NEC

PART NO. 599910663

SERVICE MANUAL

COLOR MONITOR

AccuSync™ LCD51VM

MODEL ID LCD51VM(A)/-BK(A)/-BK(B)

1st Edition

NEC-MITSUBISHI ELECTRIC VISUAL SYSTEMS CORPORATION

JULY 2003

200309
08R510AY
08R520AY
08R520BY

WARNING

The SERVICE PERSONNEL should have the appropriate technical training, knowledge and experience necessary to:

- Be familiar with specialized test equipment, and
- Be careful to follow all safety procedures to minimize danger to themselves and their coworkers.

To avoid electrical shocks, this equipment should be used with an appropriate power cord.

This equipment utilized a micro-gap power switch. Turn off the set by first pushing power switch. Next, remove the power cord from the AC outlet.

To prevent fire or shock hazards, do not expose this unit to rain or moisture.

This symbol warns the personnel that un-insulated voltage within the unit may have sufficient magnitude to cause electric shock.

This symbol alerts the personnel that important literature concerning the operation and maintenance of this unit has been included.
Therefore, it should be read carefully in order to avoid any problems.

PRODUCT SAFETY CAUTION

1. When parts replacement is required for servicing, always use the manufacturer's specified replacement.
2. When replacing the component, always be certain that all the components are put back in the place.
3. As for a connector, pick and extract housing with fingers properly since a disconnection and improper contacts may occur, when wires of the connector are led.
4. Use a proper screwdriver. If you use screwdriver that does not fit, you may damage the screws.

CONTENTS

User's Manual

1. A Version

NEC

USER'S MANUAL

AccuSync™ LCD51VM/LCD71VM

To learn about other special offers, register online at www.necmitsubishi.com/productregistration

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WARNING

TO PREVENT FIRE OR SHOCK HAZARDS, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE. ALSO, DO NOT USE THIS UNIT'S POLARIZED PLUG WITH AN EXTENSION CORD RECEPTACLE OR OTHER OUTLETS UNLESS THE PRONGS CAN BE FULLY INSERTED.
REFRAIN FROM OPENING THE CABINET AS THERE ARE HIGH VOLTAGE COMPONENTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

CAUTION

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, MAKE SURE POWER CORD IS UNPLUGGED FROM WALL SOCKET. TO FULLY DISENGAGE THE POWER TO THE UNIT, PLEASE DISCONNECT THE POWER CORD FROM THE AC OUTLET. DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol warns user that uninsulated voltage within the unit may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any part inside this unit.

This symbol alerts the user that important literature concerning the operation and maintenance of this unit has been included. Therefore, it should be read carefully in order to avoid any problems.

Canadian Department of Communications Compliance Statement

DOC: This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

C-UL: Bears the C-UL Mark and is in compliance with Canadian Safety Regulations according to CAN/CSA C22.2 No. 60950.

FCC Information

1. Use the attached specified cables with the AccuSync LCD51VM (L152R5) or AccuSync LCD71VM (L172R6) color monitor so as not to interfere with radio and television reception.
   (1) Please use the supplied power cord or equivalent to ensure FCC compliance.
   (2) Please use the supplied shielded video signal cable.
   Use of other cables and adapters may cause interference with radio and television reception.

2. 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 your dealer or an experienced radio/TV technician for help.

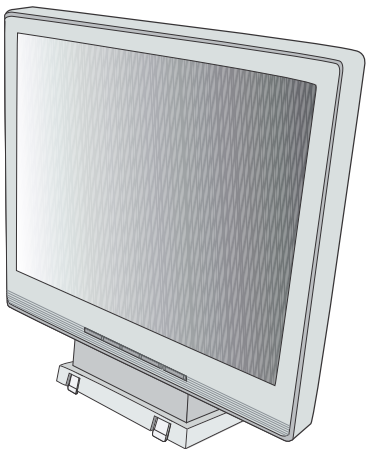
Changes or modifications not expressly approved by the party responsible for complicance could void the user's authority to operate the equipment.

If necessary, the user should contact the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet, prepared by the Federal Communications Commission, helpful: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington, D.C., 20402, Stock No. 004-000-00345-4.

Contents

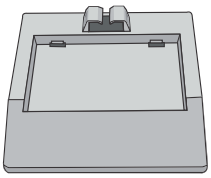
Your new NEC AccuSync LCD monitor box* should contain the following:

- AccuSync LCD monitor with tilt base
- Power Cord
- User's Manual
- Audio Cable
- Video Signal Cable
- Base stand



AccuSync LCD monitor (base stand not connected)

User's Manual



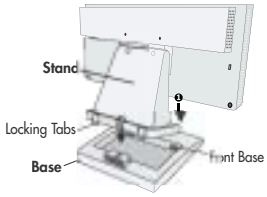
Base Stand

** Remember to save your original box and packing material to transport or ship the monitor.*

Quick Start

To attach the Base to the LCD Stand:

1. Insert the front of the LCD Stand into the holes in the front of the Base.
2. Next, position the locking tabs on the back side of the LCD Stand with the holes on the Base. Lower the Stand until locking tabs are secure.



To attach the AccuSync LCD monitor to your system, follow these instructions:

1. Turn off the power to your computer.
2. For the PC with Analog output: Connect the 15-pin mini D-SUB signal cable to the connector of the display card in your system **(Figure A.1)**. Tighten all screws.
   For the MAC: Connect the AccuSync Macintosh cable adapter to the computer, then attach the 15-pin mini D-SUB signal cable to the AccuSync Macintosh cable adapter **(Figure A.2)**. Tighten all screws.

NOTE: To obtain the AccuSync Macintosh cable adapter, call NEC-Mitsubishi Electronics Display of America, Inc. at (800) 632-4662.

3. Connect the 15-pin mini D-SUB of the video signal cable to the appropriate connector on the back of the monitor **(Figure B.1)**. Connect the audio cable to AUDIO-INPUT on the back of the monitor and the other end to the "Audio out" terminal of the computer.

   Headphones may be connected to the "Headphones" output on the back of the monitor "🎧". While the headphones are connected, the sound from the speakers will be disabled. Headphones can be purchased from your local electronics store.
4. Connect one end of the power cord to the LCD and the other end to the power outlet. Place the video signal cable and power cord between the cable holder **(Figure B.1)**.

NOTE: Adjust the position of cables between the holder to avoid damage.

NOTE: If you use this monitor at AC125-240V, please refer to Recommended Use section of this manual for proper selection of power cord.

5. Turn on the monitor with the front power button and the computer. **(Figure C.1)**
6. No-touch Auto Adjust automatically adjusts the monitor to optimal settings upon initial setup for most timings. For further adjustments, use the following OSM® controls:
   - Auto Adjust Contrast
   - Auto Adjust

   Refer to the Controls section of this User's Manual for a full description of these OSM controls.

NOTE: For download information on the Windows® 95/98/Me/2000/XP INF file for your AccuSync monitor, refer to the **References** section of this User's Manual.

NOTE: If you have any problems, please refer to the **Troubleshooting** section of this User's Manual.

Quick Start *–continued*

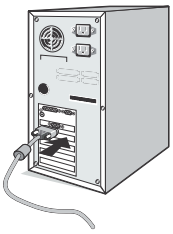
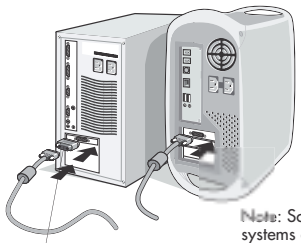


Figure A.1



Macintosh Cable Adapter (not include)

Figure A.2

Note: Some Macintosh systems do not require a Macintosh Cable Adapter

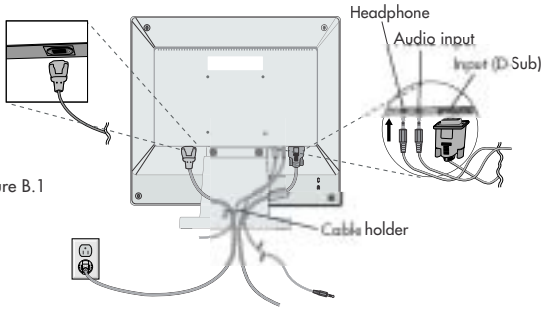


Figure B.1

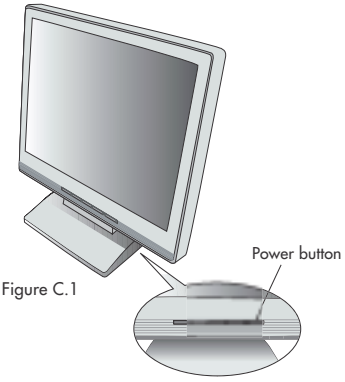


Figure C.1

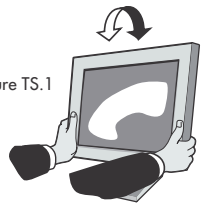
4

Quick Start *–continued*

Tilt

Grasp both sides of the monitor screen with your hands and adjust the tilt as desired **(Figure TS.1).**

Figure TS.1



Remove Monitor Stand for Mounting

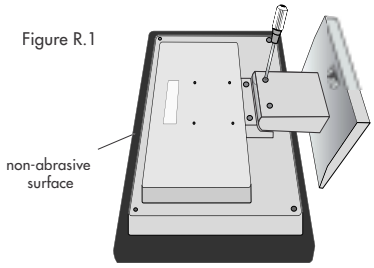
To prepare the monitor for alternate mounting purposes:

1. Disconnect all cables.
2. Place monitor face down on a nonabrasive surface **(Figure R.1)**.
3. Remove the 2 screws on the stand and lift off the stand **(Figure R.1)**.
4. Remove the 4 screws connecting the monitor to the stand and remove the metal plate **(Figure R.2)**.

   The monitor is now ready for mounting in an alternate manner.
5. Connect the AC cord and signal cable to the back of the monitor **(Figure R.3)**.
6. Reverse this process to reattach stand.

NOTE: Use only VESA-compatible alternative mounting method.
NOTE: Handle with care when removing monitor stand.

Figure R.1



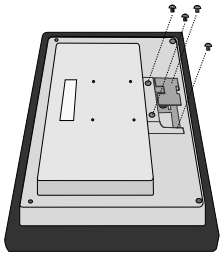


Figure R.2

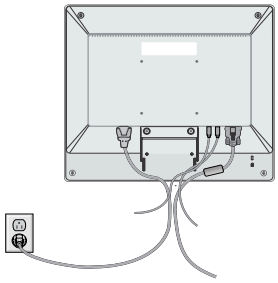
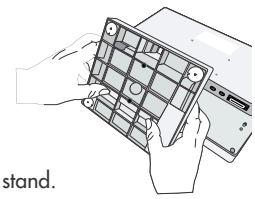


Figure R.3

Quick Start *–continued*

Removing the Base

Note: Always remove the Base when shipping the LCD.

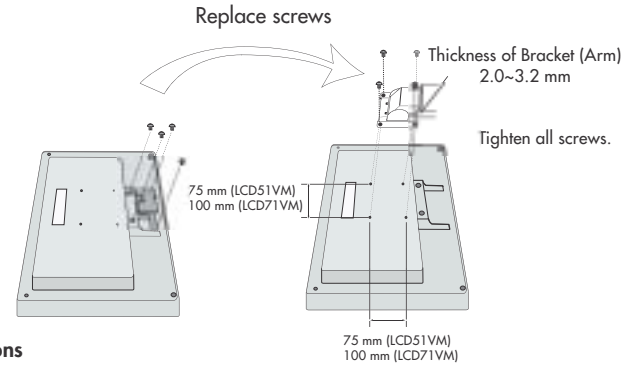


1. Place monitor face down on a non-abrasive surface **(Figure R.1)**.
2. While using your thumbs, press the bottom tabs upward to unlock.
3. Press the top tabs down to unlock and pull off the stand.

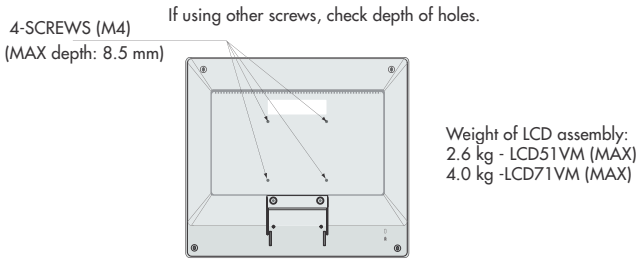
Connecting a Flexible Arm

This LCD monitor is designed for use with a flexible arm. Please use the attached screws (4pcs) as shown in the picture when installing.

To meet the safety requirements, the monitor must be mounted to an arm which guaranties the necessary stability under consideration of the weight of the monitor. The LCD monitor should only be used with an approved arm (e.g. GS mark).



Specifications



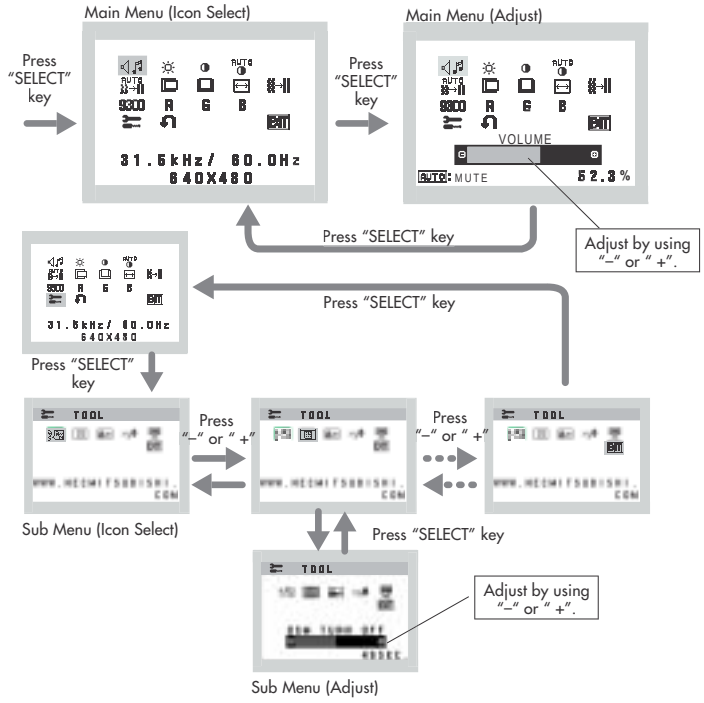
Controls

OSM® (On-Screen Manager) control buttons on the front of the monitor function as follows:

1. Basic key function

Button	SELECT	–	+	AUTO / RESET
OSM Off	OSM displayed	Shortcut to bright adjust window	Shortcut to volume adjust window	"Auto adjust" function
OSM On (Icon selection stage)	Moves to Adjustment stage	Cursor moves left	Cursor moves right	
OSM On (Adjustment stage)	Moves to Icon selection stage	Adjust value decrease or Cursor for adjust moves left	Adjust value increase or Cursor for adjust moves right	Reset operation Mute off/on Volume adjustment window

2. OSM Structure



Controls *–continued*

AUDIO
Control the sound volume of speakers and headphone.
To mute the speaker sound, press the AUTO/RESET key.

BRIGHTNESS
Adjusts the overall image and background screen brightness.

CONTRAST
Adjusts the image brightness in relation to the background.

AUTO CONTRAST
Adjusts the image displayed for non-standard video inputs.

AUTO ADJUST
Automatically adjusts the Image Position, the H. Size and Fine setting.

LEFT/RIGHT
Controls Horizontal Image Position within the display area of the LCD.

DOWN/UP
Controls Vertical Image Position within the display area of the LCD.

H. SIZE
Adjusts the horizontal size by increasing or decreasing this setting.

FINE
Improves focus, clarity and image stability by increasing or decreasing this setting.

COLOR CONTROL SYSTEMS
Four color presets (9300/7500/6500/USER) select the desired color setting.

COLOR RED
Increase or decreases Red. The change will appear on screen.

COLOR GREEN
Increase or decreases Green. The change will appear on screen.

COLOR BLUE
Increase or decreases Blue. The change will appear on screen.

TOOL
Selecting TOOL allows you to get into the sub menu.

FACTORY PRESET
Selecting Factory Preset allows you to reset all OSM control settings back to the factory settings. The RESET button will need to be held down for several seconds to tage effect. Individual settings can be reset by highlighting the control to be reset and pressing the RESET button.

