

SERVICE MANUAL  
HIGH RESOLUTION DISPLAY MONITOR  
Diamond Pro 2060u for Southern Hemisphere  
(NSZ2127STTUW)

NEC-MITSUBISHI ELECTRIC VISUAL SYSTEMS CORPORATION  
SEPTEMBER 2001

CBB-S5758


## **X-RADIATION WARNING**

The surface of picture tube may generate X-Radiation.

Precaution during servicing, and if possible use of a lead apron or metal for shielding is recommended. To avoid possible exposure to X-Radiation and electrical shock hazard, the high voltage compartment and the picture tube shield must be kept in place whenever the chassis is in operation.

When replacing picture tube use only designated replacement part since it is a critical component with regard to X-Radiation as noted above.

## **CRITICAL COMPONENT WARNING**

- In the schematic diagram/parts list, the components marked "  " are critical components for X-ray radiation.

When replacing these parts, use exactly the same one indication in parts list.

- If one or some of the components listed below are replaced, the high voltage and the operating voltage of high voltage hold-down circuit must be re-adjusted according to Clause 2.4 ADJUSTMENT on page 2-6 :

T701, IC101, IC103, R708, R709

## Contents

1. Circuit description .....	1-1
1.1 Power block .....	1-1
1.1.1 Outline .....	1-1
1.1.2 Rectifying circuit .....	1-1
1.1.3 Surge current suppression .....	1-1
1.1.4 Higher harmonic circuit .....	1-2
1.1.5 Sub power circuit .....	1-4
1.1.6 Main power circuit .....	1-4
1.1.7 Degaussing circuit .....	1-7
1.1.8 Power management circuit .....	1-7
1.1.9 Protective circuit .....	1-7
1.2 Horizontal deflection block .....	1-12
1.2.1 Distortion compensation waveform generating circuit .....	1-13
1.2.2 Deflection current compensation circuit .....	1-22
1.3 Vertical output block .....	1-24
1.4 High voltage block .....	1-25
1.4.1 High voltage control circuit .....	1-25
1.4.2 Protective function circuit .....	1-25
1.4.3 DBF (Dynamic Beam Focus) circuit .....	1-27
1.5 CRT compensation block .....	1-29
1.5.1 Rotation circuit .....	1-29
1.5.2 Corner purity circuit .....	1-29
1.5.3 Earth magnetism cancel circuit .....	1-30
1.5.4 Digital dynamic convergence clear (DDCC) circuit .....	1-32
1.6 Control block .....	1-39
1.6.1 Sync. signal process .....	1-39
1.6.2 Front button .....	1-39
1.6.3 I2C bus control .....	1-39
1.6.4 Power control .....	1-39
1.6.5 ABL, Beam protector .....	1-40
1.6.6 CRT support .....	1-40
1.6.7 High voltage control .....	1-40
1.6.8 Display Data Channel .....	1-41
1.6.9 Power-On Indicator .....	1-41
1.6.10 Clamp pulse .....	1-42
1.6.11 SPARK .....	1-42
1.6.12 Avoidance operation during input SYNC switching .....	1-42
1.6.13 CS switch and vertical linearity switch .....	1-42

1.6.14 H/W RESET .....	1-42
1.6.15 Oscillation circuit.....	1-43
1.6.16 I/O expander .....	1-43
1.7 Software .....	1-43
1.7.1 Outline .....	1-43
1.7.2 Frequency variation detection function .....	1-43
1.7.3 Memory of user timing .....	1-44
1.7.4 Picture adjustment.....	1-44
1.7.5 Power management.....	1-44
1.7.6 OSD display at NO SYNC .....	1-45
1.7.7 Power-On Indicator display .....	1-45
1.7.8 Status memory to EEPROM .....	1-46
1.8 Deflection processor block .....	1-47
1.8.1 Outline .....	1-47
1.8.2 Vertical deflection waveform generating circuit .....	1-47
1.8.3 Horizontal deflection drive waveform generating circuit.....	1-48
1.8.4 Distortion compensation waveform generating circuit .....	1-48
1.8.5 DBF compensation waveform generating circuit .....	1-48
1.8.6 Convergence compensation waveform generating circuit.....	1-49
1.8.7 Blanking waveform generating circuit.....	1-49
1.8.8 Moire canceling circuit .....	1-49
1.8.9 Distortion compensating operation .....	1-51
1.9 Video block .....	1-52
1.9.1 Picture signal amplifier circuit .....	1-52
1.9.2 Cut-off circuit .....	1-52
1.9.3 2-input change over circuit and synchronizing signal circuit .....	1-55
1.9.4 On Screen Display circuit .....	1-57
1.9.5 AUTO SIZE function .....	1-58
1.10 USB circuit .....	1-60
1.10.1 Outline .....	1-60
1.10.2 USB downstream power supply .....	1-60
1.10.3 HUB controller power output.....	1-60
1.11 Wave form of main circuit voltage .....	1-61

