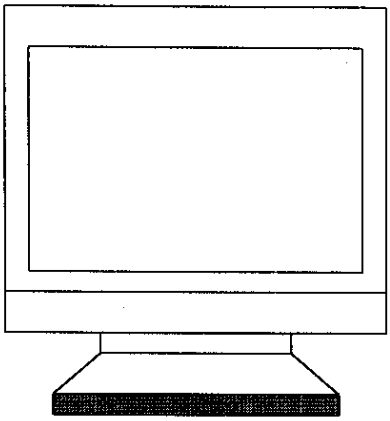
SERVICE MANUAL

COLOR MONITOR

MODEL: 1996F



CHINA GREAT-WALL COMPUTER SHENZHEN CO., LTD.

-----SHIYAN BRANCH MONITOR DIVISION

NOTICE

These document are for repair service information only . Every reasonable effort has been made to ensure the accuracy of this manual . We can not guarantee the accuracy of this information after date of publication and disclaims liability for changes , errors or omissions .

FCC recommendation

The device complies with part 15 of the FCC Rules.
Operation is subject to the following two conditions .
1)This device may not cause harmful interference , and
2)This device must accept any interference received,including interference that may cause undesired operation.

1. SPECIFICATIONS FOR COLOR MONITOR

1-1 CRT

19",90° Deflection,FST 0.25mm dot pitch non-glare

1-2 Viewable image size: 45.7cm

1-3 Display Color: Unlimited Colors

1-4 External Control:

Power On/Off Switch, +/- key(Contrast, Brightness), Quit key, Menu key: H/V-Size, H/V-Position, Geometry,Moire,Languages, Color Mode, Color adjust Mode ,ZOOM

1-5 Input Video Signal

Sync. H/V Separate TTL Positive/Negative

H/V Composite,TTL,Positive/Negative

Video RGB Analog(0.7Vp-p),positive 75ohm terminated

1-6 Resolution（factory preset timings）

Horizontal:	720	640	640	640	800	800	1024	1024
Vertical:	400	480	480	480	600	600	768	768
Fh (KHz):	31.3	31.5	37.5	43.3	46.8	53.7	60	68.6
Fv (Hz):	70	60	75	85	75	85	75	85

Horizontal:	1280	1280	1600	1600
Vertical:	1024	1024	1200	1200
Fh (KHz):	80	91.46	75	93.75
Fv (Hz);	75	85	60	75

1-7 Display Size :

Horizontal: 357mm

Vertical: 268mm

1-8 Scanning Frequencies

Horizontal: 30~96KHz , automatically .

Vertical: 50~150Hz , automatically .

1-9 Misconvergence

Center: 0.3 mm Max

Corner : 0.4mm Max

1-11 Video Bandwidth : 210MHz

1-12 Power Source:

Switching Mode Power Supply

AC 100~240V, 50/60Hz Universal Type; 85Watts

1-13 Operating Temperature: 0^0C~40^0C Ambient

1-14 Humidity :

10%~85% Relative , Non-Condensing

1-15 Weight:

20kg(net)

1-16 Dimensions Monitor:

411mm(W)×425mm(D)×425mm(H)

1-17 External Connection:

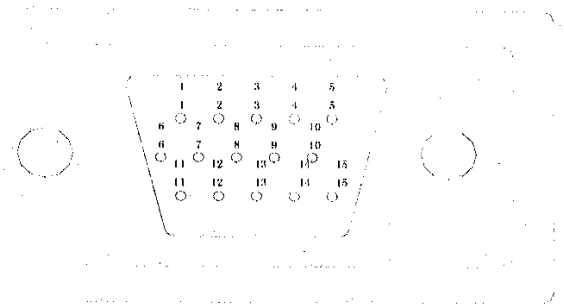
15 Pin D-type Connector

AC Power Cord

2. OPERATING INSTRUCTIONS

This procedure gives you instructions for installing and using the monitor

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



15-Pin Color Display

Signal Cable

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1.	RED	9.	NC
2.	GREEN	10.	GND
3.	BLUE	11.	MONITOR.GND
4.	GND	12.	DDC SERIAL DATA
5.	GND	13.	HORIZ.SYNC
6.	GND-R	14.	VERT.SYNC(*VCLK)
7.	GND-G	15.	DDC SERIAL CLOCK
8.	GND-B		

3. Apply power to the display by turning the power switch to the "ON" position and allow about thirty seconds for display tube warm-up. The Power-On indicator lights when the display is on.
4. With proper signals feed to the display, a pattern or data should appear on the screen, adjust the brightness and

contrast to the most pleasing display.

5. This monitor has power saving function following the VESA DPMS. Be sure to connect the signal cable to the PC.
6. If your monitor requires service, it must be returned with the power cord.

3. ADJUSTMENT

ADJUSTMENT CONDITIONS AND PRECAUTIONS

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

MAIN ADJUSTMENTS

NO.	FUNCTION	LOCATION	DESIGNATION
1	+ KEY	Keyboard	SW303
2	-KEY	Keyboard	SW302
3	MENUKEY	Keyboard	SW304
4	QUITKEY	Keyboard	SW304
5	Enter	Keyboard	SW301
6	FOCUS	FBT	FBT FOCUS VR

ADJUSTMENT METHOD

Adjusting the picture

The description for function control Menu

1.CONTRAST

Adjust the picture contrast.

2. BRIGHTNESS

Adjust the picture brightness.

3.H/V-Position

Adjust the horizontal or vertical position of the picture.

4. H/V-SIZE

Adjust the picture's horizontal or verticalLal size.