Controls *–continued*

EXIT

Selecting EXIT allows you exit OSM menu/sub menu.

LANGUAGE

OSM control menus are available in seven languages.

OSM TURN OFF

The OSM control menu will stay on as long as it is in use. In the OSM Turn OFF submenu, you can select how long the monitor waits after the last touch of a button to shut off the OSM control menu. The preset choices are 10 - 120 seconds in 5 second intervals.

OSM LOCK OUT

This control completely locks out access to all OSM control functions without Brightness and Contrast. When attempting to activate OSM controls while in the Lock Out mode, a screen will appear indicating the OSM are locked out. To activate the OSM Lock Out function, press "AUTO/ RESET", then "+" key and hold down simultaneously. To de-activate the OSM Lock Out, press "AUTO/ RESET", then "+" key and hold down simultaneously.

RESOLUTION NOTIFIER

If ON is selected, a message will appear on the screen after 30 seconds, notifying you that the resolution is not at optimal resolution.

MONITOR INFO

Indicates the model and serial numbers of your monitor.

OSM® Warning: OSM Warning menus disappear with SELECT button.
NO SIGNAL: This function gives a warning when there is no signal present. After power is turned on or when there is a change of input signal or video is inactive, the **No Signal** window will appear.
RESOLUTION NOTIFIER: This function gives a warning of use with optimized resolution. After power is turned on or when there is a change of input signal or the video signal doesn't have proper resolution, the **Resolution Notifier** window will open. This function can be disabled in the TOOL menu.
OUT OF RANGE: This function gives a recommendation of the optimized resolution and refresh rate. After the power is turned on or there is a change of input signal or the video signal doesn't have proper timing, the **Out Of Range** menu will appear.

Recommended Use

Safety Precautions and Maintenance

FOR OPTIMUM PERFORMANCE, PLEASE NOTE THE FOLLOWING WHEN SETTING UP AND USING THE ACCUSYNC LCD COLOR MONITOR:

- **DO NOT OPEN THE MONITOR.** There are no user serviceable parts inside and opening or removing covers may expose you to dangerous shock hazards or other risks. Refer all servicing to qualified service personnel.
- Do not spill any liquids into the cabinet or use your monitor near water.
- Do not insert objects of any kind into the cabinet slots, as they may touch dangerous voltage points, which can be harmful or fatal or may cause electric shock, fire or equipment failure.
- Do not place any heavy objects on the power cord. Damage to the cord may cause shock or fire.
- Do not place this product on a sloping or unstable cart, stand or table, as the monitor may fall, causing serious damage to the monitor.
- When operating the AccuSync LCD monitor with its AC 125-240V power supply, use a power supply cord that matches the power supply voltage of the AC power outlet being used. The power supply cord you use must have been approved by and comply with the safety standards of your country. (Type H05VV-F should be used in Europe)
- In UK, use a BS-approved power cord with molded plug having a black (5A) fuse installed for use with this monitor. If a power cord is not supplied with this monitor, please contact your supplier.
- Do not place any objects onto the monitor and do not use the monitor outdoors.
- The inside of the fluorescent tube located within the LCD monitor contains mercury. Please follow the bylaws or rules of your municipality to dispose of the tube properly.

Immediately unplug your monitor from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- When the power supply cord or plug is damaged.
- If liquid has been spilled, or objects have fallen into the monitor.
- If the monitor has been exposed to rain or water.
- If the monitor has been dropped or the cabinet damaged.
- If the monitor does not operate normally by following operating instructions.
- Do not bend power cord.
- Do not use monitor in high temperature, humid, dusty, or oily areas.
- If glass is broken, handle with care.
- Do not cover vent on monitor.
- If monitor or glass is broken, do not come in contact with the liquid crystal and handle with care.

CAUTION

- Allow adequate ventilation around the monitor so that heat can properly dissipate. Do not block ventilated openings or place the monitor near a radiator or other heat sources. Do not put anything on top of monitor.
- The power cable connector is the primary means of detaching the system from the power supply. The monitor should be installed close to a power outlet which is easily accessible.
- Handle with care when transporting. Save packaging for transporting.

Image Persistence

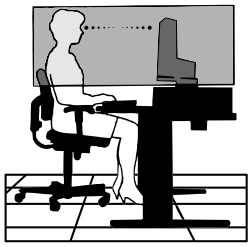
Image persistence is when a residual or "ghost" image of a previous image remains visible on the screen. Unlike CRT monitors, LCD monitors' image persistence is not permanent, but constant images being displayed for a long period of time should be avoided.

To alleviate image persistence, turn off the monitor for as long as the previous image was displayed. For example, if an image was on the monitor for one hour and a residual image remains, the monitor should be turned off for one hour to erase the image.

NOTE: As with all personal display devices, NEC-Mitsubishi Electronics Display recommends using a moving screen saver at regular intervals whenever the screen is idle or turning off the monitor when not in use.

Recommended Use *–continued*

CORRECT PLACEMENT AND ADJUSTMENT OF THE MONITOR CAN REDUCE EYE, SHOULDER AND NECK FATIGUE. CHECK THE FOLLOWING WHEN YOU POSITION THE MONITOR:



- For optimum performance, allow 20 minutes for warm-up.
- Adjust the monitor height so that the top of the screen is at or slightly below eye level. Your eyes should look slightly downward when viewing the middle of the screen.
- Position your monitor no closer than 16 inches and no further away than 28 inches from your eyes. The optimal distance is 20 inches.
- Rest your eyes periodically by focusing on an object at least 20 feet away. Blink often.
- Position the monitor at a 90° angle to windows and other light sources to minimize glare and reflections. Adjust the monitor tilt so that ceiling lights do not reflect on your screen.
- If reflected light makes it hard for you to see your screen, use an antiglare filter.
- Clean the LCD monitor surface with a lint-free, nonabrasive cloth. Avoid using any cleaning solution or glass cleaner!
- Adjust the monitor's brightness and contrast controls to enhance readability.
- Use a document holder placed close to the screen.
- Position whatever you are looking at most of the time (the screen or reference material) directly in front of you to minimize turning your head while you are typing.
- Avoid displaying fixed patterns on the monitor for long periods of time to avoid image persistence (afterimage effects).
- Get regular eye checkups.

Ergonomics

To realize the maximum ergonomics benefits, we recommend the following:

- Use the preset Size and Position controls with standard signals
- Use the preset Color Setting
- Use non-interlaced signals with a vertical refresh rate between 60-75Hz
- Do not use primary color blue on a dark background, as it is difficult to see and may produce eye fatigue to insufficient contrast

For more detailed information on setting up a healthy work environment, write the American National Standard for Human Factors Engineering of Visual Display Terminal Workstations – ANSI-HFS Standard No. 100-1988 – The Human Factors Society, Inc. P.O. Box 1369, Santa Monica, California 90406.

Specifications

Monitor Specifications		AccuSync LCD51VM Monitor	Notes
LCD Module	Diagonal: Viewable Image Size: Native Resolution (Pixel Count):	15.0 inch 15.0 inch 1024 x 768	Active matrix; thin film transistor (TFT) liquid crystal display (LCD); 0.297 mm dot pitch; 250cd/m² white luminence; 450:1 contrast ratio, typical
Input Signal	Video: Sync:	ANALOG 0.7 Vp-p/75 Ohms Separate sync TTL Level (Positive/Negative) Horizontal sync Positive/Negative Vertical sync Positive/Negative	
Display Colors	Analog input:	16,777,216	Depending on display card used.
Maximum Viewing Angles	Left/right: Up/Down:	60°/60° (CR>10) 40°/60° (CR>10)	
Synchronization Range	Horizontal: Vertical:	31.5 kHz to 60 kHz 56 Hz to 75 Hz	Automatically Automatically
Resolutions Supported		720 x 400*1 :VGA text 640 x 480*1 at 60 Hz to 75 Hz 800 x 600*1 at 56 Hz to 75 Hz 832 x 624*1 at 75 Hz 1024 x 768 at 60 Hz to 75 Hz	Some systems may not support all modes listed. NEC-Mitsubishi Electronics Display cites recommended resolution at 75 Hz for optimal display performance.
Active Display Area	Horizontal : Vertical :	304.1 mm/12.0 inches 228.1 mm/9.0 inches	
Power Supply		100-240 V ~, 50/60 Hz	
Speaker Practical Audio Output		1 + 1 Watts	
Current Rating		0.45 - 0.25 A	
Dimensions		347.4 mm (W) x 341.9 mm (H) x 183.5 mm (D) 13.7 inches (W) x 13.5 inches (H) x 7.2 inches (D)	
Weight		3.0 kg 6.6 lbs	
Environmental Considerations			
	Operating Temperature: Humidity: Feet: Storage Temperature: Humidity: Feet:	5°C to 35°C/41°F to 95°F 30% to 80% 0 to 12,000 Feet -10°C to 60°C/14°F to 140°F 10% to 85% 0 to 40,000 Feet	

*1 Interpolated Resolutions: When resolutions are shown that are lower than the pixel count of the LCD module, text may appear different. This is normal and necessary for all current flat panel technologies when displaying nonnative resolutions full screen. In flat panel technologies, each dot on the screen is actually one pixel, so to expand resolutions to full screen, an interpolation of the resolution must be done.

NOTE: Technical specifications are subject to change without notice.

Specifications *–continued*

Monitor Specifications		AccuSync LCD71VM Monitor	Notes
LCD Module	Diagonal:	17.0 inch	Active matrix; thin film transistor (TFT)
	Viewable Image Size:	17.0 inch	liquid crystal display (LCD); 0.264 mm dot
	Native Resolution (Pixel Count):	1280 x 1024	pitch; 250cd/m² white luminence; 450:1 contrast ratio, typical
Input Signal	Video:	ANALOG 0.7 Vp-p/75 Ohms	
	Sync:	Separate sync TTL Level (Positive/Negative) Horizontal sync Positive/Negative Vertical sync Positive/Negative	
Display Colors	Analog input:	16,194,277	Depending on display card used.
Maximum Viewing Angles	Left/right:	70°/70° (CR>10)	
	Up/Down:	60°/60° (CR>10)	
Synchronization Range	Horizontal:	31.5 kHz to 81.1 kHz	Automatically
	Vertical:	56 Hz to 75 Hz	Automatically
Resolutions Supported		720 x 400*1 : VGA text	Some systems may not support
		640 x 480*1 at 60 Hz to 75 Hz	all modes listed.
		800 x 600*1 at 56 Hz to 75 Hz	
		832 x 624*1 at 75 Hz	
		1024 x 768*1 at 60 Hz to 75 Hz	
		1152 x 864*1 at 70 Hz to 75 Hz	
		1152 x 870*1 at 75 Hz	NEC-Mitsubishi Electronics Display cites
		1280 x 960*1 at 60 Hz to 75 Hz	recommended resolution at 60 Hz for
		1280 x 1024 at 60 Hz to 75 Hz.....	optimal display performance.
Active Display Area	Horizontal :	338 mm/13.3 inches	
	Vertical :	270.3 mm/10.6 inches	
Power Supply		100-240 V ~, 50/60 Hz	
Speaker Practical Audio Output		1 + 1 Watts	
Current Rating		0.75 - 0.4 A	
Dimensions		379 mm (W) x 383 mm (H) x 193 mm (D) 14.9 inches (W) x 15.1 inches (H) x 7.6 inches (D)	
Weight		4.6 kg 10.2 lbs	
Environmental Considerations			
	Operating Temperature:	5°C to 35°C/41°F to 95°F	
	Humidity:	30% to 80%	
	Feet:	0 to 12,000 Feet	
	Storage Temperature:	-10°C to +60°C/14°F to 140°F	
	Humidity:	10% to 85%	
	Feet:	0 to 40,000 Feet	

*1 Interpolated Resolutions: When resolutions are shown that are lower than the pixel count of the LCD module, text may appear different. This is normal and necessary for all current flat panel technologies when displaying non-native resolutions full screen. In flat panel technologies, each dot on the screen is actually one pixel, so to expand resolutions to full screen, an interpolation of the resolution must be done.

NOTE: Technical specifications are subject to change without notice.

Features

Reduced Footprint: Provides the ideal solution for environments requiring superior image quality but with size and weight limitations. The monitor's small footprint and low weight allow it to be moved or transported easily from one location to another.

AccuColor® Control Systems: Allows you to adjust the colors on your screen and customize the color accuracy of your monitor to a variety of standards.

OSM® (On-Screen Manager) Controls: Allow you to quickly and easily adjust all elements of your screen image via simple to use on-screen menus.

No-touch Auto Adjust: No-touch Auto Adjust automatically adjusts the monitor to optimal settings upon initial setup.

ErgoDesign® Features: Enhance human ergonomics to improve the working environment, protect the health of the user and save money. Examples include OSM controls for quick and easy image adjustments, tilt base for preferred angle of vision, small footprint and compliance with MPRII and TCO guidelines for lower emissions.

Plug and Play: The Microsoft® solution with the Windows®95/98/Me/2000/XP operating system facilitates setup and installation by allowing the monitor to send its capabilities (such as screen size and resolutions supported) directly to your computer, automatically optimizing display performance.

IPM® (Intelligent Power Manager) System: Provides innovative power-saving methods that allow the monitor to shift to a lower power consumption level when on but not in use, saving two-thirds of your monitor energy costs, reducing emissions and lowering the air conditioning costs of the workplace.

Multiple Frequency Technology: Automatically adjusts monitor to the display card's scanning frequency, thus displaying the resolution required.

FullScan® Capability: Allows you to use the entire screen area in most resolutions, significantly expanding image size.

VESA Standard Mounting Interface: Allows users to connect their AccuSync monitor to any VESA standard third party mounting arm or bracket. Allows for the monitor to be mounted on a wall or an arm using any third party compliant device.

Troubleshooting

No picture
- The signal cable should be completely connected to the display card/computer.
- The display card should be completely seated in its slot.
- Front Power Switch and computer power switch should be in the ON position.
- Check to make sure that a supported mode has been selected on the display card or system being used. (Please consult display card or system manual to change graphics mode.)
- Check the monitor and your display card with respect to compatibility and recommended settings.
- Check the signal cable connector for bent or pushed-in pins.

Power Button does not respond
- Unplug the power cord of the monitor from the AC outlet to turn off and reset the monitor.

Image Persistence
- Image persistence is when a residual or "ghost" image of a previous image remains visible on the screen. Unlike CRT monitors, LCD monitors' image persistence is not permanent, but constant images being displayed for a long period of time should be avoided.

  To alleviate image persistence, turn off the monitor for as long as the previous image was displayed. For example, if an image was on the monitor for one hour and a residual image remains, the monitor should be turned off for one hour to erase the image.

  NOTE: As with all personal display devices, NEC-Mitsubishi Electronics Display recommends using a moving screen saver at regular intervals whenever the screen is idle or turning off the monitor when not in use.

Image is unstable, unfocused or swimming is apparent
- Signal cable should be completely attached to the computer.
- Use the OSM Image Adjust controls to focus and adjust display by increasing or decreasing the FINE control. When the display mode is changed, the OSM Image Adjust settings may need to be readjusted.
- Check the monitor and your display card with respect to compatibility and recommended signal timings.
- If your text is garbled, change the video mode to non-interlace and use 60Hz refresh rate.

LED on monitor is not lit *(no green or amber color can be seen)*
- Power Switch should be in the ON position and power cord should be connected.

Display image is not sized properly
- Use the OSM Image Adjust controls to increase or decrease the H.SIZE.
- Check to make sure that a supported mode has been selected on the display card or system being used. (Please consult display card or system manual to change graphics mode.)

No Video
- If no video is present on the screen, turn the Power button off and on again.
- Make certain the computer is not in a power-saving mode (touch the keyboard or mouse).

No Sound
- Check to see if speaker cable is properly connected.
- Check to see if mute is activated.
- Check to see if volume in OSM is set at minimum.

