DIP DVI 24P 3R FR(P1.905,H10.04) GP	CN2		1
6	#N/A	DFHD11MR001	CONN DIP HEADER 11P 1R MR(P2.0,H4.1) GP	CN3		1
7	#N/A	DFHD30MR267	CONN DIP HEADER 30P 2R MR(P2.0,H4.0) GP	CN4		1
8	#N/A	DFHD08FR102	CONN DIP HEADER 8P 2R FR(P2.54,H5.0) GP	CN6		1
9	#N/A	DFHD04MR132	CONN DIP HEADER 4P 1R MR(P2.0,H4.1) GP	CN7		1
10	#N/A	CC647T1MD05	CAP EC 47U 10V(+-20%,105C,5*11,2000H)GP	C37		1
11	#N/A	CC71004MD68	CAP EC 100U 25V(+-20%,105C,6*11,LESR) GP	C68,C69,C70,C72		4
12	#N/A	CC73303MD51	CAP EC 330U 16V(+-20%,105C,8*11,2KH)GP	C24,C30,C46,C53,C66,C67,C74,C76,C80,C83		10
13	#N/A	CC810T1MD05	CAP EC 1000U6.3V(+-20%,105C,8*11.5) GP	C61		1
14	#N/A	BG612000202	XTAL DIP 12MHZ(+-30PPM,HC-49/S TYPE) GP	Y2		1
15	#N/A	DFPJ05FR153	CONN DIP PHONE JACK 5P FR(H10)248C GP	J2		1
16	#N/A	DC04725K011	CHOKE COIL 47UH(2.5A,+-10%,T07473 GP) GP	L15		1
17	#N/A	AL007496D29	IC(20P) UTC TDA7496LK(DIP) GP	U6		1
18	B-00004142	23W0VABB009	W0VA BUTTON/B ASSY GP			1
19	B-00004145	AS08B532009	PWR MODULE(DTA)EADP-64CF B,90~264V GP			1
20	#N/A	AS023360D18	INV MODULE(SEL)W0E(20V,I=6MA) GP			1
21	C-00004166	24W0VALB000	W0VA LCD BEZEL ASSY GP			1
22	#N/A	34W0VALB000	W0VA LCD BEZEL SUB ASSY GP			1
23	#N/A	36W0VAPS006	W0VA PCB SHIELDING ASSY GP			1
24	#N/A	FAW0VA02014	LCD BKT-L W0VA(FAW0VA02,REV3A)GP			1
25	#N/A	FAW0VA03011	LCD BKT-R W0VA(FAW0VA03,REV3A)GP			1
26	#N/A	FCW0E002016	POWER MYLAR W0E-A1(FAW0E002, REV3A)GP			1
27	#N/A	FCL70007019	MYLAR SCALAR/LCD L70L-A(FCL70007,R3A)GP			1
28	#N/A	FCM7T004014	AL FOIL M7T(FCM7T004,REV3A) GP			2
29	M-SCW-0824-6761	MM30030IBJ4	SCREW M3*3-I-NI GP			4
30	HW-00004156	MF30040IJB3	SCREW F3.0*4.0-I(MC) GP			10
31	M-SCW-0824-0813	MF30060BBJ6	SCREW F3.0*6-B(NI)GP			10
32	M-MS-0808-8986	MBLI1004018	IO NUT LI1(MBLI1004,REV3A)			4
33	M-SCW-0824-0814	MM30060BBJ3	SCREW M3.0*6,B(NI) GP			1
34	#N/A	MS35080B456	SCREW F3.5*8-B(NI)(WASHER)GP			1
35	#N/A	FCL7TA03011	AL-(50*25) L7TA(FCL7TA03,REV3B)GP			2
36	CB-00002525	DD0L9VLC015	CABLE MB-LCD(30P,140MM)L9V-5 GP			1
37	CB-00004152	DD0L9VLC023	CABLE LVDS(30P,140MM,LINKTEC,AU)L9VA GP			1
38	CB-00004150	DDW0VABU007	CABLE MB-BUTTON(11P/11P,240MM)W0VA GP			1
39	CB-00004151	DD0W0EIV008	CABLE MB-INV(7P/8P,320MM)W0E GP			1
40	E-00004155	DN0TE130F01	SPEAK ASSY L9T FG-TE130 1.5W*2 GP			1
41	C-00004164	25W0VALC007	W0VA LCD COVER ASSY GP			1
42	#N/A	EAW0VA02014	LCD COVER W0VA(EAW0VA02,REV3A)GP			1
43	M-MS-0808-9411	FBL70008014	LOCK METAL L70B(FBL70008,REV3A) GP			1
44	#N/A	FBW0VA01019	HINGE-PLATE W0VA(FBW0VA01,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	27W0VACS006	W0VA CHASSIS ASSY GP			1
54	#N/A	EBW0VA03011	HINGE COVER W0VA(EBW0VA03,REV3A)GP			1
55	#N/A	GAW0VA02014	RUBBER PLUG VESA (GAW0VA02,R3A)GRAY GP			4
56	#N/A	ME40200PJ28	SCREW T4.0*20.0-P(BNI) GP			2
57	#N/A	MM40100BL61	SCREW M4*10.0-B(BNI,NYLOK) GP			4
58	#N/A	2AW0VAPTQ01	W0VA PANEL DEPENDENT KIT ASSY(QDI) GP			1
59	E-00004154	AA20AL01004	LCD(TFT) 20" QD20AL01 REV.01 GP			1
60	#N/A	AZW0VA0Q005	W0VA SW BIOS(NOVATEK,W/AUDIO)FOR QDI			1
61	#N/A	28W0VAPK003	W0VA PACKING ASSY GP			1
62	C-00004165	38W0VABS001	W0VA BASE SUB ASSY GP			1
63	CB-00002602	DDL7VDPC005	CABLE MB-VGA (15/15P,1.8M)L7VD GP			1
64	CB-00004149	DD0L0TPC007	CABLE AUDIO(ST,1.8M)BLACK L0T GP			1
65	CB-00003440	DD0L0TTH108	CABLE ASSY L0T MB-DVI(24P,REV2A) GP			1
66	P-00004161	HBW0VA01019	END CAP(L) W0VA(HBL7TA01,REV3A) GP			1
67	P-00004162	HBW0VA02015	END CAP(R) W0VA(HBL7TA02,REV3A) GP			1
68	M-LB-0813-0747	HCL7V004013	CORE LABEL(HCL7V004,REV3A)			1
69	#N/A	HCW0VA01010	ID LABEL W0VA(HCW0VA01,REV3A) GP			1

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
70	M-LB-0813-0745	HCL7V002011	SERIAL LEBAL L7V(HCL7V002,REV3A) GP			1
71	M-LB-0813-1042	HCL7V019011	CARTON LABEL L7VC(HCL7V019,REV3B) GP			1
72	P-00004167	HFW0VA01012	CARTON W0VA(HFW0VA01,REV3A) GP			1
73	DC-00004153	HGW0VA01013	CD+QSG W0VA(HGW0VA01,REV3A) GP			1
74	#N/A	JXLM5003011	HANDLE LM5S(JXLM5003,REV 3B) GP			1
75	M-00004158	JXW0ZB01019	LCD FILM W0ZB-A1(JXW0ZB01,REV3A)GP			1
76	M-LB-0813-1043	HCL70021011	HI-POT LABEL L70L(HCL70021,REV3A)			1
77	#N/A	HFW0VA02019	SPACE PLATE W0VA(HFW0VA02,REV3A) GP			0.04
78	P-00004159	HAL0T002019	PE BAG L0T(HAL0T002,REV3A)GP			1
79	#N/A	HDL7VC01019	SERVICR PAPER L7VC(HDL7VC01,REV3A) GP			1
80	DC-00003536	HCL9V009011	HG LABEL L9VD(HCL9V009,REV3A)			1
81	A-PC-0106-0224	DM333181G97	POWER CORD 3P 1.8M(USA)V04VS350012180 GP			1

8. Exploded Diagram and Exploded Parts List



ViewSonic Corporation		
Model		
Title		
Date		Rev:

EXPLODED PARTS LIST (VA2012w-1)