5. Geometry

Adjust the picture's pincushion,parallelogram,trapezoid,pin balance,rotation.

7. Moire

Control these keys to make the image not to shiver.

8. Language

Move to language you want.

9. OSD position

Toggles OSD position horizontally or vertically.

10. Color Mode

Adjust the picture's Color Mode.

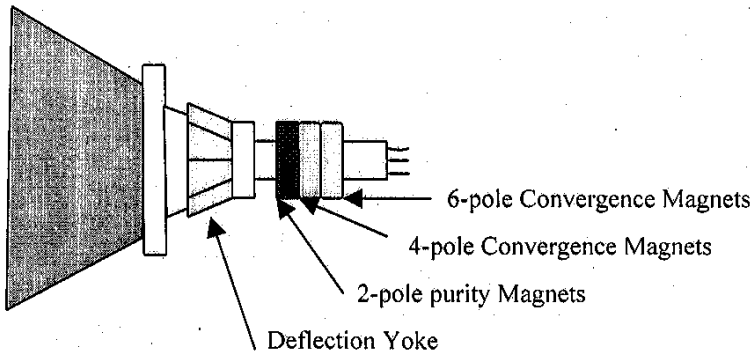
11. Color Adjust Mode
Adjust the picture's Red,Green,Bule background raster and Red,Green,Bule lever gain.
12. ZOOM
Shrink and Expand the image.
13. Focus Adjustment:

A. Set mode 1280×1024 Fh: 91.2KHz with character full page.
B. Adjust external brightness to center and external contrast to max. then adjust focus VR to make the display be focused very well.

14. Purity Adjustment

A. Be sure that the display is not being exposed to any external magnetic fields.
B. Ensure that the spacing between the Purity, Convergence, Magnet, (PCM), assembly and the CRT stem is 29mm. (See below diagram)
C. Produce a complete, red pattern on the display. Adjust the purity magnet rings on the PCM assembly to obtain a complete field of the color red. This is done by moving the two tabs in such a manner that they advance in an opposite direction but at the same time to obtain the same angle between the two tabs, which should be approximately 180'.
D. Check the complete blue and complete green patterns to observe their respective color purity. Make minor adjustments if needed.

RELATIVE PLACEMENT OF TYPICAL COMPONENTS



15. Convergence Adjustment

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

G. Horizontal green and magenta lines are converged by varying the two tabs to together, keeping the angle between them constant.

4.CIRCUIT DESCRIPTION

MICRO CIRCUIT

IC401 TDA4856 is CPU ,This CPU has the following functions.

1. Detect timing mode by sensing the Horizontal frequency,Vertical frequency, the polarity of Hor.sync and Ver. Sync.
2. Key Board scan control.
3. Geometry control internal D/A converters.
4. Cs capacitor switch control.
5. Power saving control.

When CPU detects a timing .It takes data from E^2PROM(IC302) ,then output voltage to control the geometry of this monitor . If Key is presses ,the CPU will do some job according to the Key function .For example ,if function key is pressed ,it can change different value to control screen geometry(H-SIZE.V-SIZE……etc.)

DEFLECTION CIRCUIT

Hor.output is builded by Q415、DY、D410、C428 and C429 。When Q415 is doing it switch function，it export the sawtooth current，and make Dy to control the CRT to do electric scan，and L412、D413、D414、VR404 control the position of RASTER。T403、 D411、 D416、 C498 and Q444 control the Hor. linearity，and it is adjusted by IC301、PIN39。

VIDEO CIRCUIT

VIDEO signal is from signal cable and through the cap C601、C602、C603 to SID2500 PIN8、PIN5、PIN10，and use SID2500 PIN21、PIN24、PIN28 to export it to IC603,and use IC603 to amplify it to **50**Vpp.。

POWER SUPPLY

The design uses a discontinuous flyback topology operating in current –mode resulting in a multiple output switcher with stack well .faster diodes are used.The fast transient response of the control loop maintains picture integrity.Very fast current limiting protects the switch agains short circuits.

SSS7N60B (Q101) is the Power switch . UC3842B(IC502) is the current mode controller selected .It offers feed forward compensation,feedback error amplifer ,and low voltage lock out features ,The 3842 draws very little current is start up mode .There is enough power from the line bleeder to slowly charge a capacitor to the 16 volts needed to start the switcher.

DPMS

The monitor has a power saving function that conforms to the VESA DPMS standard . This feature will only work if your PC is a green PC. This feature is similar to a screen saver, except that your monitor will turn it off instead of activating the screen saver.

The power saving states can be indicated by the light-emitting diode(LED)on the front panel:

State	Power LED Color
On	Green
Standby/Suspend	flicker
Off	flicker

Plug & play DDC1/2B Feature

This monitor is equipped with VESA DDC1/2B capabilities according to the VESA DDC STANDARD. It allows the monitor to inform the host system of its identity and, depending on the level of DDC used, communicate additional information about its display capabilities. The communication channel is defined in two levels, DDC1 and DDC2B.

The DDC1 is a unidirectional data channel from the display to the host that continuously transmits EDID information. The DDC2B is a bidirectional data channel based on the I^2C protocol. The host can request EDID information over the DDC2B channel.

1. BLOCK DIAGRAM - PLEASE SEND A REVISE BLOCK DIAGRAM THAT SHOWS THE FREQUENCY OF THE CLOCKS AND OSCILLATORS
2. USER MANUAL - THE FOLLOWING STATEMENTS MUST BE PLACED IN THE USERS MANUAL.

THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-Consult the dealer or an experienced radio/TV technician for help.