References

NEC-Mitsubishi Monitor Customer Service & Support

Customer Service and Technical Support:	(800) 632-4662
Fax:	(800) 695-3044
Parts and Accessories/Macintosh Cable Adapter:	(888) NEC-MITS [888-632-6487]
Customer Service Policies & Processes:	http://www.necmitsubishi.com/css/ServicePolicies/ServicePolicies.htm
Online Technical Support Knowledge Base:	http://www.necmitsubishi.com/css/knowledgebase.cfm
Customer Service & Technical Support Email:	http://www.necmitsubishi.com/css/techform.htm

Sales and Product Information

Sales Information Line:	(888) NEC-MITS [888-632-6487]
Canadian Customers:	(866) 771-0266, Ext#: 4037
Government Sales:	(800) 284-6320
Government Sales email:	gov@necmitsubishi.com

Rebate Status Information

NEC Rebate Status:	www.rebatesHQ.com or 866-765-5696
Mitsubishi Rebate Status:	www.rebatesHQ.com or 877-405-4692

Electronic Channels

World Wide Web:	http://www.necmitsubishi.com
Product Registration:	http://www.necmitsubishi.com/productregistration
European Operations:	http://www.nec-mitsubishi.com

Windows® 95/98/Me/2000/XP INF File: http://www.necmitsubishi.com and select "Drivers and Downloads"

Limited Warranty

NEC-Mitsubishi Electronics Display of America, Inc. (hereinafter "NMD-A") warrants this Product to be free from defects in material and workmanship and, subject to the conditions set forth below, agrees to repair or replace (at NMD-A's sole option) any part of the enclosed unit which proves defective for a period of three (3) years from the date of first consumer purchase. Spare parts are warranted for ninety (90) days. Replacement parts or unit may be new or refurbished and will meet specifications of the original parts or unit.

This warranty gives you specific legal rights and you may also have other rights, which vary from state to state. This warranty is limited to the original purchaser of the Product and is not transferable. This warranty covers only NMD-A-supplied components. Service required as a result of third party components is not covered under this warranty. In order to be covered under this warranty, the Product must have been purchased in the U.S.A. or Canada by the original purchaser. This warranty only covers Product distribution in the U.S.A. or Canada by NMD-A No warranty service is provided outside of the U.S.A. or Canada. Proof of Purchase will be required by NMD-A to substantiate date of purchase. Such proof of purchase must be an original bill of sale or receipt containing name and address of seller, purchaser, and the serial number of the product.

It shall be your obligation and expense to have the Product shipped, freight prepaid, or delivered to the authorized reseller from whom it was purchased or other facility authorized by NMD-A to render the services provided hereunder in either the original package or a similar package affording an equal degree of protection. All Products returned to NMD-A for service MUST have prior approval, which may be obtained by calling 1-800-632-4662. The Product shall not have been previously altered, repaired, or serviced by anyone other than a service facility authorized by NMD-A to render such service, the serial number of the product shall not have been altered or removed. In order to be covered by this warranty the Product shall not have been subjected to displaying of fixed images for long periods of time resulting in image persistence (afterimage effects), accident, misuse or abuse or operated contrary to the instructions contained in the User's Manual. Any such conditions will void this warranty.

NMD-A SHALL NOT BE LIABLE FOR DIRECT, INDIRECT, INCIDENTAL, CONSEQUENTIAL, OR OTHER TYPES OF DAMAGES RESULTING FROM THE USE OF ANY NMD-A PRODUCT OTHER THAN THE LIABILITY STATED ABOVE. THESE WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SOME STATES DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES OR THE LIMITATION OR EXCLUSION OF LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES SO THE ABOVE EXCLUSIONS OR LIMITATIONS MAY NOT APPLY TO YOU.

This Product is warranted in accordance with the terms of this limited warranty. Consumers are cautioned that Product performance is affected by system configuration, software, the application, customer data, and operator control of the system, among other factors. While NMD-A Products are considered to be compatible with many systems, specific functional implementation by the customers of the Product may vary. Therefore, suitability of a Product for a specific purpose or application must be determined by consumer and is not warranted by NMD-A.

For the name of your nearest authorized NEC-Mitsubishi Electronics Display service facility, contact NEC-Mitsubishi Electronics Display of America at 1-800-632-4662.

TCO'99

Congratulations! You have just purchased a TCO'99 approved and labelled product! Your choice has provided you with a product developed for professional use. Your purchase has also contributed to reducing the burden on the environment and also to the further development of environmentally adapted electronics products.

Why do we have environmentally labelled computers?

In many countries, environmental labelling has become an established method for encouraging the adaptation of goods and services to the environment. The main problem, as far as computers and other electronics equipment are concerned, is that environmentally harmful substances are used both in the products and during the manufacturing. Since it has not been possible for the majority of electronics equipment to be recycled in a satisfactory way, most of these potentially damaging substances sooner or later enter Nature.

There are also other characteristics of a computer, such as energy consumption levels, that are important from the viewpoints of both the work (Internal) and natural (external) environments. Since all methods of conventional electricity generation have a negative effect on the environment (acidic and climate-influencing emissions, radioactive waste, etc.), it is vital to conserve energy. Electronics equipment in offices consume an enormous amount of energy since they are often left running continuously.

What does labelling involve?

This product meets the requirements for the TCO'99 scheme which provides for international and environmental labelling of personal computers. The labelling scheme was developed as a joint effort by the TCO (The Swedish Confederation of Professional Employees), Svenska Naturskyddsforeningen (The Swedish Society for Nature Conservation) and Statens Energimyndighet (The Swedish National Energy Administration).

The requirements cover a wide range of issues: environment, ergonomics, usability, emission of electrical and magnetic fields, energy consumption and electrical and fire safety.

The environmental demands concern restrictions on the presence and use of heavy metals, brominated and chlorinated flame retardants, CFCs (freons) and chlorinated solvents, among other things. The product must be prepared for recycling and the manufacturer is obliged to have an environmental plan which must be adhered to in each country where the company implements its operational policy. The energy requirements include a demand that the computer and/or display, after a certain period of inactivity, shall reduce its power consumption to a lower level in one or more stages. The length of time to reactivate the computer shall be reasonable for the user.

Labelled products must meet strict environmental demands, for example, in respect of the reduction of electric and magnetic fields, physical and visual ergonomics and good usability.

Environmental Requirements

Flame retardants

Flame retardants are present in printed circuit boards, cables, wires, casings and housings. In turn, they delay the spread of fire. Up to thirty percent of the plastic in a computer casing can consist of flame retardant substances. Most flame retardants contain bromine or chloride and these are related to another group of environmental toxins, PCBs, which are suspected to give rise to severe health effects, including reproductive damage in fisheating birds and mammals, due to the bio-

TCO'99 *–continued*

accumulative* processes. Flame retardants have been found in human blood and researchers fear that disturbances in foetus development may occur.

TCO'99 demand requires that plastic components weighing more than 25 grams must not contain flame retardants with organically bound chlorine and bromine. Flame retardants are allowed in the printed circuit boards since no substitutes are available.

Lead**

Lead can be found in picture tubes, display screens, solders and capacitors. Lead damages the nervous system and in higher doses, causes lead poisoning.

TCO'99 requirement permits the inclusion of lead since no replacement has yet been developed.

Cadmium**

Cadmium is present in rechargeable batteries and in the color generating layers of certain computer displays. Cadmium damages the nervous system and is toxic in high doses.

TCO'99 requirement states that batteries, the color generating layers of display screens and the electrical or electronics components must not contain any cadmium.

Mercury**

Mercury is sometimes found in batteries, relays and switches, Mercury damages the nervous system and is toxic in high doses.

TCO'99 requirement states that batteries may not contain any Mercury. It also demands that no mercury is present in any of the electrical or electronics components associated with the display unit.

CFCs (freons)

CFCs (freons) are sometimes used for washing printed circuit boards. CFCs break down ozone and thereby damage the ozone layer in the stratosphere, causing increased reception on Earth of ultraviolet light with consequent increased risks of skin cancer (malignant melanoma).

The relevant TCO'99 requirement; Neither CFCs nor HCFCs may be used during the manufacturing and assembly of the product or its packaging.

*Bio-accumulative is defined as substances which accumulate within living organisms.
**Lead, Cadmium and Mercury are heavy metals which are Bio-accumulative.

To obtain complete information on the environmental criteria document, order from:

TCO Development Unit
SE-114 94 Stockholm
SWEDEN
FAX Number: +46 8 782 92 07
E-mail (Internet): development@tco.se

You may also obtain current information on TCO'99 approved and labelled products by visiting their website at: http://www.tcodevelopment.com/

Declaration of the Manufacturer

We hereby certify that the color monitor
AccuSync™ LCD51VM (L152R5) and
AccuSync LCD71VM (L172R6)
are in compliance with
Council Directive 73/23/EEC:
– EN 60950

Council Directive 89/336/EEC:
– EN 55022
– EN 61000-3-2
– EN 61000-3-3
– EN 55024

and marked with

CE

NEC-Mitsubishi Electric Visual
Systems Corporation
4-13-23, Shibaura,
Minato-Ku
Tokyo 108-0023, Japan

PROPRIETARY NOTICE AND LIABILITY DISCLAIMER

DECLARATION OF CONFORMITY

This device complies with Part 15 of 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.

U.S. Responsible Party:	**NEC-Mitsubishi Electronics Display of America, Inc.**
Address:	**1250 North Arlington Heights Road, Suite 500 Itasca, Illinois 60143-1248**
Tel. No.:	**(630) 467-3000**

Type of Product:	Display Monitor
Equipment Classification:	Class B Peripheral
Model:	AccuSync LCD51VM (L152R5) / LCD71VM (L172R6)

FC

We hereby declare that the equipment specified above conforms to the technical standards as specified in the FCC Rules.

NEC

Part No. 15501681
Printed in China

AccuSync LCD51VM
AccuSync LCD71VM

User's Manual

NEC

WARNING

TO PREVENT FIRE OR SHOCK HAZARDS, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE. ALSO, DO NOT USE THIS UNIT'S POLARIZED PLUG WITH AN EXTENSION CORD RECEPTACLE OR OTHER OUTLETS UNLESS THE PRONGS CAN BE FULLY INSERTED.

REFRAIN FROM OPENING THE CABINET AS THERE ARE HIGH VOLTAGE COMPONENTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

CAUTION

RISK OF ELECTRIC SHOCK • DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol warns user that uninsulated voltage within the unit may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any part inside this unit.

This symbol alerts the user that important literature concerning the operation and maintenance of this unit has been included. Therefore, it should be read carefully in order to avoid any problems.

Caution:

When operating the AccuSync LCD51VM/AccuSync LCD71VM with a 220-240V AC power source in Europe, use the power cord provided with the monitor.

In the UK, a BS approved power cord with a moulded plug has a Black (five Amps) fuse installed for use with this equipment. If a power cord is not supplied with this equipment please contact your supplier.

For all other cases, use a power cord that matches the AC voltage of the power outlet and has been approved by and complies with the safety standard of your particular country.

Declaration

Declaration of the Manufacturer

We hereby certify that the colour monitor AccuSync LCD51VM/AccuSync LCD71VM are in compliance with

Council Directive 73/23/EEC:
- EN 60950

Council Directive 89/336/EEC:
- EN 55022
- EN 61000-3-2
- EN 61000-3-3
- EN 55024

and marked with

CE

NEC-Mitsubishi Electric Visual Systems, Corp.
MS Shibaura Bldg., 13-23,
Shibaura 4-chome,
Minato-Ku, Tokyo 108-0023, Japan

As an ENERGY STAR Partner, NEC-Mitsubishi Electric Visual Systems Corp. has determined that this product meets the ENERGY STAR guidelines for energy efficiency. ENERGY STAR is a U.S. registered mark.

For the Customer to use in U.S.A. or Canada

Canadian Department of Communications Compliance Statement

DOC: This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouiller du Canada.

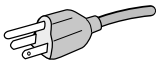
C-UL: Bears the C-UL Mark and is in compliance with Canadian Safety Regulations according to CSA C22.2 No. 60950.

Ce produit porte la marque 'C-UL' et se conforme aux règlements de sûrele Canadiens selon CAN/CSA C22.2 No. 60950.

FCC Information

1. Use the attached specified cables with the AccuSync LCD51VM/AccuSync LCD71VM colour monitor so as not to interfere with radio and television reception.

   (1) The power supply cord you use must have been approved by and comply with the safety standards of U.S.A., and meet the following condition.

Power supply cord Length Plug shape	Non shield type, 3-conductor 2.0 m  U.S.A

   (2) Shielded video signal cable. Use of other cables and adapters may cause interference with radio and television reception.

2. 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 your dealer or an experienced radio/TV technician for help.

   If necessary, the user should contact the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet, prepared by the Federal Communications Commission, helpful: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington, D.C., 20402, Stock No. 004-000-00345-4.

Declaration of Conformity

This device complies with Part 15 of 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.

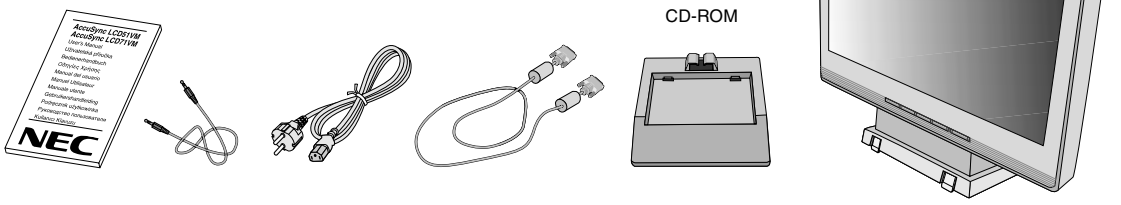
U.S. Responsible Party:	**NEC-Mitsubishi Electronics Display of America, Inc.**
Address:	**1250 N. Arlington Heights Road** **Itasca, Illinois 60143-1248**
Tel. No.:	**(630) 467-3000**
Type of Product:	Display Monitor
Equipment Classification:	Class B Peripheral
Model:	AccuSync LCD51VM/AccuSync LCD71VM

We hereby declare that the equipment specified above conforms to the technical standards as specified in the FCC Rules.

Contents

Your new NEC AccuSync LCD monitor box* should contain the following:

- AccuSync LCD monitor with tilt base
- Audio Cable
- Power Cord
- Video Signal Cable
- User's Manual
- CD-ROM



User's Manual | Audio Cable | Power Cord | Video Signal Cable | Base Stand | AccuSync LCD monitor (base stand not connected)

* *Remember to save your original box and packing material to transport or ship the monitor.*

Quick Start

To attach the Base to the LCD Stand:

1. Insert the front of the LCD stand into the holes in the front of the Base (**Figure S.1**).
2. Next, position the locking tabs on the back side of the LCD stand with the holes on the Base. Lower the Stand in place until locking tabs are secure (**Figure S.1**).

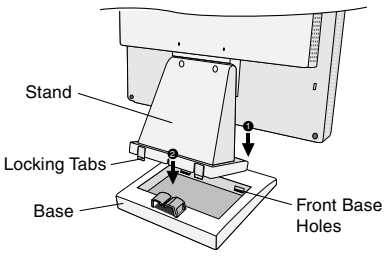


Figure S.1

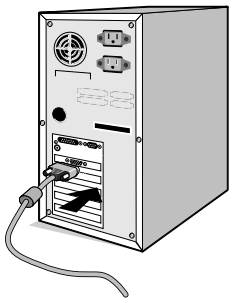


Figure A.1

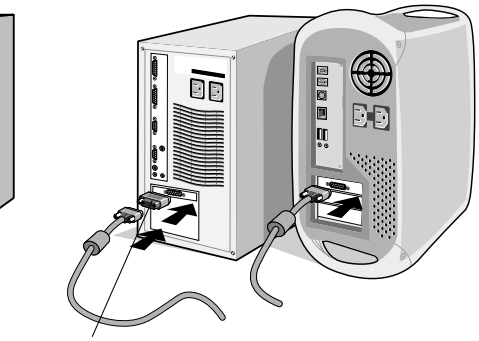


Figure A.2

To attach the AccuSync LCD monitor to your system, follow these instructions:

1. Turn off the power to your computer.
2. **For the PC with Analog output:** Connect the 15-pin mini D-SUB signal cable to the connector of the display card in your system (**Figure A.1**). Tighten all screws.

   For the Mac: Connect the MultiSync Macintosh cable adapter (not included) to the computer. Attach the 15-pin mini D-SUB signal cable to the MultiSync Macintosh cable adapter (**Figure A.2**). Tighten all screws.

NOTE: Some Macintosh systems do not require a Macintosh cable adapter.

3. Connect the 15-pin mini D-SUB of the video signal cable, Audio Cable and Headphone (not included) to the appropriate connector on the back of the monitor (**Figure B.1**).
4. Connect one end of the power cord to the monitor and the other end to the power outlet. Place the Video Signal Cable, Headphone (not included) and power cord to the Cable holder (**Figure B.1**).