ViewSonic Model Number: VS10859-1

Rev: 1a

Serial No. Prefix: PXC

Item	ViewSonic P/N	Ref. P/N	Description	Q'ty
1	B-00004144	21W0VAMB002	W0VA M/B ASSY (NOVATEK 68563) GP	1
2	B-00004145	AS08B532009	PWR MODULE(DTA)EADP-64CF B,90~264V GP	1
3	#N/A	AS023360D18	INV MODULE(SEL)W0E(20V,I=6MA) GP	1
4	B-00004142	23W0VABB009	W0VA BUTTON/B ASSY GP	1
5	#N/A	EAW0VA01026	LCD BEZEL W0VA SILVER GP	1
6	#N/A	EBW0VA01019	FUNCTION BUTTON W0VA GP	1
7	#N/A	EBW0VA02015	LENS W0VA(EBW0VA02,REV3A)GP	1
8	M-MS-0808-9244	FEL7V004015	BIRD LOGO-10MM L7VC	1
9	M-MS-0808-9243	FEL7V003019	LOGO FRONT-VSC-38MM L7VC	1
10	#N/A	FCW0VA01010	SHIELDING MYLAR W0VA GP	1
11	#N/A	FAW0VA01018	SHIELDING W0VA GP	1
12	#N/A	FAW0VA02014	LCD BKT-L W0VA GP	1
13	#N/A	FAW0VA03011	LCD BKT-R W0VA GP	1
14	#N/A	FCW0E002016	POWER MYLAR W0E-A1 GP	1
15	#N/A	FCL70007019	MYLAR SCALAR/LCD L70L-A GP	1
16	#N/A	FCM7T004014	AL FOIL M7T GP	2
17	M-SCW-0824-6761	MM30030IBJ4	SCREW M3*3-I-NI GP	4
18	HW-00004156	MF30040IJB3	SCREW F3.0*4.0-I(MC) GP	10
19	M-SCW-0824-0813	MF30060BBJ6	SCREW F3.0*6-B(NI)GP	10
20	M-MS-0808-8986	MBLI1004018	IO NUT LI1	4
21	M-SCW-0824-0814	MM30060BBJ3	SCREW M3.0*6,B(NI) GP	1
22	#N/A	MS35080B456	SCREW F3.5*8-B(NI)(WASHER)GP	1
23	#N/A	FCL7TA03011	AL-(50*25) L7TA GP	2
24	CB-00004152	DD0L9VLC023	CABLE LVDS(30P,140MM,LINKTEC,AU)L9VA GP	1
25	CB-00004150	DDW0VABU007	CABLE MB-BUTTON(11P/11P,240MM)W0VA GP	1
26	CB-00004151	DD0W0EIV008	CABLE MB-INV(7P/8P,320MM)W0E GP	1
27	E-00004155	DN0TE130F01	SPEAK ASSY L9T FG-TE130 1.5W*2 GP	1
28	#N/A	EAW0VA02022	LCD COVER W0VA BKGP	1
29	M-MS-0808-9411	FBL70008014	LOCK METAL L70B GP	1
30	#N/A	FBW0VA01019	HINGE-PLATE W0VA1 GP	1
31	#N/A	EAW0VA03029	STAND FRONT W0VA BK GP	1
32	#N/A	EAW0VA05021	STAND-BACK W0VA BK GP	1
33	#N/A	FAW0VA04017	HINGE ASSY W0VA GP	1
34	#N/A	FBW0VA02015	CONTACT-PLATE W0VA GP	1
35	HW-00004157	MF40140IJ29	SCREW F4.0*14-I(BNI) GP	7
36	#N/A	DDL9TATH107	CABLE STAND-HINGE(1P,150MM) GP	1
37	M-SCW-0824-6895	MF40080IBJ1	SCREW F4.0*8-I(NI)GP	1
38	#N/A	EBW0VA03020	HINGE COVER W0VA BK GP	1
39	#N/A	GAW0VA02014	RUBBER PLUG VESA GRAY GP	4
40	#N/A	ME40200PJ28	SCREW T4.0*20.0-P(BNI) GP	2
41	#N/A	MM40100BL61	SCREW M4*10.0-B(BNI,NYLOK) GP	4
42	#N/A	2AW0VAPTQ01	W0VA PANEL DEPENDENT KIT ASSY(QDI) GP	1
43	#N/A	EAW0VA04025	BASE W0VA BK GP	1
44	#N/A	FBW0VA03011	BASE-PLATE W0VA GP	1
45	#N/A	GAW0VA03011	RUBBER FOOT-C W0VA GP	2
46	#N/A	GAW0VA01018	RUBBER FOOT W0VA GP	2
47	M-00004158	JXW0ZB01019	LCD FILM W0ZB-A1 GP	1
48	PL-00001806	GAL5T001016	RUBBER-HOLDER L5TL-E	1
49	#N/A	HCW0VA02016	ID LABEL(S) W0VA GP	1
50	M-LB-0813-0745	HCL7V002011	SERIAL LEBAL L7V GP	1

EXPLODED PARTS LIST (VA2012wb-1)