2.	Adjustment procedure .....	2-1
2.1	Measuring instruments .....	2-1
2.2	Preparatory inspections .....	2-1
2.3	Names of each monitor part .....	2-2
2.3.1	Configuration of front control panel .....	2-2
2.3.2	Configuration of rear input connector .....	2-2
2.3.3	OSD display matrix .....	2-3
2.3.3.1	User mode .....	2-3
2.3.3.2	Factory mode .....	2-4
2.4	Adjustment .....	2-6
2.4.1	How to select the factory adjustment (FACTORY) mode .....	2-6
2.4.1.1	Selecting with front panel switches .....	2-6
2.4.2	Adjustments before aging .....	2-6
2.4.2.1	Adjusting the high voltage and high voltage protector .....	2-6
2.4.2.2	SCREEN voltage / FOCUS adjustment .....	2-7
2.4.2.3	Shock test .....	2-7
2.4.2.4	Preadjustment before aging .....	2-7
2.4.2.5	Adjusting the landing (ITC/4 corner purity adjustment) .....	2-7
2.4.3	Adjustments after aging .....	2-7
2.4.3.1	+B adjustment .....	2-7
2.4.4	Adjusting the picture size, position and distortion .....	2-8
2.4.4.1	Adjusting the picture inclination .....	2-8
2.4.4.2	Adjusting the back raster position .....	2-8
2.4.4.3	Adjusting the left/right distortion, picture width, picture position (H-PHASE) and vertical linearity (all preset) .....	2-8
2.4.4.4	Adjusting the DBF amplitude and phase .....	2-9
2.4.5	Adjusting the cut off .....	2-10
2.4.6	Adjusting the RGB drive signal and X-Pro .....	2-13
2.4.6.1	Adjusting the R, G, B drive signal (Adjustment of COLOR 1) .....	2-13
2.4.6.2	Adjusting ABL .....	2-13
2.4.6.3	Adjustment of X-Pro .....	2-14
2.4.6.4	Confirmation for operation of X-Pro .....	2-14
2.4.7	Adjusting the Purity .....	2-14
2.4.8	Adjusting the focus .....	2-15
2.4.9	Adjusting the convergence .....	2-16
2.4.9.1	Adjusting with ITC .....	2-16
2.4.9.2	Adjusting DDCCP .....	2-18
2.4.10	Default settings (With factory mode) .....	2-23
2.5	Inspections (In normal mode) .....	2-24
2.5.1	Electrical performance .....	2-24
2.5.1.1	Withstand voltage .....	2-24

2.5.1.2	Grounding conductivity check .....	2-24
2.5.1.3	Degaussing coil operation.....	2-24
2.5.1.4	POWER SAVE function operation (Set the AC power input to 230V) .....	2-24
2.5.1.5	Confirming the CORNER-PURITY function .....	2-25
2.5.1.6	Focus, picture performance .....	2-25
2.5.1.7	Misconvergence .....	2-25
2.5.1.8	Picture distortion .....	2-26
2.5.1.9	Linearity .....	2-28
2.5.1.10	Adjustment value list.....	2-29
2.5.1.11	Confirming CLAMP PULSE POSITION, SYNC ON GREEN .....	2-29
2.5.1.12	Checking the functions during Composite Sync input .....	2-30
2.5.1.13	Confirming the full white luminance .....	2-30
2.5.1.14	Confirming CONVERGENCE compensation function .....	2-30
2.5.1.15	Confirming ROTATION compensation function .....	2-30
2.5.1.16	Luminance/color coordination uniformity .....	2-30
2.5.1.17	Confirming the full white color coordination .....	2-30
2.5.1.18	Confirming the color tracking .....	2-31
2.5.1.19	CRT installation position .....	2-31
2.5.1.20	Confirming FPM operation .....	2-31
2.5.1.21	Confirming Auto size operation .....	2-31
2.5.1.22	Others.....	2-31
2.5.1.23	Confirming USB .....	2-31
2.6	DDC write data contents .....	2-32
2.7	Self-diagnosis shipment setting.....	2-33
2.8	Default inspection .....	2-33
2.8.1	Default setting of switches .....	2-33
2.8.2	Default setting of OSD .....	2-33
2.8.3	Checking the labels .....	2-33
2.8.4	Packaging .....	2-33
2.9	Degaussing with handy-demagnetizer .....	2-34
2.9.1	General precautions .....	2-34
2.9.2	How to hold and use the handy-demagnetizer .....	2-34
2.10	Timing chart .....	2-35
2.11	Adjustment timing .....	2-36
3.	Schematic diagram	
4.	Exploded view	
<Appendix>		
Serial number information		
Specification		
User's guide		
All parts list		