NOTE: Adjust position of cable that place under the Cable holder to avoid damage for cable or monitor.

NOTE: If you use this monitor at AC125-240V, please refer to Recommended Use section of this manual for proper selection of power cord.

5. Turn on the monitor with the front power button and the computer (**Figure C.1**).

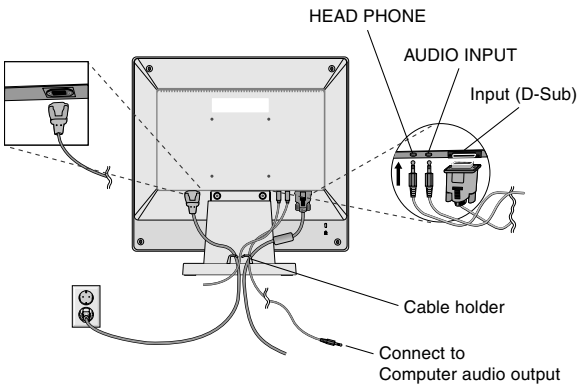


Figure B.1

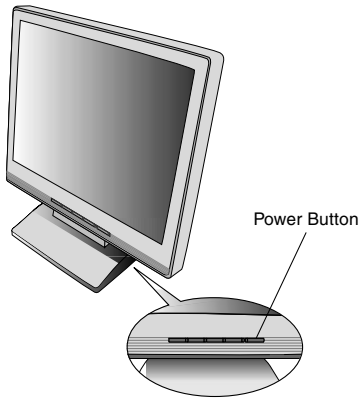


Figure C.1

6. No-touch Auto Adjust automatically adjusts the monitor to optimal settings upon initial setup for most timings. For further adjustments, use the following OSM controls:
   - Auto Adjust Contrast
   - Auto Adjust

   Refer to the **Controls** section of this User's Manual for a full description of these OSM controls.

NOTE: If you have any problem, please refer to the **Troubleshooting** section of this User's Manual.

Tilt

Grasp both sides of the monitor screen with your hands and adjust the tilt as desired (**Figure TS.1**).

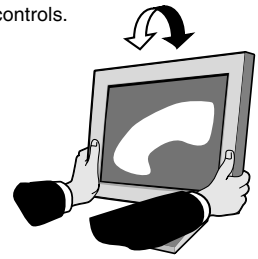


Figure TS.1

Remove Monitor Stand for Mounting

To prepare the monitor for alternate mounting purposes:

1. Disconnect all cables.
2. Place monitor face down on a non-abrasive surface (**Figure R.1**).
3. Remove the 2 screws connecting the monitor to the stand and lift off the stand (**Figure R.1**)
4. Remove the 4 screws connecting the monitor to the stand and lift off the stand, assembly (**Figure R.2**). The monitor is now ready for mounting in an alternate manner.
5. Connect the AC cord and signal cable to the back of the monitor (**Figure R.3**).
6. Reverse this process to reattach stand.

NOTE: Use only VESA-compatible alternative mounting method.

NOTE: Handle with care when removing monitor stand.

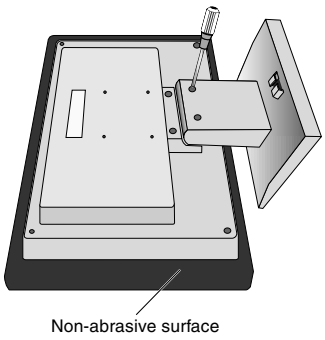


Figure R.1

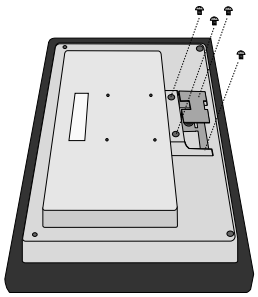


Figure R.2

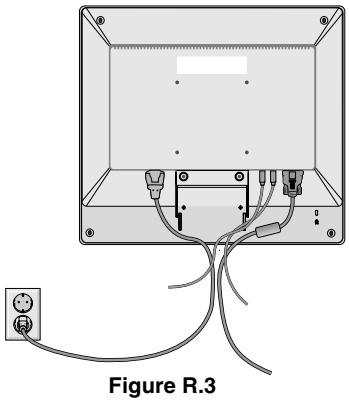
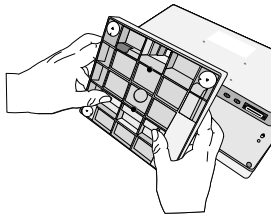


Figure R.3

Removing the Base



NOTE: Always remove the Base when shipping the LCD.

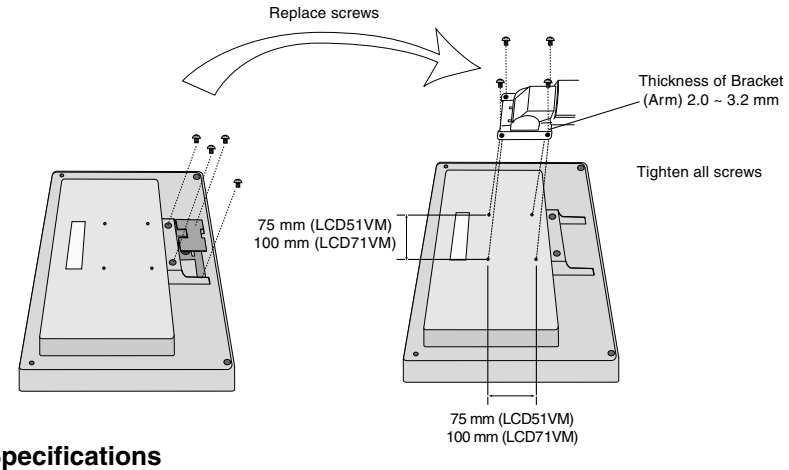
1. Place monitor face down on a non-abrasive surface (**Figure R.1**).
2. While using your thumbs, press the bottom tabs upward to unlock.
3. Press the top tabs down to unlock and pull off the stand.

Connecting a Flexible Arm

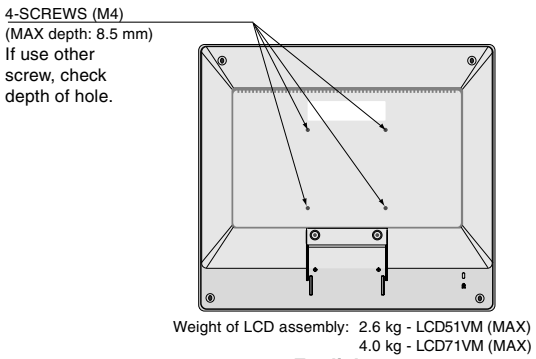
This LCD monitor is designed for use with a flexible arm.

Please use the attached screws (4pcs) as show in the picture when installing. To meet the safety requirements, the monitor must be mounted to an arm which guaranties the necessary stability under consideration of the weight of the monitor.

The LCD monitor shall only be used with an approved arm (e.g. GS mark).



Specifications



Weight of LCD assembly: 2.6 kg - LCD51VM (MAX)
4.0 kg - LCD71VM (MAX)

Controls

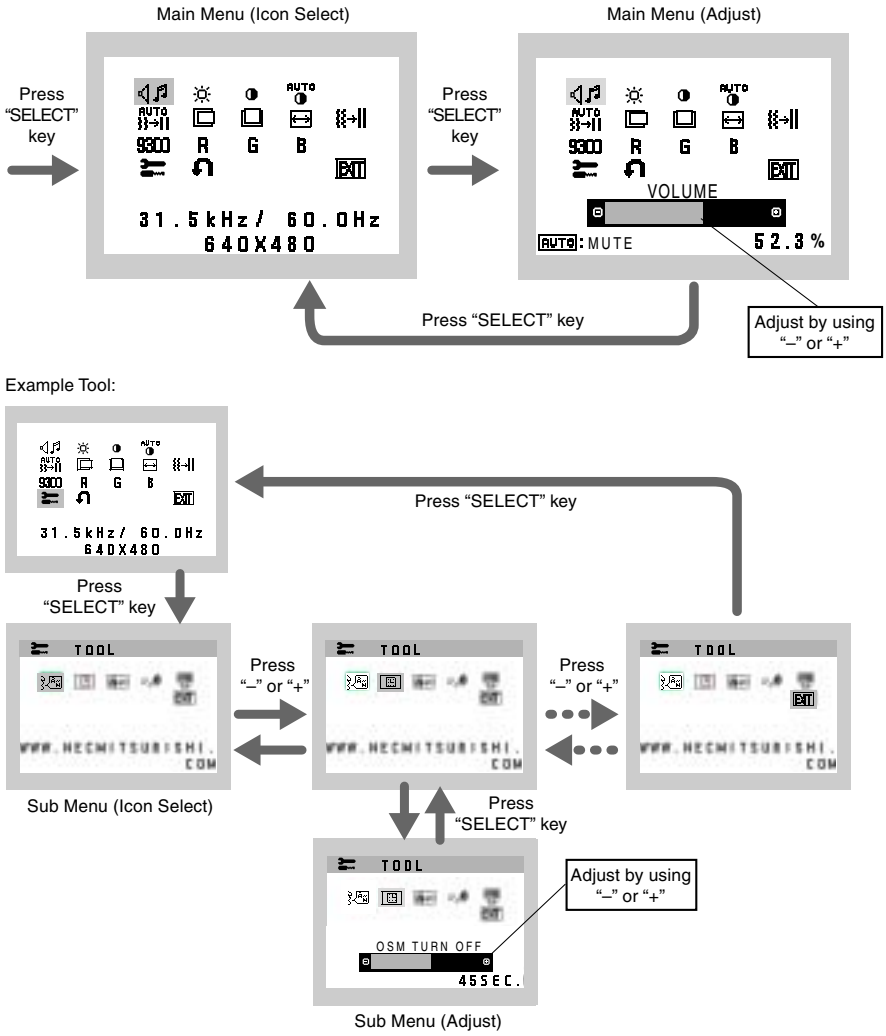
OSM (On-Screen Manager) control buttons on the front of the monitor function as follows:

1. Basic function at pressing each key

Button	SELECT	–	+	AUTO / RESET
At No OSD showing	Showing OSM.	Shortcut to Bright adjust window.	Shortcut to Volume adjust window.	"Auto adjust" operate.
At OSD showing (Icon selection stage)	Go to Adjustment stage.	Cursor goes to left.	Cursor goes to right.	
At OSD showing (Adjustment stage)	Go to Icon selection stage.	Adjust value decrease or Cursor for adjust goes to left.	Adjust value increase or Cursor for adjust goes to right.	Reset operation. Mute off/on switch on Volume adjustment window.

NOTE: To quit the OSM screen at any time during the operation, press SELECT key for longer than 3 seconds.

2. OSM structure



AUDIO
Audio volume icon is chosen, depending on the volume condition (AUTO/RESET).

BRIGHTNESS
Adjusts the overall image and background screen brightness.

CONTRAST
Adjusts the image brightness in relation to the background.

AUTO CONTRAST
Adjusts the image displayed for non-standard video inputs.

AUTO ADJUST
Automatically adjusts the Image Position, the H. Size and Fine setting.

LEFT/RIGHT
Controls Horizontal Image Position within the display area of the LCD.

DOWN/UP
Controls Vertical Image Position within the display area of the LCD.

H. SIZE
Adjusts the horizontal size by increasing or decreasing this setting.

FINE
Improves focus, clarity and image stability by increasing or decreasing this setting.

COLOUR CONTROL SYSTEMS
Four colour presets (9300/7500/6500/USER) select the desired color setting.

COLOUR RED
Increase or decreases Red. The change will appear on screen.

COLOUR GREEN
Increase or decreases Green. The change will appear on screen.

COLOUR BLUE
Increase or decreases Blue. The change will appear on screen.

TOOL
Selecting TOOL allows you to get into the sub menu.

FACTORY PRESET
Selecting Factory Preset allows you to reset all OSM control settings back to the factory settings. The RESET button will need to be held down for several seconds to tage effect. Individual settings can be reset by highlighting the control to be reset and pressing the RESET button.

EXIT
Selecting EXIT allows you exit OSM menu/ sub menu.

LANGUAGE
OSM control menus are available in seven languages.

OSM TURN OFF
The OSM control menu will stay on as long as it is in use. In the OSM Turn OFF submenu, you can select how long the monitor waits after the last touch of a button to shut off the OSM control menu. The preset choices are 10 - 120 seconds by 5 seconds step.

OSM LOCK OUT

This control completely locks out access to all OSM control functions without Brightness and Contrast. When attempting to activate OSM controls while in the Lock Out mode, a screen will appear indicating the OSM are locked out. To activate the OSM Lock Out function, press “AUTO/ RESET”, then “+” key and hold down simultaneously. To de-activate the OSM Lock Out, press “AUTO/ RESET”, then “+” key and hold down simultaneously.

RESOLUTION NOTIFIER

If ON is selected, a message will appear on the screen after 30 seconds, notifying you that the resolution is not at optimal resolution.

MONITOR INFO

Indicates the model and serial numbers of your monitor.

OSM Warning

OSM Warning menus disappear with Exit button.

NO SIGNAL: This function gives a warning when there is no signal present. After power is turned on or when there is a change of input signal or video is inactive, the **No Signal** window will appear.

RESOLUTION NOTIFIER: This function gives a warning of use with optimized resolution. After power is turned on or when there is a change of input signal or the video signal doesn’t have proper resolution, the **Resolution Notifier** window will open. This function can be disabled in the TOOL menu.

OUT OF RANGE: This function gives a recommendation of the optimized resolution and refresh rate. After the power is turned on or there is a change of input signal or the video signal doesn’t have proper timing, the **Out Of Range** menu will appear.

Recommended use

Safety Precautions and Maintenance

FOR OPTIMUM PERFORMANCE, PLEASE NOTE
THE FOLLOWING WHEN SETTING UP AND
USING THE ACCUSYNC LCD COLOUR MONITOR:

- **DO NOT OPEN THE MONITOR.** There are no user serviceable parts inside and opening or removing covers may expose you to dangerous shock hazards or other risks. Refer all servicing to qualified service personnel.
- Do not spill any liquids into the cabinet or use your monitor near water.
- Do not insert objects of any kind into the cabinet slots, as they may touch dangerous voltage points, which can be harmful or fatal or may cause electric shock, fire or equipment failure.
- Do not place any heavy objects on the power cord. Damage to the cord may cause shock or fire.
- Do not place this product on a sloping or unstable cart, stand or table, as the monitor may fall, causing serious damage to the monitor.
- When operating the LCD monitor with its AC 125-240V power supply, use a power supply aord that matches the power supply voltage of the AC power outlet being used. The power supply cord you use must have been approved by and comply with the safety standards of your country. (Type H05VV-F should be used in Europe).
- In U.K, use a BS-approved power cord with molded plug having a black (5A) fuse installed for use with this monitor. If a power cord is not supplied with this monitor, please contact your supplier.
- Do not place any objects onto the monitor and do not use the monitor outdoors.
- The inside of the fluorescent tube located within the LCD monitor contains mercury. Please follow the bylaws or rules of your municipality to dispose of the tube properly.

Immediately unplug your monitor from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- When the power supply cord or plug is damaged.
- If liquid has been spilled, or objects have fallen into the monitor.
- If the monitor has been exposed to rain or water.
- If the monitor has been dropped or the cabinet damaged.
- If the monitor does not operate normally by following operating instructions.
- Do not bend power cord.
- Do not use monitor in high temperature, humid, dusty, or oily areas.
- Do not cover vent on monitor.
- If monitor is broken, do not come in contact with the liquid crystal and handle with care.

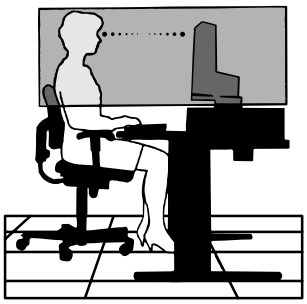
CAUTION

- Allow adequate ventilation around the monitor so that heat can properly dissipate. Do not block ventilated openings or place the monitor near a radiator or other heat sources. Do not put anything on top of monitor.
- The power cable connector is the primary means of detaching the system from the power supply. The monitor should be installed close to a power outlet, which is easily accessible.
- Handle with care when transporting. Save packaging for transporting.