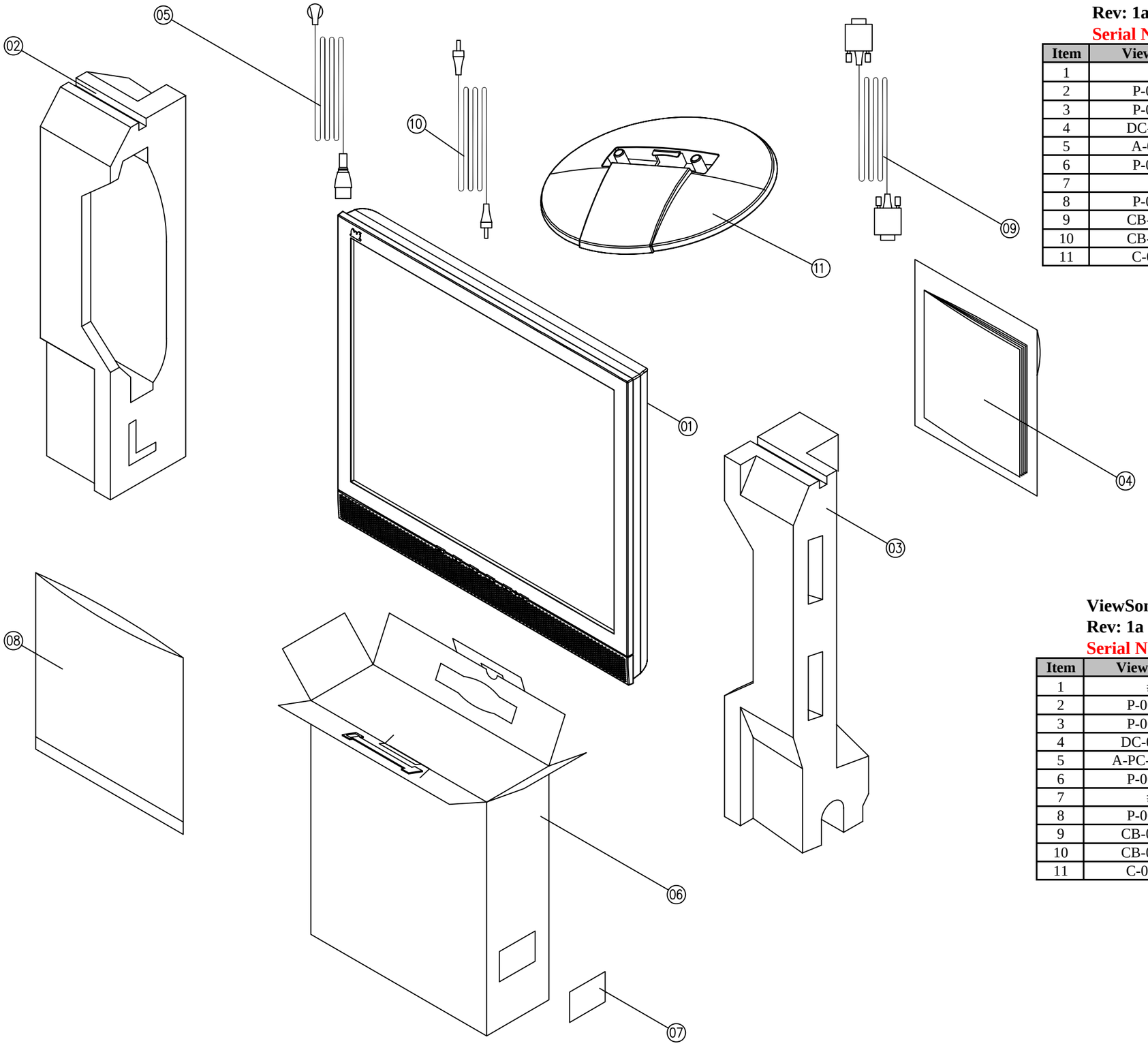
ViewSonic Model Number: VS10859-1

Rev: 1a

Serial No. Prefix: PVW

Item	ViewSonic P/N	Ref. P/N	Description	Q'ty
1	B-00004144	21W0VAMB002	W0VA M/B ASSY (NOVATEK 68563) GP	1
2	B-00004145	AS08B532009	PWR MODULE(DTA)EADP-64CF B,90~264V GP	1
3	#N/A	AS023360D18	INV MODULE(SEL)W0E(20V,I=6MA) GP	1
4	B-00004142	23W0VABB009	W0VA BUTTON/B ASSY GP	1
5	#N/A	EAW0VA01018	LCD BEZEL	1
6	#N/A	EBW0VA01019	FUNCTION BUTTON W0VA GP	1
7	#N/A	EBW0VA02015	LENS W0VA GP	1
8	M-MS-0808-9244	FEL7V004015	BIRD LOGO-10MM L7VC	1
9	M-MS-0808-9243	FEL7V003019	LOGO FRONT-VSC-38MM L7VC	1
10	#N/A	FCW0VA01010	SHIELDING MYLAR W0VA GP	1
11	#N/A	FAW0VA01018	SHIELDING W0VA GP	1
12	#N/A	FAW0VA02014	LCD BKT-L W0VA GP	1
13	#N/A	FAW0VA03011	LCD BKT-R W0VA GP	1
14	#N/A	FCW0E002016	POWER MYLAR W0E-A1 GP	1
15	#N/A	FCL70007019	MYLAR SCALAR/LCD L70L-A GP	1
16	#N/A	FCM7T004014	AL FOIL M7T GP	2
17	M-SCW-0824-6761	MM30030IBJ4	SCREW M3*3-I-NI GP	4
18	HW-00004156	MF30040IJB3	SCREW F3.0*4.0-I(MC) GP	10
19	M-SCW-0824-0813	MF30060BBJ6	SCREW F3.0*6-B(NI)GP	10
20	M-MS-0808-8986	MBLI1004018	IO NUT LI1(MBLI1004,REV3A)	4
21	M-SCW-0824-0814	MM30060BBJ3	SCREW M3.0*6,B(NI) GP	1
22	#N/A	MS35080B456	SCREW F3.5*8-B(NI)(WASHER)GP	1
23	#N/A	FCL7TA03011	AL-(50*25) L7TA GP	2
24	CB-00004152	DD0L9VLC023	CABLE LVDS(30P,140MM,LINKTEC,AU)L9VA GP	1
25	CB-00004150	DDW0VABU007	CABLE MB-BUTTON(11P/11P,240MM)W0VA GP	1
26	CB-00004151	DD0W0EIV008	CABLE MB-INV(7P/8P,320MM)W0E GP	1
27	E-00004155	DN0TE130F01	SPEAK ASSY L9T FG-TE130 1.5W*2 GP	1
28	#N/A	EAW0VA02014	LCD COVER W0VA GP	1
29	M-MS-0808-9411	FBL70008014	LOCK METAL L70B GP	1
30	#N/A	FBW0VA01019	HINGE-PLATE W0VA(FBW0VA01,REV3A)GP	1
31	#N/A	EAW0VA03011	STAND-FRONT W0VA GP	1
32	#N/A	EAW0VA05013	STAND-BACK W0VA GP	1
33	#N/A	FAW0VA04017	HINGE ASSY W0VA GP	1
34	#N/A	FBW0VA02015	CONTACT-PLATE W0VA GP	1
35	HW-00004157	MF40140IJ29	SCREW F4.0*14-I(BNI) GP	7
36	#N/A	DDL9TATH107	CABLE STAND-HINGE(1P,150MM) GP	1
37	M-SCW-0824-6895	MF40080IBJ1	SCREW F4.0*8-I(NI)GP	1
38	#N/A	EBW0VA03011	HINGE COVER W0VA(EBW0VA03,REV3A)GP	1
39	#N/A	GAW0VA02014	RUBBER PLUG VESA (GAW0VA02,R3A)GRAY GP	4
40	#N/A	ME40200PJ28	SCREW T4.0*20.0-P(BNI) GP	2
41	#N/A	MM40100BL61	SCREW M4*10.0-B(BNI,NYLOK) GP	4
42	#N/A	2AW0VAPTQ01	W0VA PANEL DEPENDENT KIT ASSY(QDI) GP	1
43	#N/A	EAW0VA04017	BASE W0VA GP	1
44	#N/A	FBW0VA03011	BASE-PLATE W0VA	1
45	#N/A	GAW0VA03011	RUBBER FOOT-C W0VA GP	2
46	#N/A	GAW0VA01018	RUBBER FOOT W0VA GP	2
47	M-00004158	JXW0ZB01019	LCD FILM W0ZB-A1 GP	1
48	PL-00001806	GAL5T001016	RUBBER-HOLDER L5TL-E(GAL5T001,REV3B)	1
49	M-LB-0813-0745	HCL7V002011	SERIAL LEBAL L7V GP	1
50	#N/A	HCW0VA01010	ID LABEL W0VA GP	1

Packing for Shipping



PACKING PART LIST (VA2012w-1)

ViewSonic Model Number: VS10859-1W

Rev: 1a

Serial No. Prefix: PXC

Item	ViewSonic P/N	Ref. P/N	Location	Q'ty
1	#N/A	1LW0VAXVS99	VA2012w monitor	1
2	P-00004161	HBW0VA01019	END CAP (L)	1
3	P-00004162	HBW0VA02015	END CAP (R)	1
4	DC-00004153	HGW0VA01013	USER'S MANUAL & CD	1
5	A-00003642	DM33T181004	POWER CORD 3P 1.8M	1
6	P-00004160	HFW0VA03015	CARTON	1
7	#N/A	HCL7VC019011	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-00004147	38W0VABS010	Base assy	1

PACKING PART LIST (VA2012wb-1)