- **Image Persistence:** Image persistence is when a residual or “ghost” image of a previous image remains visible on the screen. Unlike CRT monitors, LCD monitors’ image persistence is not permanent, but constant images being displayed for a long period of time should be avoided.
  To alleviate image persistence, turn off the monitor for as long as the previous image was displayed. For example, if an image was on the monitor for one hour and a residual image remains, the monitor should be turned off for one hour to erase the image.

  NOTE: As with all personal display devices, NEC-Mitsubishi Electronics Display-Europe recommends using a moving screen saver at regular intervals whenever the screen is idle or turning off the monitor when not in use.

CORRECT PLACEMENT AND ADJUSTMENT OF THE MONITOR CAN REDUCE EYE, SHOULDER AND NECK FATIGUE. CHECK THE FOLLOWING WHEN YOU POSITION THE MONITOR:



- For optimum performance, allow 20 minutes for warm-up.
- Adjust the monitor height so that the top of the screen is at or slightly below eye level. Your eyes should look slightly downward when viewing the middle of the screen.
- Position your monitor no closer than 40 cm and no further away than 70 cm from your eyes. The optimal distance is 58 cm.
- Rest your eyes periodically by focusing on an object at least 6 m away. Blink often.
- Position the monitor at a 90° angle to windows and other light sources to minimize glare and reflections. Adjust the monitor tilt so that ceiling lights do not reflect on your screen.
- If reflected light makes it hard for you to see your screen, use an antiglare filter.
- Clean the LCD monitor surface with a lint-free, non-abrasive cloth. Avoid using any cleaning solution or glass cleaner!
- Adjust the monitor's brightness and contrast controls to enhance readability.
- Use a document holder placed close to the screen.
- Position whatever you are looking at most of the time (the screen or reference material) directly in front of you to minimize turning your head while you are typing.
- Avoid displaying fixed patterns on the monitor for long periods of time to avoid image persistence (after-image effects).
- Get regular eye checkups.

Ergonomics

To realize the maximum ergonomics benefits, we recommend the following:

- Use the preset Size and Position controls with standard signals.
- Use the preset Colour Setting.
- Use non-interlaced signals with a vertical refresh rate between 60-75 Hz.
- Do not use primary colour blue on a dark background, as it is difficult to see and may produce eye fatigue to insufficient contrast.

Specifications LCD51VM Monitor

Monitor Specifications		AccuSync LCD51VM Monitor	Notes
LCD Module	Diagonal:	38.1 cm/15 inches	Active matrix; thin film transistor (TFT) liquid crystal display (LCD); 0.297 mm dot pitch; 250 cd/m^2 white luminance, 400/450:1 contrast ratio, typical.
	Viewable Image Size:	38.1 cm/15 inches	
	Native Resolution (Pixel Count):	1024 x 768	
Input Signal	Video:	ANALOG 0.7 Vp-p/75 Ohms	
	Sync:	Separate sync.TTL Level (Positive/Negative) Horizontal sync. Positive/Negative Vertical sync. Positive/Negative	
Display Colours	Analog input:	16,777,216	Depends on display card used.
Synchronization Range	Horizontal:	31.5 kHz to 60 kHz	Automatically
	Vertical:	56 Hz to 75 Hz	Automatically
Viewing Angle	Left/Right:	-60°/+60°(CR>10)	
	Up/Down:	-40°/+60°(CR>10)	
Resolutions Supported	Landscape:	720 x 400*1 : VGA 640 x 480*1 @ 60 Hz to 75 Hz 800 x 600*1 @ 56 Hz to 75 Hz 832 x 624*1 @ 75 Hz 1024 x 768 @ 60 Hz to 75 Hz.....	Some systems may not support all modes listed. NEC-Mitsubishi Electronics Display cites recommended resolution at 75 Hz for optimal display performance.
Active Display Area	Horizontal:	304.1 mm	
	Vertical:	228.1 mm	
Speakers	Practical Audio Output:	1.0 W + 1.0 W	
Power Supply		100 - 240 V ~ 50/60 Hz	
Current Rating		0.45 - 0.25 A	
Dimensions	Landscape:	347.4 mm (W) x 341.9 mm (H) x 168.5 mm (D) (with stand) 347.4 mm (W) x 296.2 mm (H) x 53.9 mm (D) (without stand)	
Weight		3.0 kg	
Environmental Considerations			
	Operating Temperature:	5 °C to 35 °C	
	Humidity:	30% to 80%	
	Altitude:	0 to 3,658 m	
	Storage Temperature:	-10 °C to +60 °C	
	Humidity:	10% to 85%	
	Altitude:	0 to 12,192 m	

*1 Interpolated Resolutions: When resolutions are shown that are lower than the pixel count of the LCD module, text may appear different. This is normal and necessary for all current flat panel technologies when displaying non-native resolutions full screen. In flat panel technologies, each dot on the screen is actually one pixel, so to expand resolutions to full screen, an interpolation of the resolution must be done.

NOTE: Technical specifications are subject to change without notice.

Specifications LCD71VM Monitor

Monitor Specifications		AccuSync LCD71VM Monitor	Notes
LCD Module	Diagonal:	43.2 cm/17 inches	Active matrix; thin film transistor (TFT) liquid crystal display (LCD); 0.264 mm dot pitch; 250 cd/m^2 white luminance, 450:1 contrast ratio, typical.
	Viewable Image Size:	43.2 cm/17 inches	
	Native Resolution (Pixel Count):	1280 x 1024	
Input Signal	Video:	ANALOG 0.7 Vp-p/75 Ohms	
	Sync:	Separate sync.TTL Level (Positive/Negative) Horizontal sync. Positive/Negative Vertical sync. Positive/Negative	
Display Colours	Analog input:	16,194,277	Depends on display card used.
Synchronization Range	Horizontal:	31.5 kHz to 81.1 kHz	Automatically
	Vertical:	56 Hz to 75 Hz	Automatically
Viewing Angle	Left/Right:	-70°/+70°(CR>10)	
	Up/Down:	-60°/+60°(CR>10)	
Resolutions Supported	Landscape:	720 x 400*1 : VGA	Some systems may not support all modes listed.
		640 x 480*1 @ 60 Hz to 75 Hz	
		800 x 600*1 @ 56 Hz to 75 Hz	
		832 x 624*1 @ 75 Hz	
		1024 x 768*1 @ 60 Hz to 75 Hz	
		1152 x 864*1 @ 70 Hz to 75 Hz	
		1152 x 870*1 @ 75 Hz	NEC-Mitsubishi Electronics Display cites recommended resolution at 75 Hz for optimal display performance.
		1280 x 960*1 @ 60 Hz to 75 Hz	
		1280 x 1024 @ 60 Hz to 75 Hz.....	
Active Display Area	Horizontal:	338 mm	
	Vertical:	270.3 mm	
Speakers	Practical Audio Output:	1.0 W + 1.0 W	
Power Supply		100 - 240 V ~ 50/60 Hz	
Current Rating		0.75 - 0.4 A	
Dimensions	Landscape:	379 mm (W) x 383 mm (H) x 193 mm (D) (with stand) 347.4 mm (W) x 296.2 mm (H) x 53.9 mm (D) (without stand)	
Weight		4.6 kg	
Environmental Considerations			
	Operating Temperature:	5 °C to 35 °C	
	Humidity:	30% to 80%	
	Altitude:	0 to 3,658 m	
	Storage Temperature:	-10 °C to +60 °C	
	Humidity:	10% to 85%	
	Altitude:	0 to 12,192 m	

*1 Interpolated Resolutions: When resolutions are shown that are lower than the pixel count of the LCD module, text may appear different. This is normal and necessary for all current flat panel technologies when displaying non-native resolutions full screen. In flat panel technologies, each dot on the screen is actually one pixel, so to expand resolutions to full screen, an interpolation of the resolution must be done.

NOTE: Technical specifications are subject to change without notice.

Features

Reduced Footprint: Provides the ideal solution for environments requiring superior image quality but with size and weight limitations. The small footprint and low weight allow it to be moved or transported easily from one location to another.

AccuColor Control Systems: Allows you to adjust the colours on your screen and customize the colour accuracy of your monitor to a variety of standards.

OSM (On-Screen Manager) Controls: Allow you to quickly and easily adjust all elements of your screen image via simple to use on-screen menus.

No-touch Auto Adjust: No-touch Auto Adjust automatically adjusts the monitor to optimal settings upon initial setup.

ErgoDesign Features: Enhance human ergonomics to improve the working environment, protect the health of the user and save money. Examples include OSM controls for quick and easy image adjustments, tilt base for preferred angle of vision, small footprint and compliance with MPRII and TCO guidelines for lower emissions.

Plug and Play: The Microsoft solution with the Windows 95/98/Me/2000/XP operating system facilitates setup and installation by allowing the monitor to send its capabilities (such as screen size and resolutions supported) directly to your computer, automatically optimizing display performance.

IPM (Intelligent Power Manager) System: Provides innovative power-saving methods that allow the monitor to shift to a lower power consumption level when on but not in use, saving two-thirds of your monitor energy costs, reducing emissions and lowering the air conditioning costs of the workplace.

Multiple Frequency Technology: Automatically adjusts monitor to the display card's scanning frequency, thus displaying the resolution required.

FullScan Capability: Allows you to use the entire screen area in most resolutions, significantly expanding image size.

VESA Standard Mounting Interface: Allows users to connect their AccuSync monitor to any VESA standard third party mounting arm or bracket. Allows for the monitor to be mounted on a wall or an arm using any third party compliant device.

Troubleshooting

No picture

- The signal cable should be completely connected to the display card/computer.
- The display card should be completely seated in its slot.
- Check front power Switch and computer power switch should be in the ON position.
- Check to make sure that a supported mode has been selected on the display card or system being used. (Please consult display card or system manual to change graphics mode.)
- Check the monitor and your display card with respect to compatibility and recommended settings.
- Check the signal cable connector for bent or pushed-in pins.
- Check the signal input.

Power Button does not respond

- Unplug the power cord of the monitor from the AC outlet to turn off and reset the monitor.

Image persistence

- Image persistence is when a “ghost” of an image remains on the screen even after the monitor has been turned off. Unlike CRT monitors, LCD monitors’ image persistence is not permanent, but constant images being displayed for a long period of time should be avoided.
  To alleviate image persistence, turn the monitor off for as long as an image was displayed. For example, if an image was on the monitor for one hour and a residual image remains, the monitor should be turned off for one hour to erase the image.

NOTE: As with all personal display devices, NEC-Mitsubishi Electronics Displays recommends using a screen saver at regular intervals whenever the screen is idle or turning off the monitor when not in use.

Image is unstable, unfocused or swimming is apparent

- Signal cable should be completely attached to the computer.
- Use the OSM Image Adjust controls to focus and adjust display by increasing or decreasing the fine total. When the display mode is changed, the OSM Image Adjust settings may need to be re-adjusted.
- Check the monitor and your display card with respect to compatibility and recommended signal timings.
- If your text is garbled, change the video mode to non-interlace and use 60 Hz refresh rate.

LED on monitor is not lit (no green or amber colour can be seen)

- Power Switch should be in the ON position and power cord should be connected.

Display image is not sized properly

- Use the OSM Image Adjust controls to increase or decrease the H.SIZE.
- Check to make sure that a supported mode has been selected on the display card or system being used. (Please consult display card or system manual to change graphics mode.)

No Video

- If no video is present on the screen, turn the Power button off and on again.
- Make certain the computer is not in a power-saving mode (touch the keyboard or mouse).

No Sound

- Check to see if speaker cable is properly connected.
- Check to see if mute is activated.
- Check to see if volume in OSM is set at minimum.

TCO'99

Congratulations! You have just purchased a TCO'99 approved and labelled product! Your choice has provided you with a product developed for professional use. Your purchase has also contributed to reducing the burden on the environment and also to the further development of environmentally adapted electronics products.

Why do we have environmentally labelled computers?

In many countries, environmental labelling has become an established method for encouraging the adaptation of goods and services to the environment. The main problem, as far as computers and other electronics equipment are concerned, is that environmentally harmful substances are used both in the products and during the manufacturing. Since it has not been possible for the majority of electronics equipment to be recycled in a satisfactory way, most of these potentially damaging substances sooner or later enter Nature.
There are also other characteristics of a computer, such as energy consumption levels, that are important from the viewpoints of both the work (Internal) and natural (external) environments. Since all methods of conventional electricity generation have a negative effect on the environment (acidic and climate-influencing emissions, radioactive waste, etc.), it is vital to conserve energy. Electronics equipment in offices consume an enormous amount of energy since they are often left running continuously.

What does labelling involve?

This product meets the requirements for the TCO'99 scheme which provides for international and environmental labelling of personal computers. The labelling scheme was developed as a joint effort by the TCO (The Swedish Confederation of Professional Employees), Svenska Naturskyddsforeningen (The Swedish Society for Nature Conservation) and Statens Energimyndighet (The Swedish National Energy Administration).
The requirements cover a wide range of issues: environment, ergonomics, usability, emission of electrical and magnetic fields, energy consumption and electrical and fire safety.
The environmental demands concern restrictions on the presence and use of heavy metals, brominated and chlorinated flame retardants, CFCs (freons) and chlorinated solvents, among other things. The product must be prepared for recycling and the manufacturer is obliged to have an environmental plan which must be adhered to in each country where the company implements its operational policy. The energy requirements include a demand that the computer and/or display, after a certain period of inactivity, shall reduce its power consumption to a lower level in one or more stages. The length of time to reactivate the computer shall be reasonable for the user.
Labelled products must meet strict environmental demands, for example, in respect of the reduction of electric and magnetic fields, physical and visual ergonomics and good usability.

Environmental Requirements

Flame retardants

Flame retardants are present in printed circuit boards, cables, wires, casings and housings. In turn, they delay the spread of fire. Up to thirty percent of the plastic in a computer casing can consist of flame retardant substances. Most flame retardants contain bromine or chloride and these are related to another group of environmental toxins, PCBs, which are suspected to give rise to severe health effects, including reproductive damage in fisheating birds and mammals, due to the bioaccumulative* processes.
Flame retardants have been found in human blood and researchers fear that disturbances in foetus development may occur.
TCO'99 demand requires that plastic components weighing more than 25 grams must not contain flame retardants with organically bound chlorine and bromine. Flame retardants are allowed in the printed circuit boards since no substitutes are available.

Lead**

Lead can be found in picture tubes, display screens, solders and capacitors. Lead damages the nervous system and in higher doses, causes lead poisoning.
TCO'99 requirement permits the inclusion of lead since no replacement has yet been developed.

Cadmium**

Cadmium is present in rechargeable batteries and in the colourgenerating layers of certain computer displays. Cadmium damages the nervous system and is toxic in high doses.
TCO'99 requirement states that batteries, the colourgenerating layers of display screens and the electrical or electronics components must not contain any cadmium.

Mercury**

Mercury is sometimes found in batteries, relays and switches, Mercury damages the nervous system and is toxic in high doses.
TCO'99 requirement states that batteries may not contain any Mercury. It also demands that no mercury is present in any of the electrical or electronics components associated with the display unit.

CFCs (freons)

CFCs (freons) are sometimes used for washing printed circuit boards. CFCs break down ozone and thereby damage the ozone layer in the stratosphere, causing increased reception on Earth of ultraviolet light with consequent increased risks of skin cancer (malignant melanoma).
The relevant TCO'99 requirement; Neither CFCs nor HCFCs may be used during the manufacturing and assembly of the product or its packaging.

*Bio-accumulative is defined as substances which accumulate within living organisms.
**Lead, Cadmium and Mercury are heavy metals which are Bio-accumulative.
To obtain complete information on the environmental criteria document, order from:

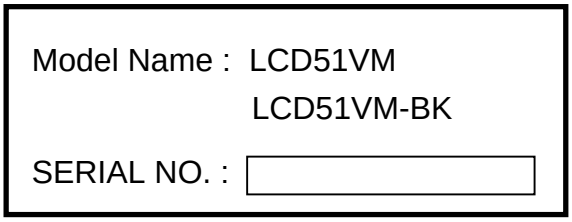
TCO Development Unit
SE-114 94 Stockholm
SWEDEN
FAX Number: +46 8 782 92 07
E-mail (Internet): development@tco.se

You may also obtain current information on TCO'99 approved and labelled products by visiting their website at:
http://www.tcodevelopment.com

Serial Number Information

Refer to the serial number information shown below.

EX.) SERIAL NUMBER LABEL



Manufactured Year :

(Last digit)

Manufactured Month :

January to September	1 to	9
October		X
November		Y
December		Z

Classification code :

Discriminate by cabinet color

White : 0
Black : 1

Running number :

Note : This running number doesn't reset at each month.

(Example)

Jan.: 00001, 00002, 00003, ….., 01234,
Feb.: 01235, 01236, 01237, ….., 99999, 00001,
Mar.: 00002, 00003, 00004, …..

Factory Code:

NPG China factory: Y

Control Code:

For A ver. (U.S.A.): A
For B ver. (Europe): B

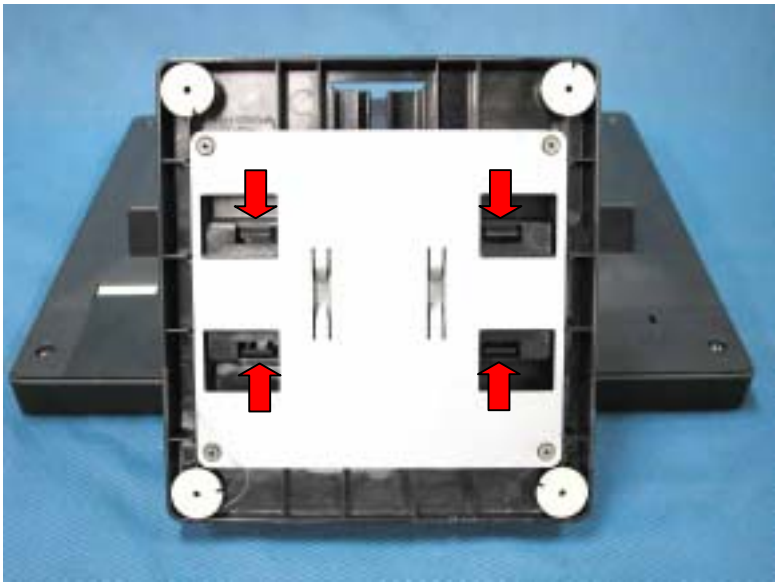
DISASSEMBLY

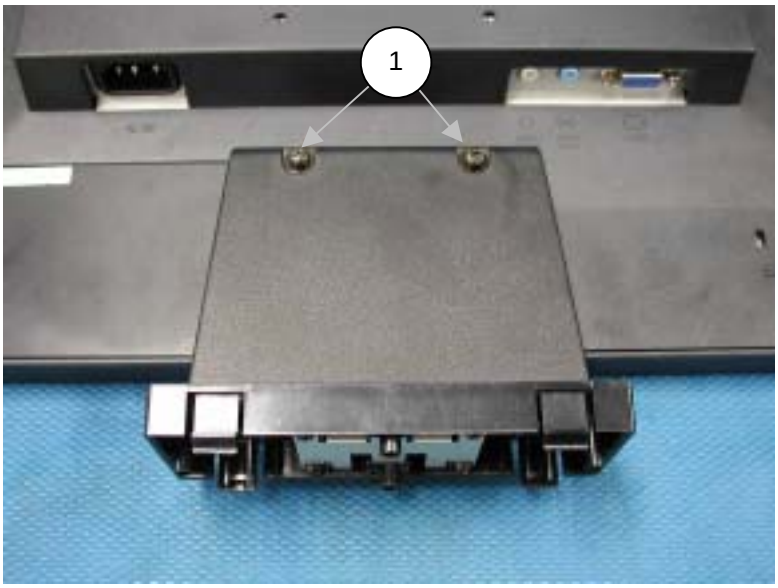
■ Before you disassemble the set, turn off power and pull out the power plug.

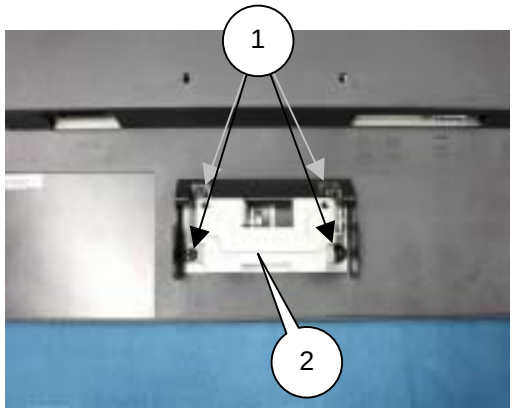
■ Use the proper screwdriver. If oversize or undersize screwdriver is used, screws may be damaged.

■ Assembly is the opposite process of disassembly.

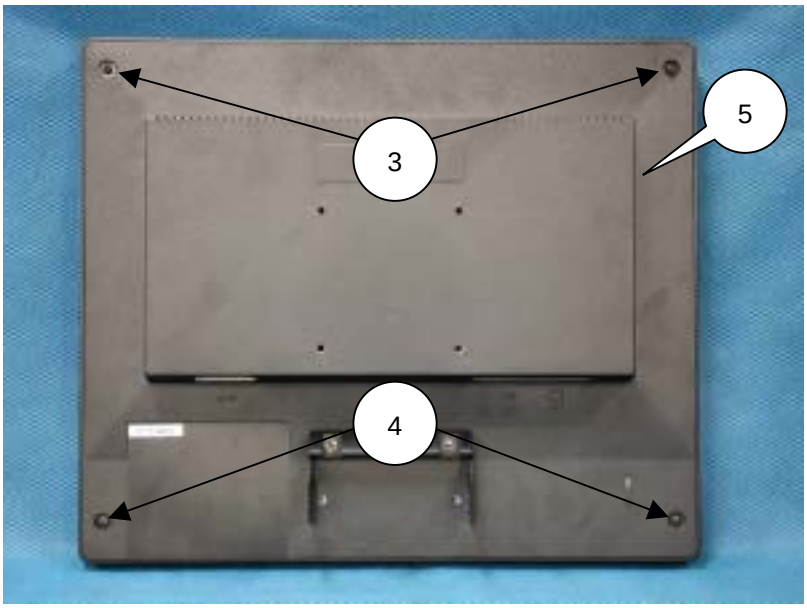
SYMBOL	Part No for NPG	DESCRIPTION	CABINET COLOR
1	14300511	SC,PL-CPIMS*4*10*3G	White
1	14300501	SC,PL-CPIMSx4x10x3K	Black
2	14900151	HINGE UNIT,L152R5	---

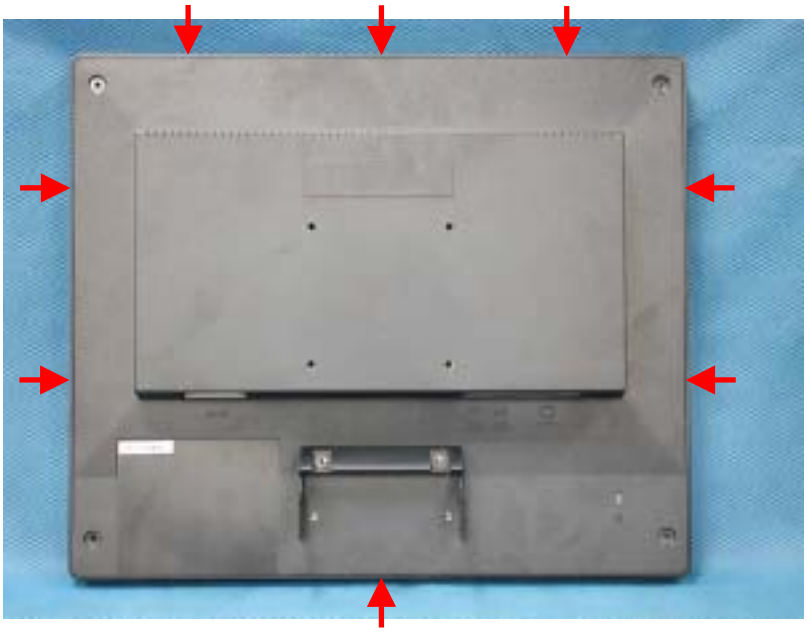




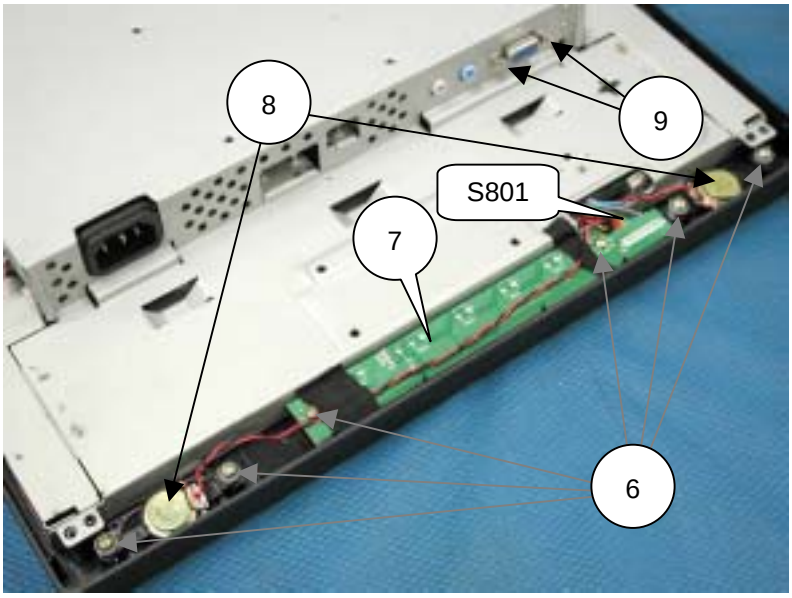


SYMBOL	Part No for NPG	DESCRIPTION	CABINET COLOR
3	14000411	SC,CBISSx3x8x3G	White
3	14000401	SC,CBISSx3x8x3K	Black
4	14000381	SC,CBISSx3x14x3G	White
4	14000431	SC,CBISSx3x14x3K	Black
5	10103781	BACK,L152R5-WH-NSP	White
5	10104211	BACK,L152R5-BK-NSP	Black

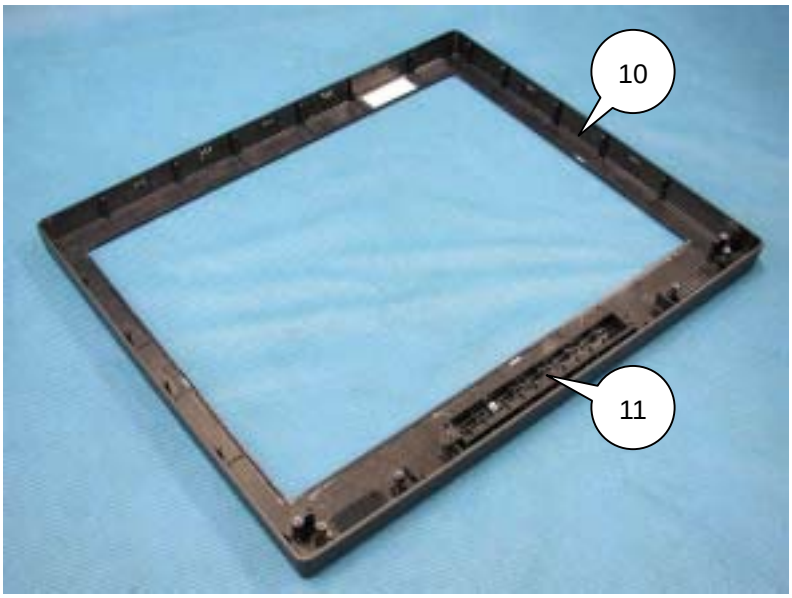




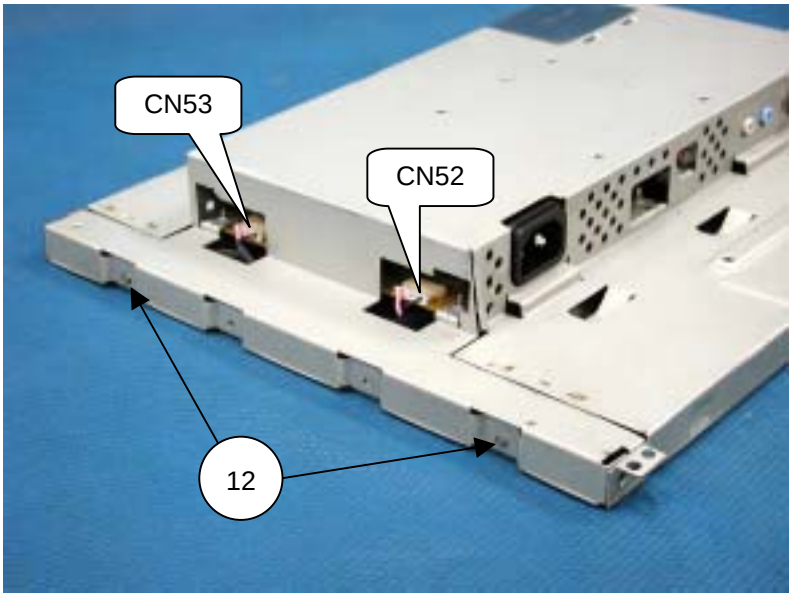
SYMBOL	Part No for NPG	DESCRIPTION
6	14000391	SC,CBIPS*3*10*15B
7	AS0R51ML	SW INSERT ASSY
8	JN100021	SPEAKER ASSY
9	14300201	4#-40TX4.8HLX4X5-NI/W



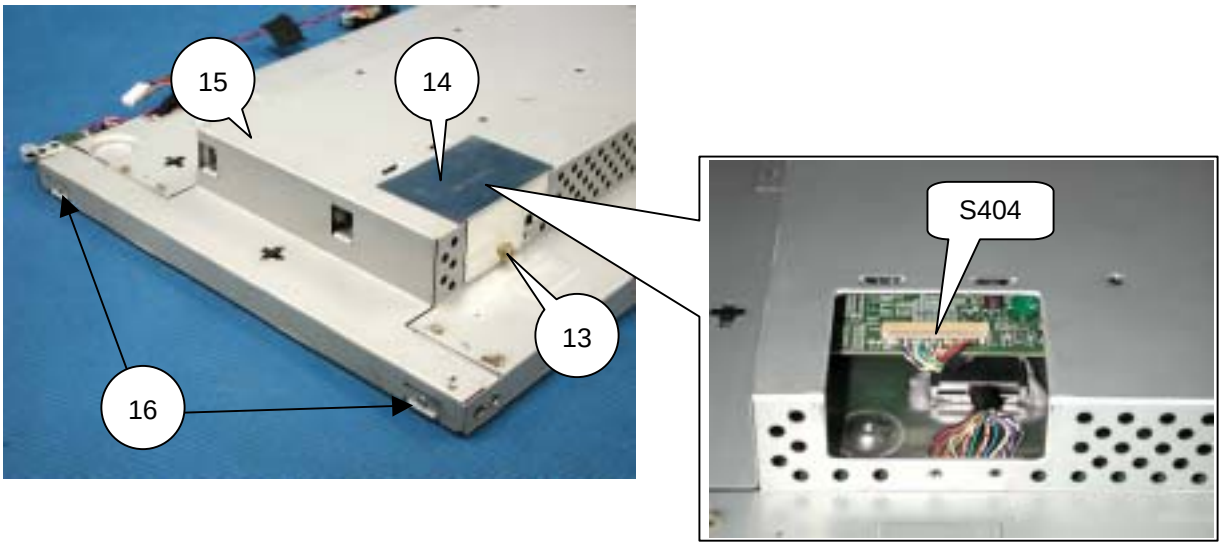
SYMBOL	Part No for NPG	DESCRIPTION	CABINET COLOR	Ver
10	10104131	BEZEL,L152R5-WH-NSP-ASSY	White	A ver
10	10104221	BEZEL,L152R5-BK-NSP-ASSY	Black	A ver
10	10104231	BEZEL,L152R5-BK(B)-NSP-ASSY	Silver/Black	B ver
11	11301671	KNOB CONTROL,L152R5-WH	White	A ver
11	11301681	KNOB CONTROL,L152R5-BK	Black Silver/Black	A/B ver