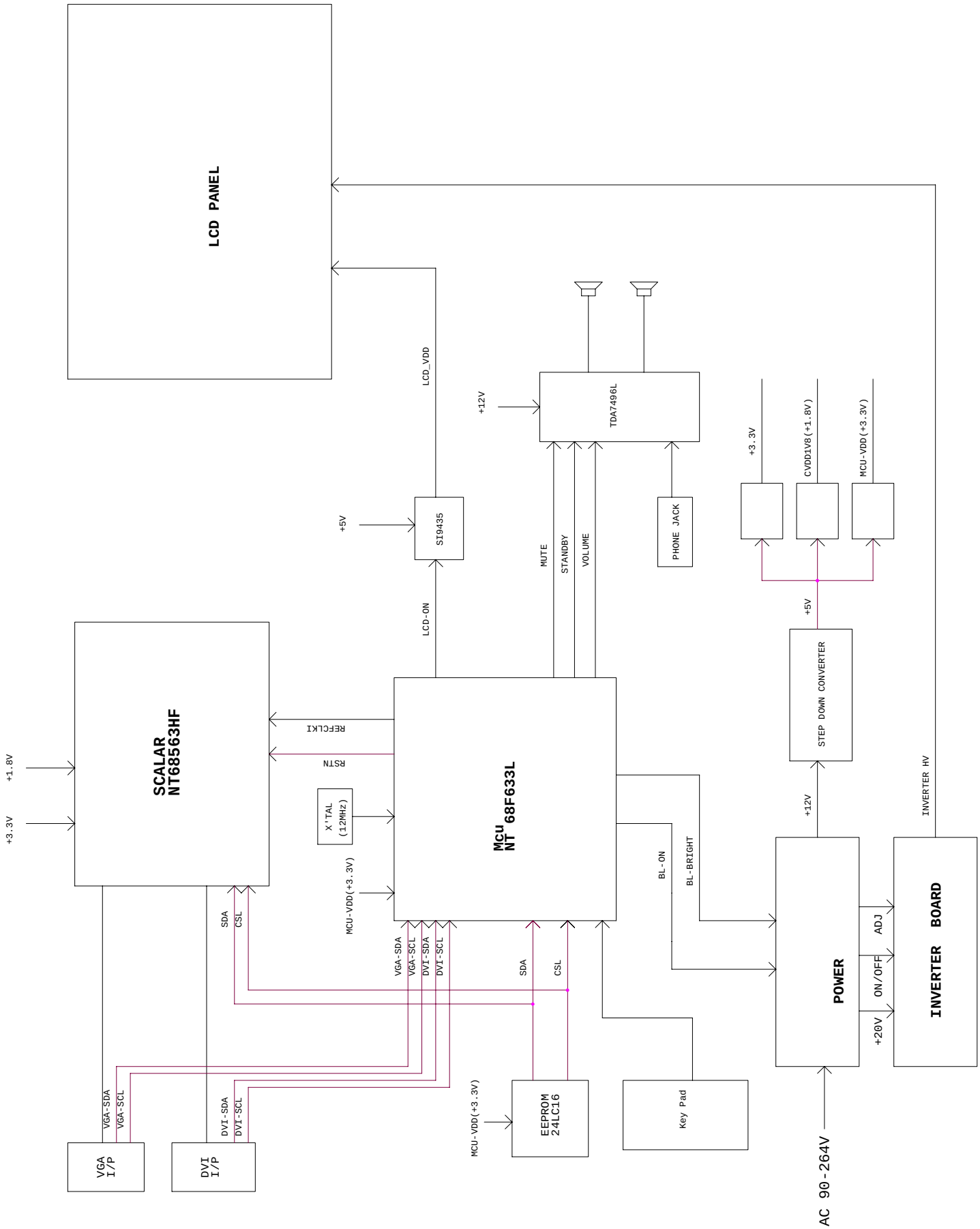
ViewSonic Model Number: VS10859-1W

Rev: 1a

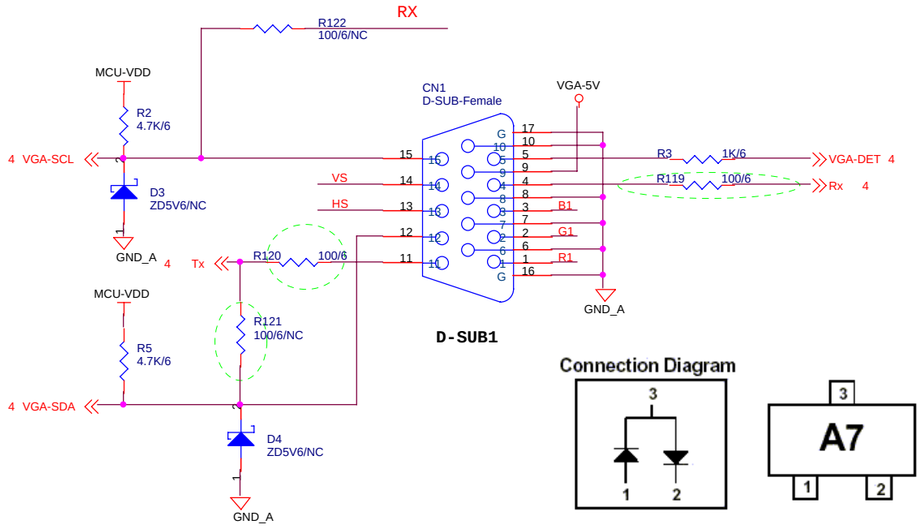
Serial No. Prefix: PVW

Item	ViewSonic P/N	Ref. P/N	Location	Q'ty
1	#N/A	1LW0VAXVS05	VA2012wb monitor	1
2	P-00004161	HBW0VA01019	END CAP (L)	1
3	P-00004162	HBW0VA02015	END CAP (R)	1
4	DC-00004153	HGW0VA01013	USER'S MANUAL & CD	1
5	A-PC-0106-0224	DM333181G97	POWER CORD 3P 1.8M	1
6	P-00004167	HFW0VA01012	CARTON	1
7	#N/A	HCL7VC019011	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

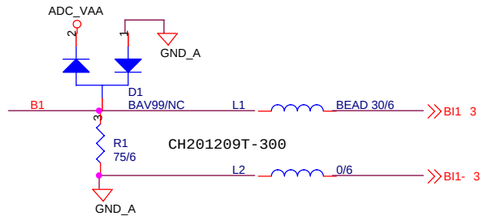


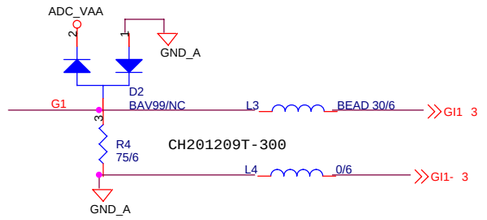
10. Schematic Diagrams

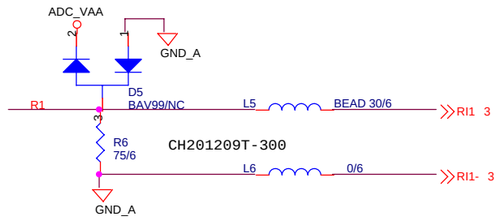


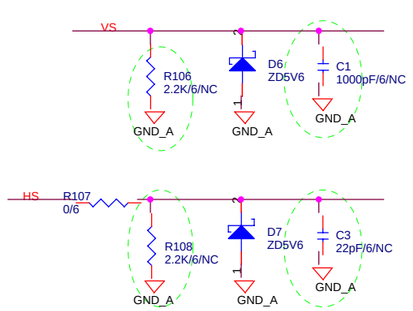
BAV99 3

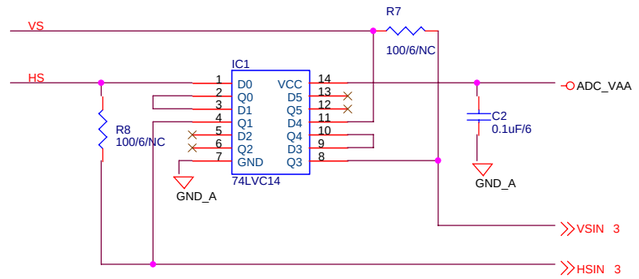
DB15	
1	R
2	G
3	B
4	NC
5	RETURN
6	RGND
7	GGND
8	BGND
9	+5V
10	SYNC.RETURN
11	NC
12	SDA
13	Hs
14	Vs
15	SCL



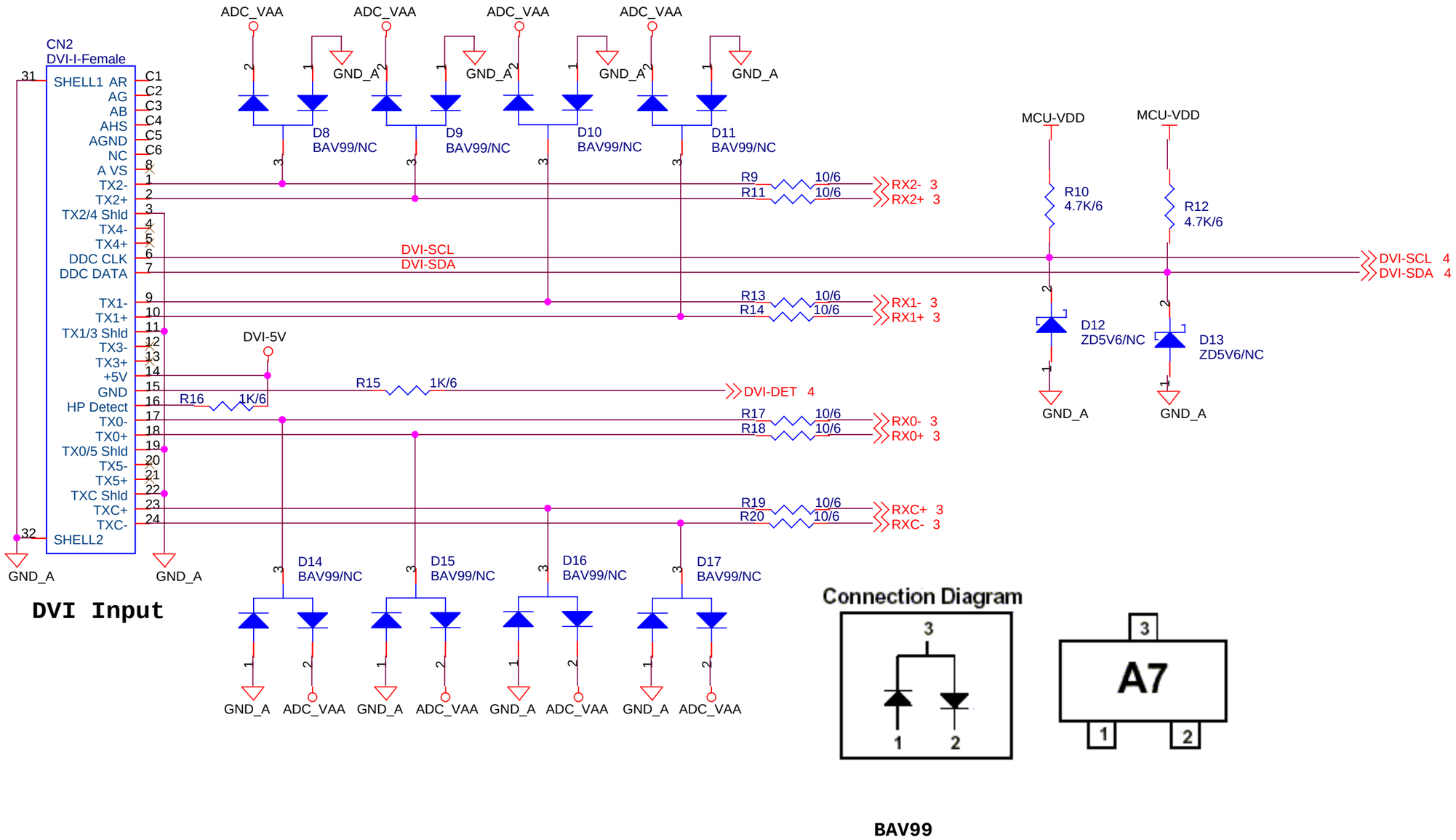








ViewSonic Corporation		
Model	ADC Input	
Title		
Date		Rev:

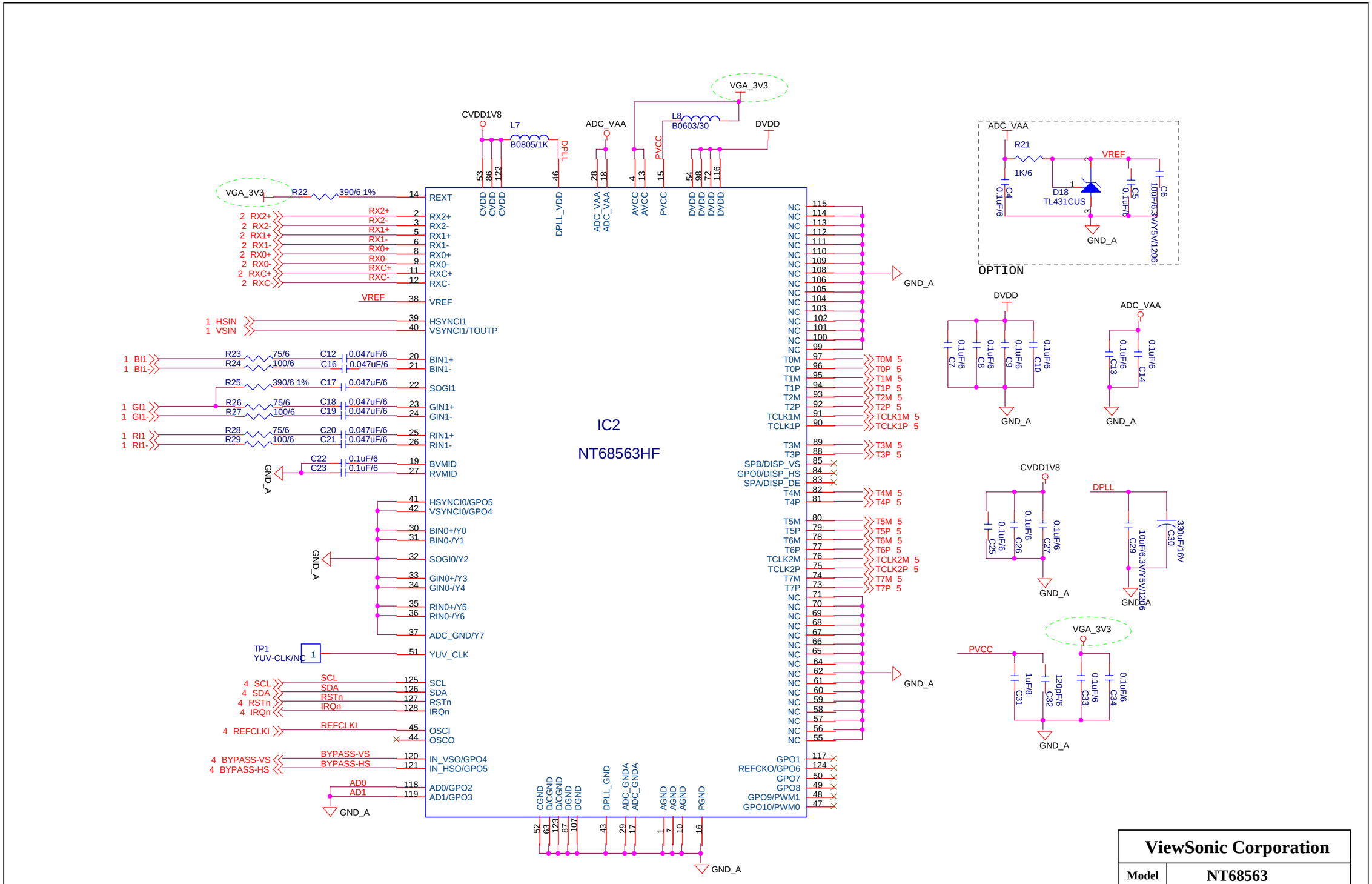


DVI Input

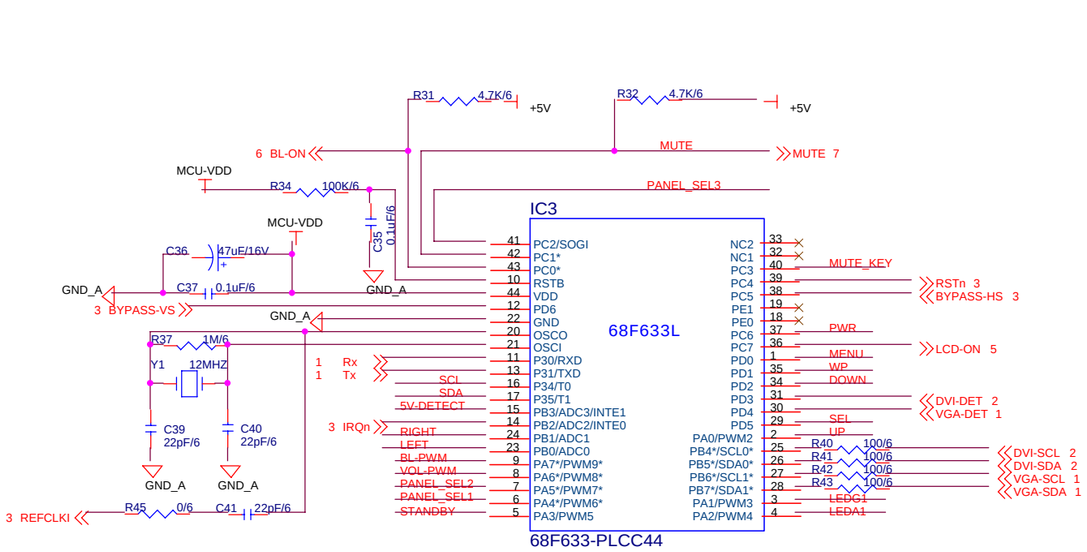
Connection Diagram

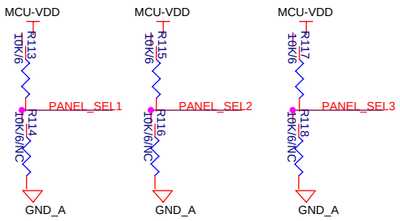
BAV99

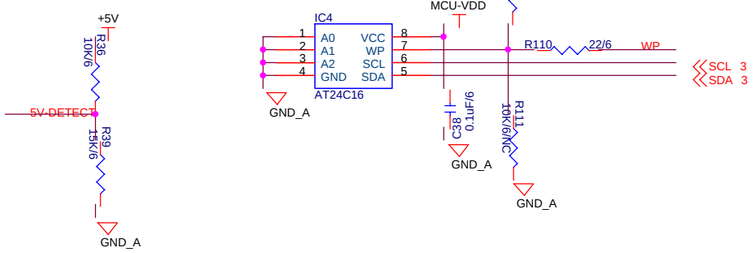
ViewSonic Corporation		
Model	DVI Input	
Title		
Date		Rev:

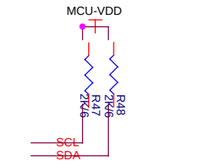


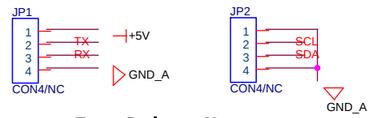
ViewSonic Corporation		
Model	NT68563	
Title		
Date		Rev:



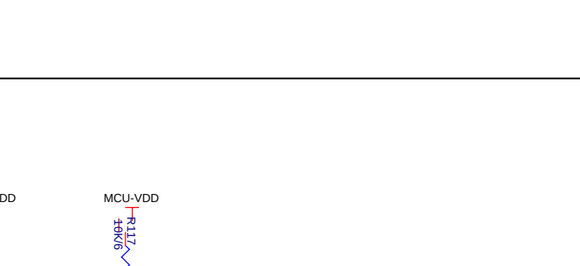


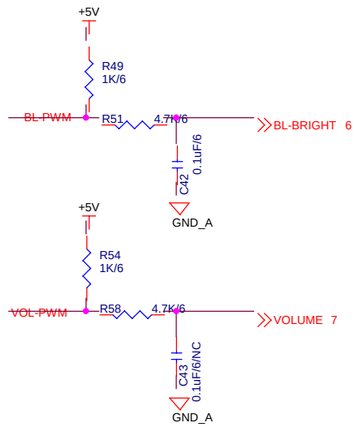


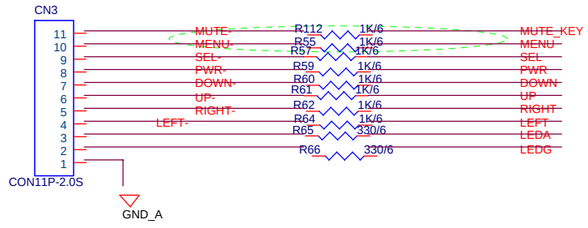


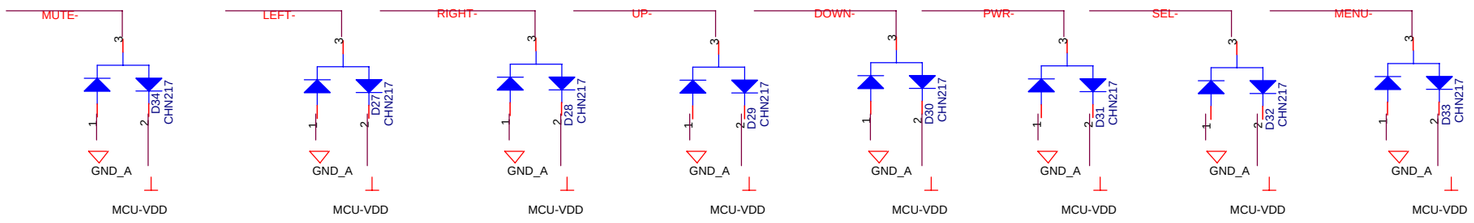


For Debug Use

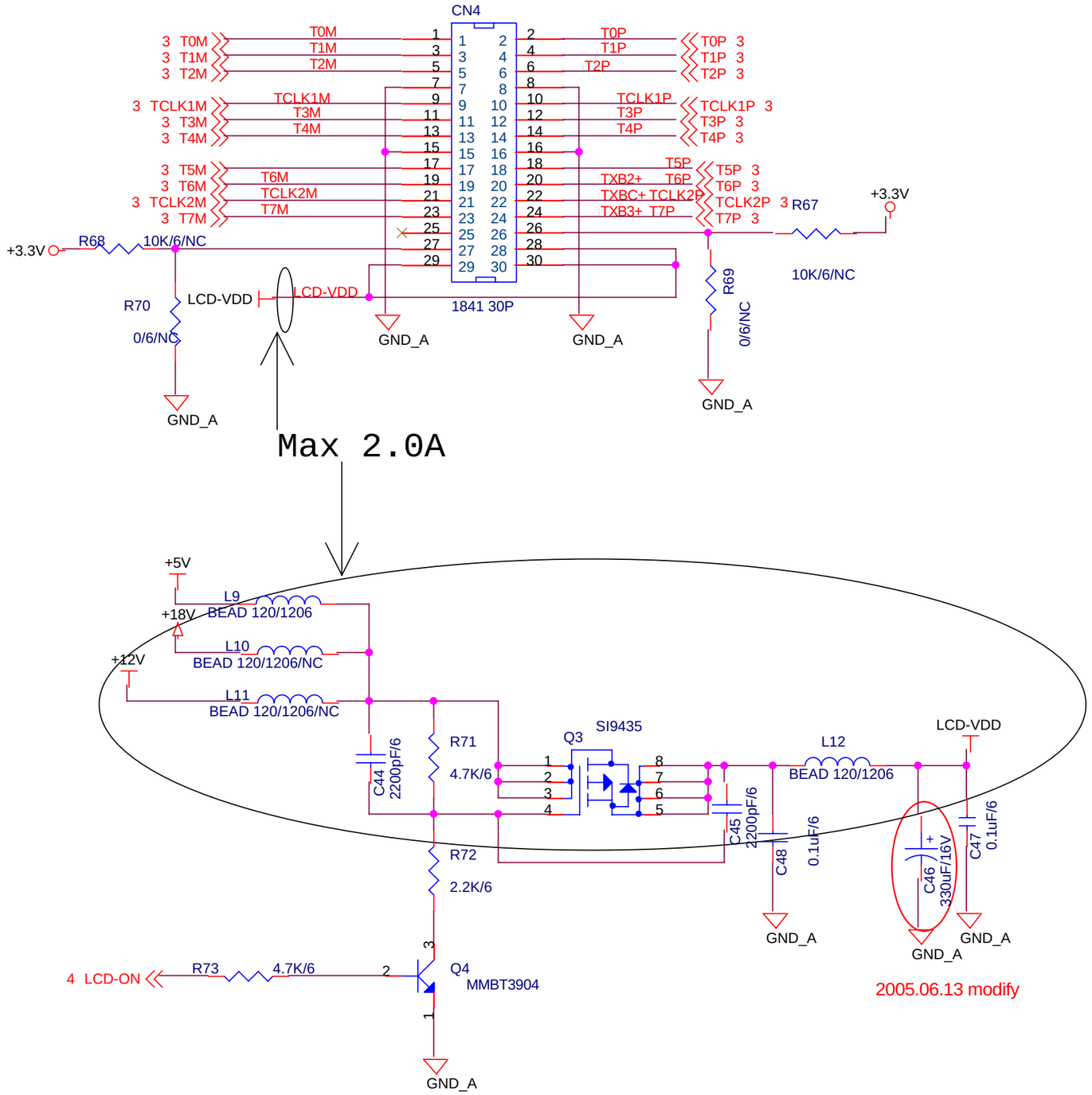




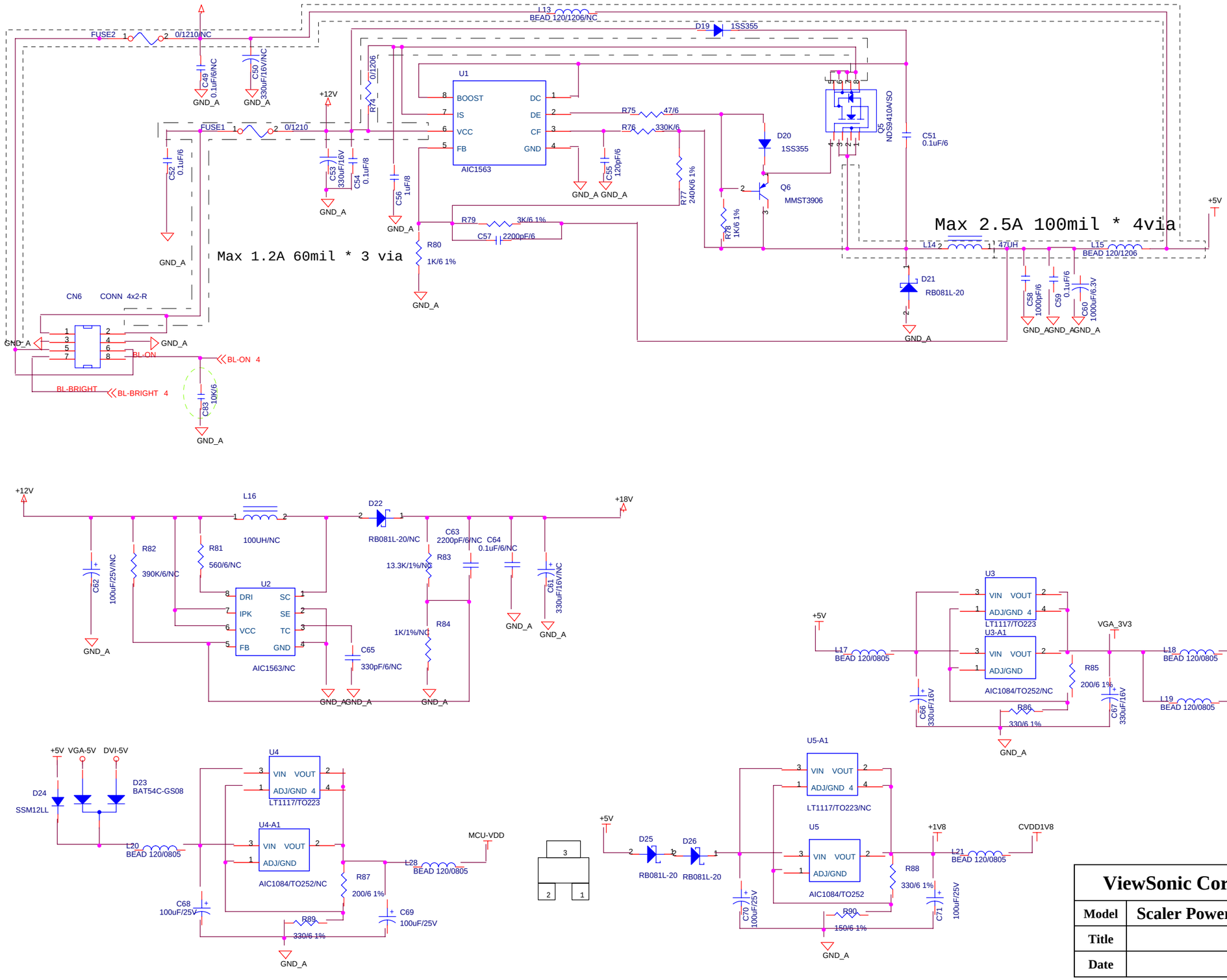




ViewSonic Corporation		
Model	MCU(I/O_Key)	