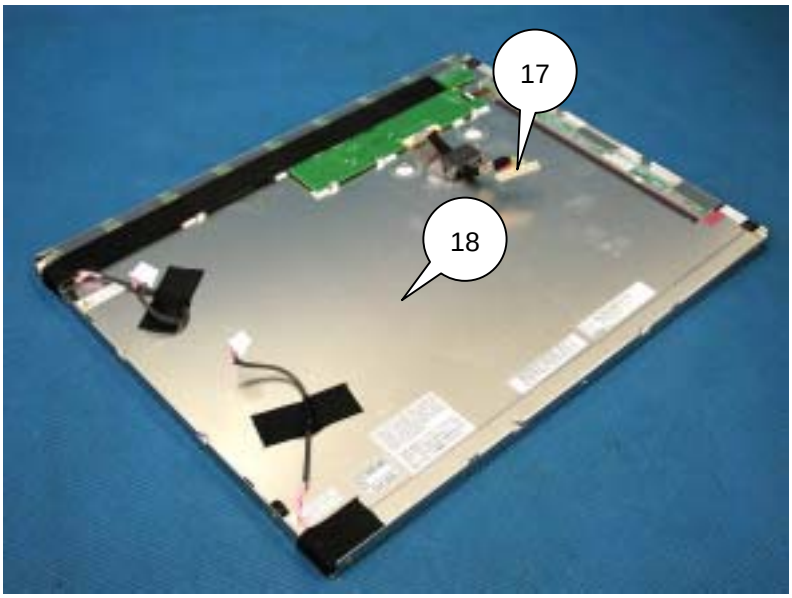
SYMBOL	Part No for NPG	DESCRIPTION
12	14300211	P2.5*4 MC (NI)



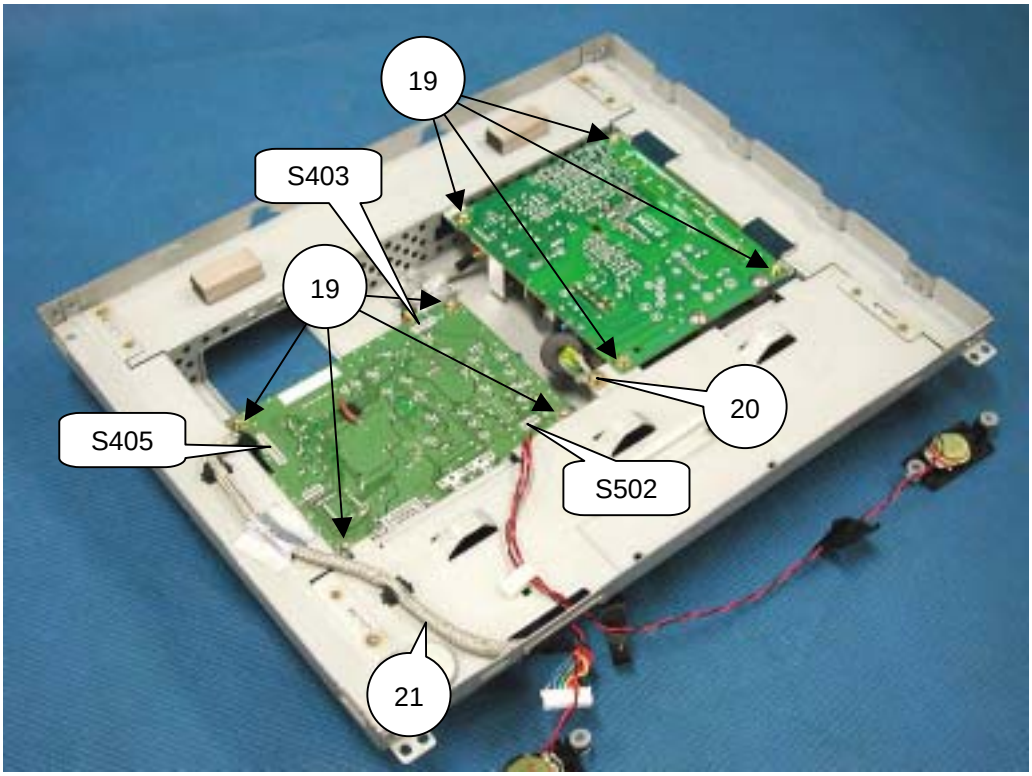
SYMBOL	Part No for NPG	DESCRIPTION
13	14000121	SCREW CUP(3*8*15BF)
14	12301171	SHIELDING COVER
15	12000881	CHASSIS BASE,L152R5-NSP-LG
16	14300211	P2.5*4 MC (NI)



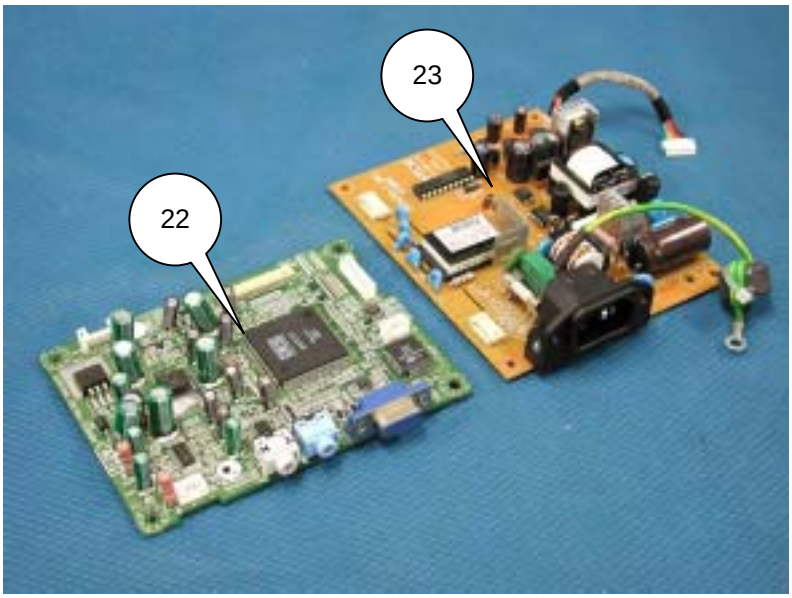
SYMBOL	Part No for NPG	DESCRIPTION
17	RC200291	WIRE 20P-20P L90 LVDS
18	JG555011	LCD NL10276BC30-10 NEC



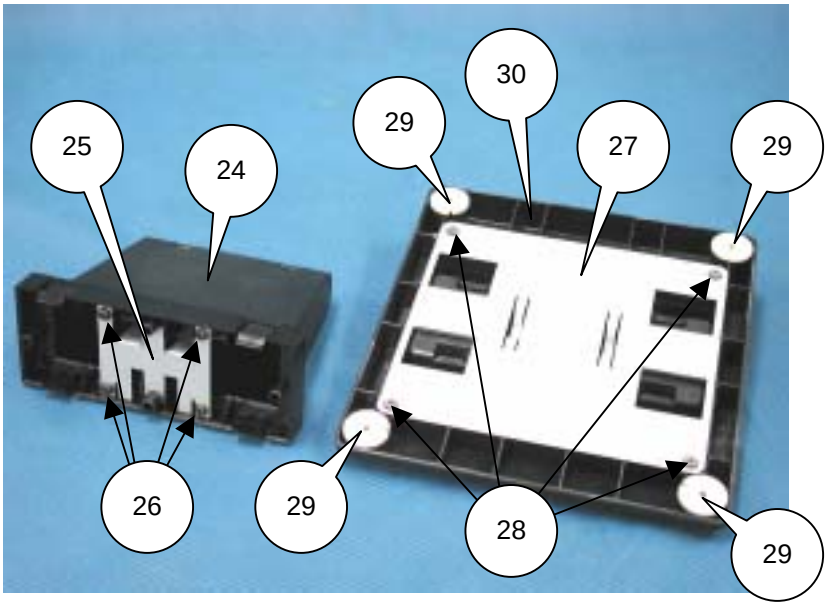
SYMBOL	Part No for NPG	DESCRIPTION
19	14000121	SCREW CUP(3*8*15BF)
20	14300031	SCREW(PL-CPIMS*4*10*15BF)
21	RC200272	WIRE 9P-9P P=2.0 L260



SYMBOL	Part No for NPG	DESCRIPTION
22	AM0R51MN	MAIN INSERT ASSY
23	JM100061	POWER B/D (15"NEC)



SYMBOL	Part No for NPG	DESCRIPTION	CABINET COLOR
24	11002101	STAND COVER T,L152R5-WH	White
24	11002141	STAND COVER T,L152R5-BK	Black
25	12301351	SHIELD TCO(T), L152R5	---
26	14000251	SCREW(3*8 TRUSS HEAD/EP-Fe/Zn5/CM1)	White
26	14000271	SCREW(BTT 3*8 AB)	Black
27	12301361	SHIELD TCO(B), L152R5	---
28	14000251	SCREW(3*8 TRUSS HEAD/EP-Fe/Zn5/CM1)	White
28	14000271	SCREW(BTT 3*8 AB)	Black
29	17001441	FOOT RUBBER	---
30	11002111	STAND COVER B,L152R5-WH	White
30	11002151	STAND COVER B,L152R5-BK	Black



ADJUSTMENT PROCEDURES

TABLE OF CONTENTS

1. Application

This adjustment specification should be applied to the LCD51VM (L152R5) adjustment.

2. Default Setting

Item		Condition
Power Supply		AC100V~240Vac
Input Freq.		1024×768@75Hz
OSM SETTING	Volume	50%
	Mute	OFF
	Brightness	100%
	Contrast	50%
	Color Temp.	USER (R: 100%, G: 100%, B: 100%)
	OSM Time Off	45 sec.
	OSM Lock Out	NO
	Resolution notifier	ON
	OSD/OSM SETTING	OSM
	URL SETTING	WWW.NECMITSUBISHI.COM
	LANGUAGE	ENGLISH

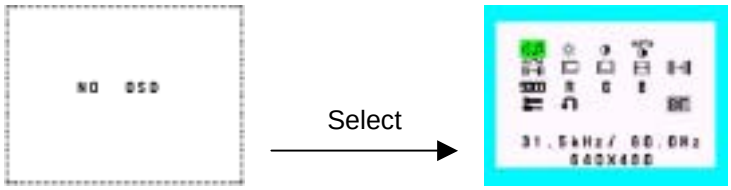
3. Basic Operation

3.1 Basic Key Function

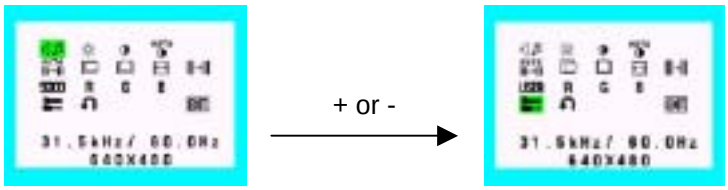
Button	**SELECT**	**–**	**+**	**AUTO/RESET**
OSM Off	OSM displayed	Shortcut to bright adjust window	Shortcut to Volume t adjust window	“Auto adjust“ function
OSM On (Icon selection stage)	Moves to Adjustment stage	Cursor moves left	Cursor moves right	
OSM On (Adjustment stage)	Moves to Icon selection stage	Adjust value decrease or Cursor for adjust moves left	Adjust value increase or Cursor for adjust moves right	Reset operation Mute off/on Volume adjustment window

3.2 Hot Key for Factory Adjust

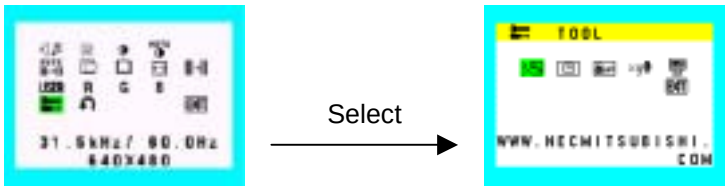
a) Press “Select” button then open OSM menu.



b) OSM select to “TOOL” menu by “Plus” or “Minus” button.

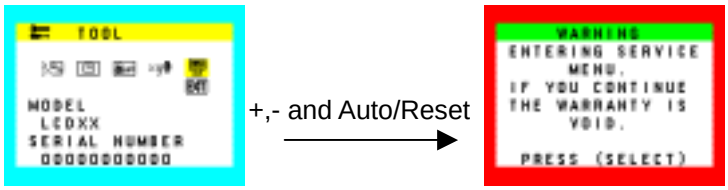


c) Press “Select button” into “TOOL” menu.



d) OSM select to “MODE” item and Press “Select button” into “MODE” menu.

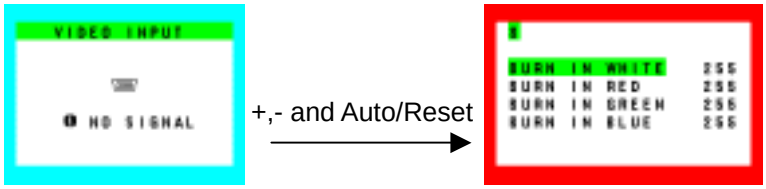
e) Press “Plus “ + ”Minus” and “Auto/Reset” button then into Factory mode.



3.3 Hot Key for Burn-in Mode

a) No signal input.

b) Press “Plus” + “Minus” and “Auto/Reset” button then into Burn-in mode.



4. Adjustment

4.1 Measuring Instruments, Jigs and Tools

The measuring instruments, jigs, and tools required at the time of the adjustment of the unit to be adjusted are as specified below.

a. A signal generator that can generate an output of signal timing produced by the adjusted (*) VG-819 or specified in [4. Setting method for the VG-819.] In this case, however, this signal generator should be capable of displaying all white and all black as a screen display pattern.

* The word “adjusted” means that the amplitude of each signal R, G, B, which is output from the signal generator, is maintained at 0.7Vp-p ± 0.05V when a load of 75Ω is connected.

4.2 Power-supply Voltage

INPUT: 100Vac ~ 240Vac

4.3 Power Circuit Closure

1) Connect the suitable cable of the VG-819 according to the setting mode.

2) Turn on the Power switch of the VG-819.

3) Connect the AC power cable to the unit being adjusted.

4) Turn on the Power switch of the unit being adjusted.

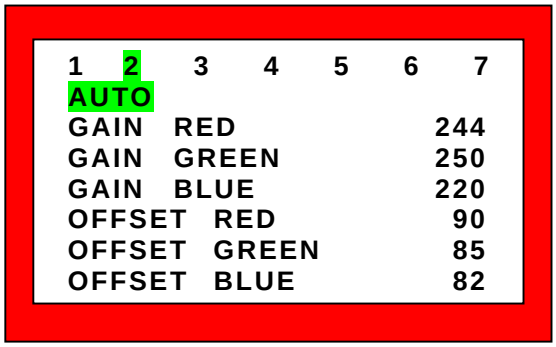
5) After the completion of signal discrimination, the LED is turned green.

4.4 ADC Bias and Gain Adjust

1) Enter an input signal of 1024×768 (75Hz), in 32-gray gradation.

2) Enter the factory mode according to “3.2 Hot key for Factory Adjust”

3) Press the (+) or (–) buttons several times to display the [AUTO CONTRAST] adjust menu.



4) Pressing the SELECT button, adjust the cursor to [AUTO]. When the AUTO/RESET button is pressed, adjustment of the bias and the gain is carried out.

5) When adjustments have been finished, press the power switch OFF → ON to close the factory mode.

4.5 Panel Brightness Check

1) Enter an input signal of 1024×768 (75Hz), in Full white pattern.

2) OSM setting “BRIGHTNESS” to Max. (100%) and “CONTRAST” to 100%.

3) Color temperature setting to “USER” (R: 100%, G: 100%, B: 100%).

4) Check the center luminance should ≥ 200cd/m^2.

4.6 Panel Color Check

1) Enter an input signal of 1024×768 (75Hz), in Full white pattern.

2) Proceed “Factory Preset” function.
   Brightness: 100%
   Contrast: 100%

3) Color temperature setting to “USER” (R: 100%, G: 100%, B: 100%).

4) Check the center color coordination.

   x = 313 ±0.03 y = 329 ±0.03

4.7 Color Temperature Check

1) Enter an input signal of 1024×768 (75Hz), in Full white pattern.

2) OSM “BRIGHTNESS” setting to Max. (100%) and “CONTRAST” setting to 100%.

3) OSM into factory mode and adjust R/G/B gain to meeting below color coordination.