Title		
Date		Rev:

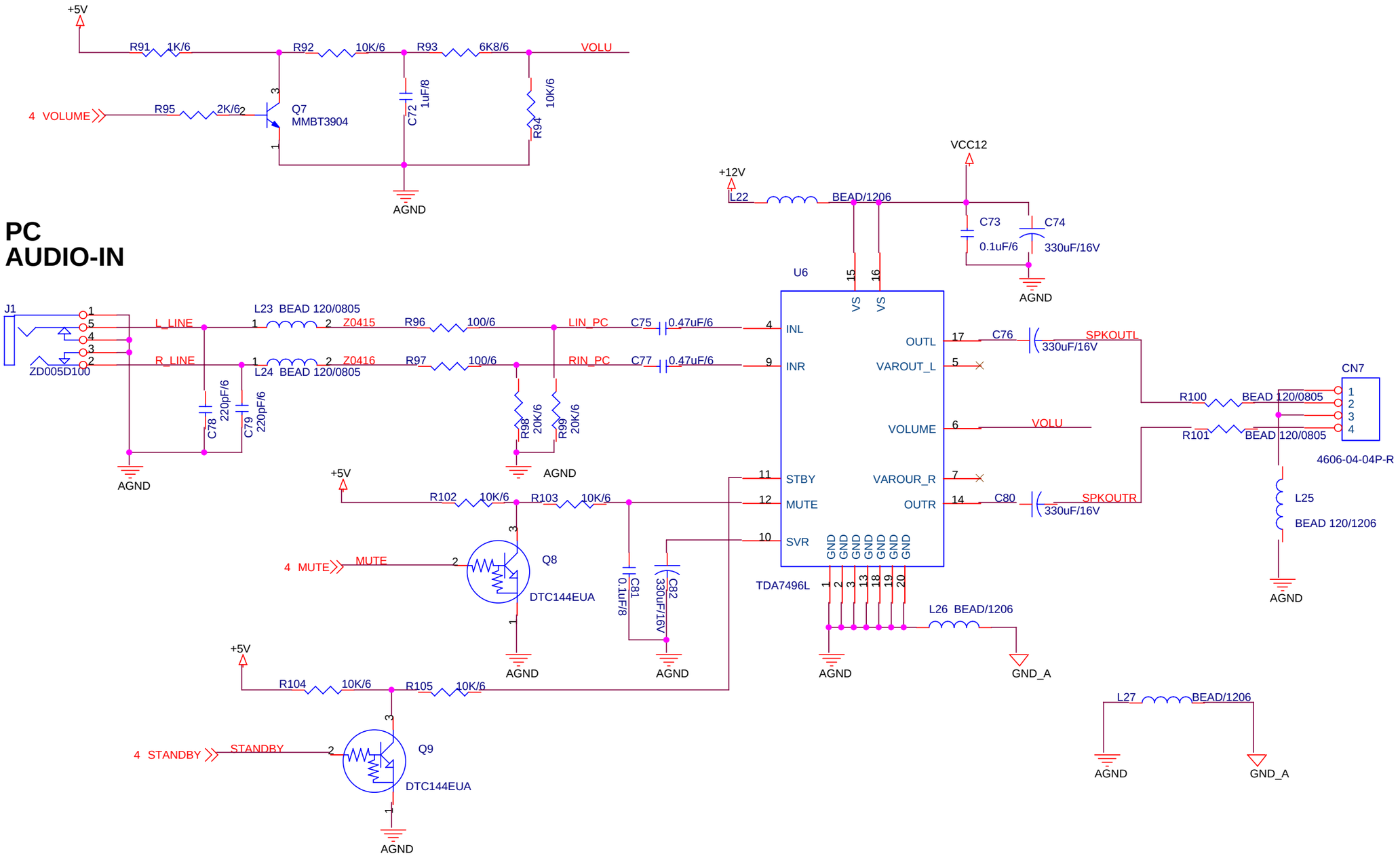


ViewSonic Corporation		
Model	PANEL OUTPUT	
Title		
Date		Rev:



ViewSonic Corporation		
Model	Scaler Power	
Title		
Date		Rev:

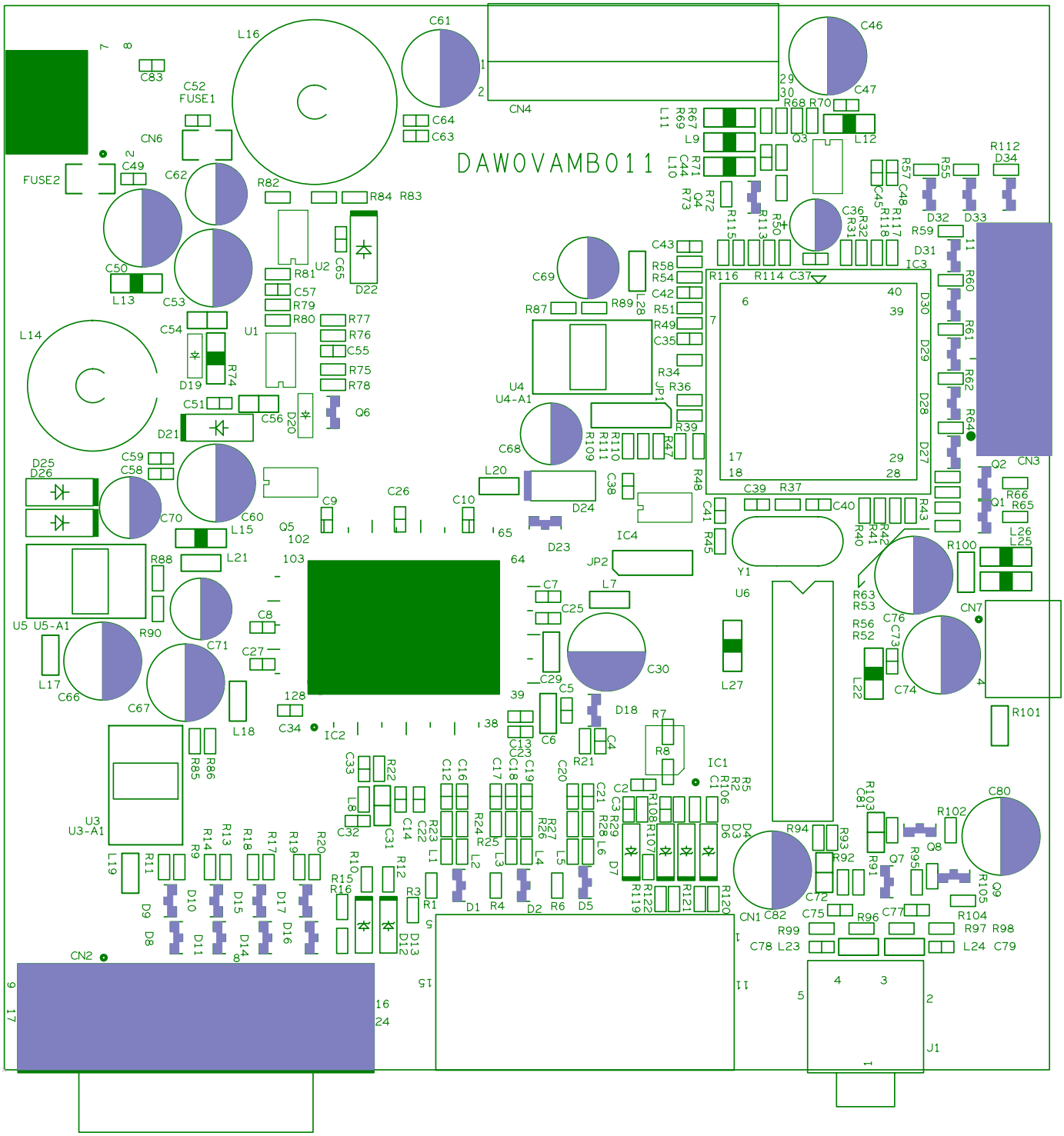
PC AUDIO-IN



ViewSonic Corporation		
Model	AUDIO	
Title		
Date		Rev:

11. PCB Layout Diagrams

MB TOP



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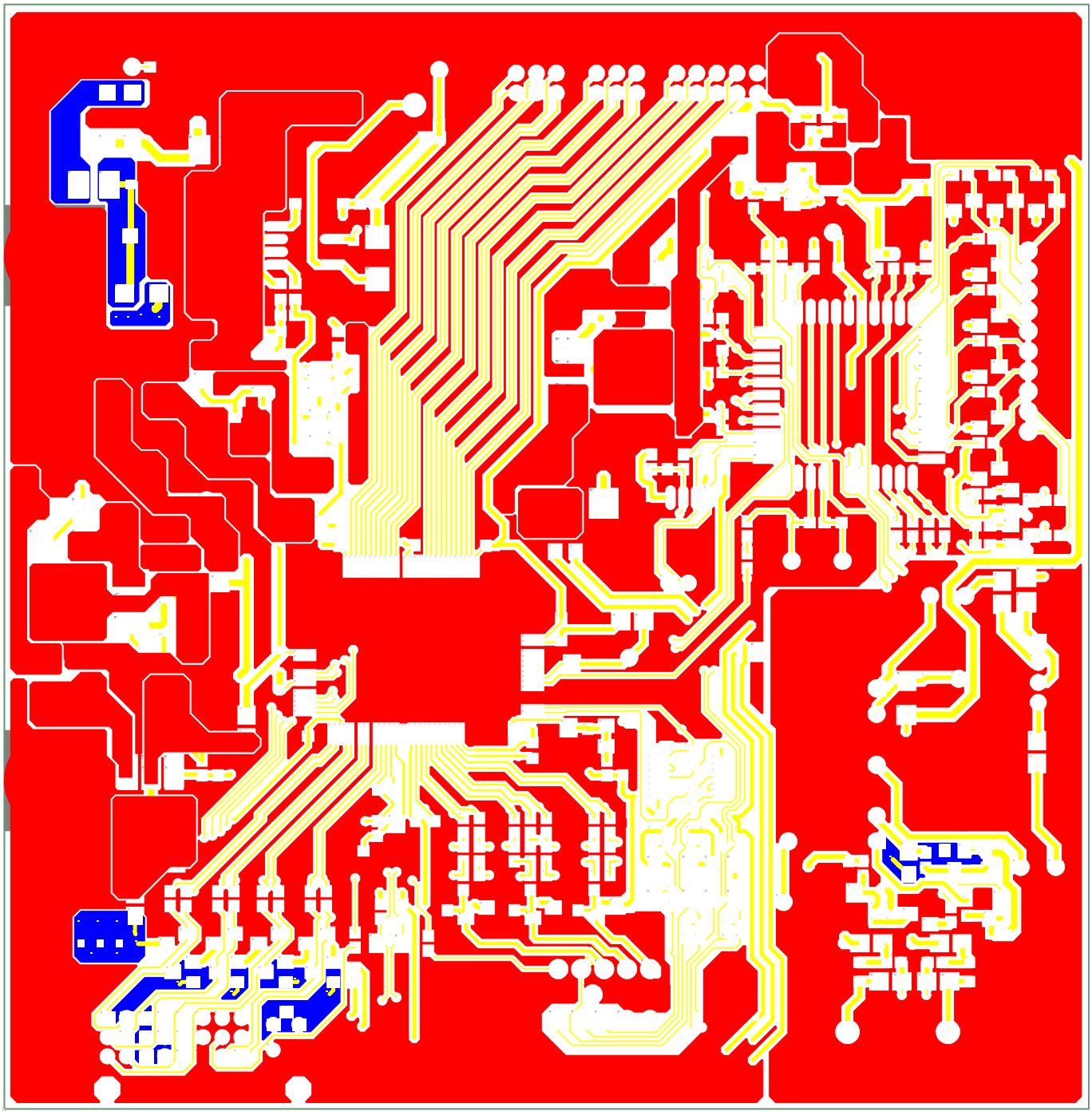

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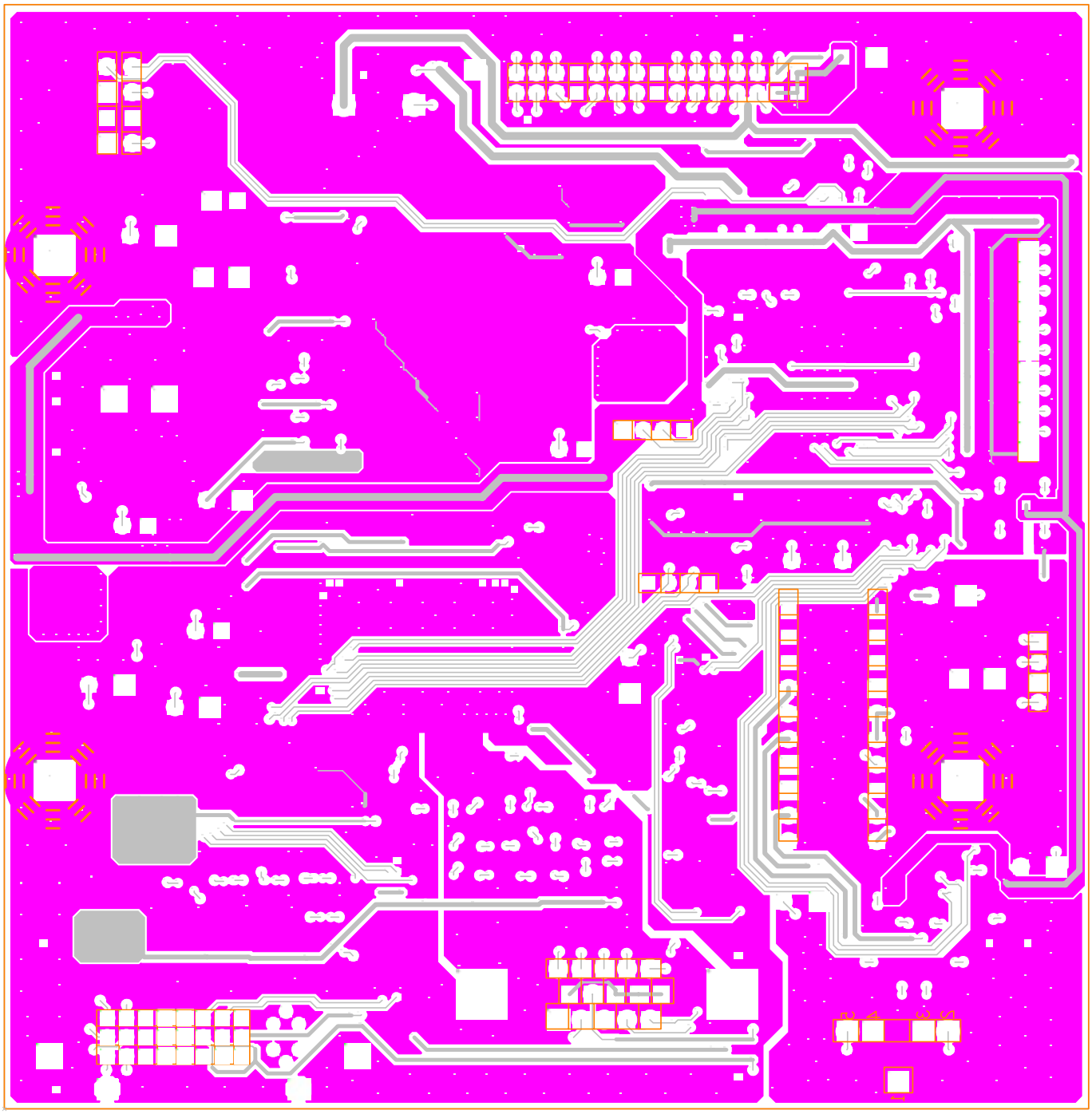

Reader's Response

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)