4) Each color temperature setting as below:

   9300K: x = 0.283 ±0.03 y = 0.297 ±0.03

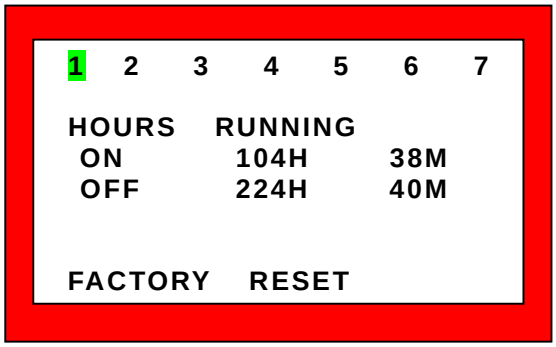
   7500K: x = 0.299 ±0.03 y = 0.315 ±0.03

   6500K: x = 0.313 ±0.03 y = 0.329 ±0.03

5. Reference Signal Timing

Item	Abbreviation	VESA 1024x768 75Hz	
Pixel frequency	fc	78.75MHz	
Horizontal frequency	fh	60.02kHz	
Line Time total	Th	16.66us	1312CLK
Horizontal active display	Thd	13.00us	1024CLK
Horizontal sync pulse	Thp	1.22us	96CLK
Horizontal back porch	Thb	2.24us	176CLK
Horizontal front porch	Thf	0.20us	16CLK
Horizontal sync polarity		POS	
Vertical Frequency	fv	75.03Hz	
Frame time total	Tv	13.33ms	800H
Vertical active display	Tvd	12.80ms	768H
Vertical sync pulse	Tvp	0.05ms	3H
Vertical back porch	Tvb	0.47us	28H
Vertical front porch	Tvf	0.02ms	1H
Vertical sync polarity		POS	

6. Factory Mode Explanations

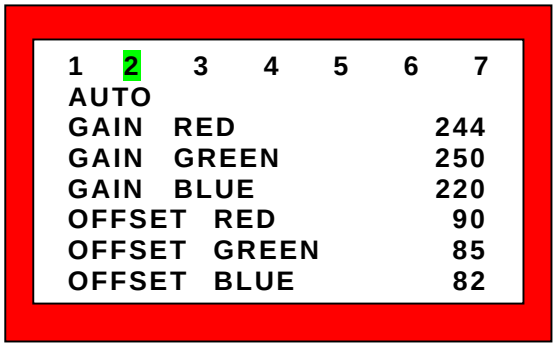


ON: Accumulated time during the reception of input signals (LED: green)

OFF: Accumulated time in the power-saving mode and soft power off mode (Only AC power input). (LED: amber or off)

* The accumulated time (hours running) is reset when FACTORY RESET is executed.

FACTORY PRESET: All data are reset to the initial values.

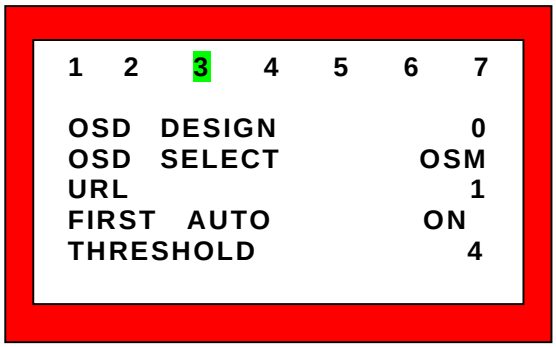


AUTO: Auto-adjustments for the gain and the offset.

GAIN R/G/B: It is possible to adjust the gain values of R, G, B, respectively.

* This value use Auto contrast of user menu.

OFFSET R/G/B: It is possible to adjust the offset values of R, G, B, respectively.



OSD DESIGN: No Used.

OSD SELECT: The OSD/OSM display is changed over for the OSM menu.

OSM (Setting for shipment)

OSD

URL: Display or no display of URL (Internet address)

0: Not displayed

1: Displayed (WWW.NECMITSUBISHI.COM): Setting for shipment (for North America and Europe version)

2: Displayed (WWW.NMV.CO.JP): (for Japan)

FIRST AUTO: Non touch auto adjust function switch.

ON: NTAA function enable. (Setting for shipment)

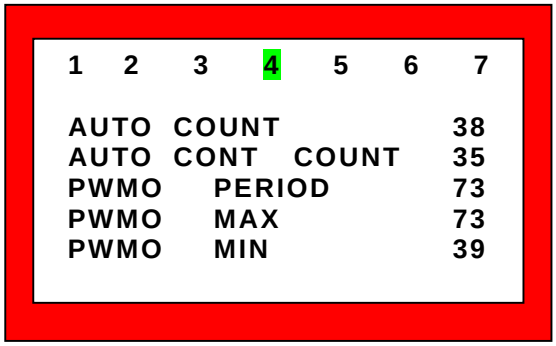
OFF: NTAA function disable.

THRESHOLD: Image detect level of auto adjust.

0: Min

16: Max

4: Initial



AUTO COUNT: No. of auto-adjustment trials conducted by the user.

* This value can reset by factory reset of service menu.

AUTO CONT COUNT: No. of auto-contrast control trials conducted by the user

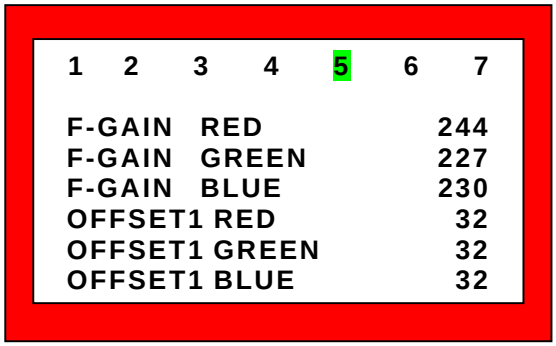
* This value can reset by factory reset of service menu.

PWMO PREIOD: Backlight brightness control frequency. Initial: 73

PWMO MAX: Brightness control Max. Initial: 73

PWMO MIN: Brightness control Min. Initial: 39

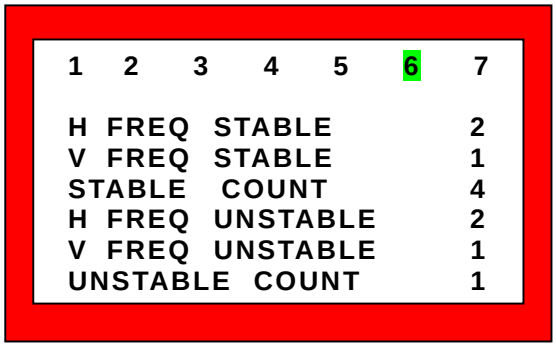
* Don't set PWMO MAX > PWMO PERIOD



F-GAIN R/G/B: It is factory auto gain result value. If proceed factory preset of user menu then overwrite gain seconds menu in this value.

OFFSET1 R/G/B: It is first stage offset control. Initial: 32

* Don't change this value.



H FREQ STABLE: Input signal stable condition from unstable. Initial: 2

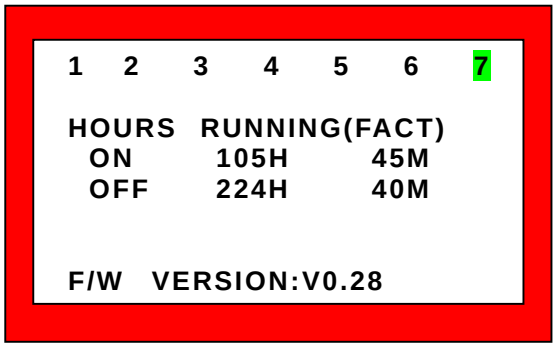
V FREQ STABLE: Input signal stable condition from unstable. Initial: 1

STABLE COUNT: Input signal stable condition from unstable. Initial: 4

H FREQ UNSTABLE: Input signal unstable condition from stable. Initial: 2

V FREQ UNSTABLE: Input signal unstable condition from stable. Initial: 1

UNSTABLE COUNT: Input signal unstable condition from stable. Initial: 1



ON: Total accumulated time during the reception of input signals (LED: green)

OFF: Total accumulated time in the power-saving mode (LED: amber)

* The accumulated time (hours running) is not reset even when FACTORY RESET is executed.

F/W VERSION: Firmware version

7. Preset Timing Sheet

	No.	1		2	
Item	Abbreviation	VGA 640x480 60Hz		MAC 640x480	
Pixel frequency	fc	25.175MHz		30.24MHz	
Horizontal frequency	fh	31.47kHz		35.00kHz	
Line Time total	Th	31.78us	800CLK	28.57us	864CLK
Horizontal active display	Thd	25.42us	640CLK	21.16us	640CLK
Horizontal sync pulse	Thp	3.81us	96CLK	2.12us	64CLK
Horizontal back porch	Thb	1.91us	48CLK	3.17us	96CLK
Horizontal front porch	Thf	0.64us	16CLK	2.12us	64CLK
Horizontal sync polarity		NEG		NEG	
Vertical Frequency	fv	59.992Hz		66.66Hz	
Frame time total	Tv	16.68ms	525H	15.00ms	525H
Vertical active display	Tvd	15.25ms	480H	13.71ms	480H
Vertical sync pulse	Tvp	0.06ms	2H	0.09ms	3H
Vertical back porch	Tvb	1.02ms	33H	1.11ms	39H
Vertical front porch	Tvf	0.35ms	10H	0.09ms	3H
Vertical sync polarity		NEG		NEG	

	No.	3		4	
Item	Abbreviation	VGA 640x480 72Hz		VESA 640x480 75Hz	
Pixel frequency	fc	31.500MHz		31.500MHz	
Horizontal frequency	fh	37.86kHz		37.50kHz	
Line Time total	Th	26.41us	832CLK	26.67us	840CLK
Horizontal active display	Thd	20.32us	640CLK	20.32us	640CLK
Horizontal sync pulse	Thp	1.27us	40CLK	2.03us	64CLK
Horizontal back porch	Thb	4.06us	128CLK	3.81us	120CLK
Horizontal front porch	Thf	0.76us	24CLK	0.51us	16CLK
Horizontal sync polarity		NEG		NEG	
Vertical Frequency	fv	72.81Hz		75.00Hz	
Frame time total	Tv	13.73ms	520H	13.33ms	500H
Vertical active display	Tvd	12.68ms	480H	12.80ms	480H
Vertical sync pulse	Tvp	0.08ms	3H	0.08ms	3H
Vertical back porch	Tvb	0.74ms	28H	0.43ms	16H
Vertical front porch	Tvf	0.24ms	9H	0.03ms	1H
Vertical sync polarity		NEG		NEG	

	No.	5		6	
Item	Abbreviation	VGA 720x350 70Hz		VGA 720x400 70Hz	
Pixel frequency	fc	28.322MHz		28.322MHz	
Horizontal frequency	fh	31.47kHz		31.47kHz	
Line Time total	Th	31.78us	900CLK	31.78us	900CLK
Horizontal active display	Thd	25.42us	720CLK	25.42us	720CLK
Horizontal sync pulse	Thp	3.81us	108CLK	3.81us	108CLK
Horizontal back porch	Thb	1.91us	54CLK	1.91us	54CLK
Horizontal front porch	Thf	0.64us	18CLK	0.63us	18CLK
Horizontal sync polarity		POS		NEG	
Vertical Frequency	fv	70.087Hz		70.087Hz	
Frame time total	Tv	14.27ms	449H	14.27ms	449H
Vertical active display	Tvd	11.12ms	350H	12.71ms	400H
Vertical sync pulse	Tvp	0.06ms	2H	0.06ms	2H
Vertical back porch	Tvb	1.91ms	60H	1.11ms	35H
Vertical front porch	Tvf	1.18ms	37H	0.38ms	12H
Vertical sync polarity		NEG		POS	

	No.	7		8	
Item	Abbreviation	VESA 800x600 56Hz		VESA 800x600 60Hz	
Pixel frequency	fc	36.00MHz		40.00MHz	
Horizontal frequency	fh	35.16kHz		37.88kHz	
Line Time total	Th	28.44us	1024CLK	26.40us	1065CLK
Horizontal active display	Thd	22.22us	800CLK	20.00us	800CLK
Horizontal sync pulse	Thp	2.00us	72CLK	3.20us	128CLK
Horizontal back porch	Thb	3.56us	128CLK	2.20us	88CLK
Horizontal front porch	Thf	0.67us	24CLK	1.00us	40CLK
Horizontal sync polarity		POS		POS	
Vertical Frequency	fv	56.25Hz		60.32Hz	
Frame time total	Tv	17.78ms	625H	16.58ms	628H
Vertical active display	Tvd	17.07ms	600H	15.84ms	600H
Vertical sync pulse	Tvp	0.06ms	2H	0.11ms	4H
Vertical back porch	Tvb	0.63ms	22H	0.61ms	23H
Vertical front porch	Tvf	0.03ms	1H	0.03ms	1H
Vertical sync polarity		POS		POS	

	No.	9		10	
Item	Abbreviation	VESA 800x600 72Hz		VESA 800x600 75Hz	
Pixel frequency	fc	50.000MHz		49.500MHz	
Horizontal frequency	fh	48.08kHz		46.88kHz	
Line Time total	Th	20.80us	1040CLK	21.33us	1056CLK
Horizontal active display	Thd	16.00us	800CLK	16.16us	800CLK
Horizontal sync pulse	Thp	2.40us	120CLK	1.62us	80CLK
Horizontal back porch	Thb	1.28us	64CLK	3.23us	160CLK
Horizontal front porch	Thf	1.12us	56CLK	0.32us	16CLK
Horizontal sync polarity		POS(/NEG)		POS	
Vertical Frequency	fv	72.19Hz		75.00Hz	
Frame time total	Tv	13.85ms	666H	13.33ms	625H
Vertical active display	Tvd	12.48ms	600H	12.80ms	600H
Vertical sync pulse	Tvp	0.13ms	6H	0.06ms	3H
Vertical back porch	Tvb	0.48ms	23H	0.45ms	21H
Vertical front porch	Tvf	0.77ms	37H	0.02ms	1H
Vertical sync polarity		POS(/NEG)		POS	

	No.	11		12	
Item	Abbreviation	MAC 832x624		VESA 1024x768 60Hz	
Pixel frequency	fc	57.28MHz		65.000MHz	
Horizontal frequency	fh	49.73kHz		48.35kHz	
Line Time total	Th	20.11us	1152CLK	20.68us	1344CLK
Horizontal active display	Thd	14.52us	832CLK	15.75us	1024CLK
Horizontal sync pulse	Thp	1.12us	64CLK	2.09us	136CLK
Horizontal back porch	Thb	3.91us	224CLK	2.46us	160CLK
Horizontal front porch	Thf	0.56us	32CLK	0.37us	24CLK
Horizontal sync polarity		NEG		NEG	
Vertical Frequency	fv	74.55Hz		60.00Hz	
Frame time total	Tv	13.41ms	667H	16.67ms	806H
Vertical active display	Tvd	12.55ms	624H	15.88ms	768H
Vertical sync pulse	Tvp	0.06ms	3H	0.12ms	6H
Vertical back porch	Tvb	0.78ms	39H	0.60ms	29H
Vertical front porch	Tvf	0.02ms	1H	0.06ms	3H
Vertical sync polarity		NEG		NEG	

	No.	13		14	
Item	Abbreviation	VESA 1024x768 70Hz		VESA 1024x768 75Hz	
Pixel frequency	fc	75.000MHz		78.75MHz	
Horizontal frequency	fh	56.48kHz		60.02kHz	
Line Time total	Th	17.71us	1328CLK	16.66us	1312CLK
Horizontal active display	Thd	13.65us	1024CLK	13.00us	1024CLK
Horizontal sync pulse	Thp	1.81us	136CLK	1.22us	96CLK
Horizontal back porch	Thb	1.92us	144CLK	2.24us	176CLK
Horizontal front porch	Thf	0.32us	24CLK	0.20us	16CLK
Horizontal sync polarity		NEG		POS	
Vertical Frequency	fv	70.07Hz		75.03Hz	
Frame time total	Tv	14.27ms	806H	13.33ms	800H
Vertical active display	Tvd	13.60ms	768H	12.80ms	768H
Vertical sync pulse	Tvp	0.11ms	6H	0.05ms	3H
Vertical back porch	Tvb	0.51ms	29H	0.47ms	28H
Vertical front porch	Tvf	0.05ms	3H	0.02ms	1H
Vertical sync polarity		NEG		POS	

INSPECTION

TABLE OF CONTENTS

1. General Description

Product Specifications

LCD Module		NEC NL10276BC30-10
	Pixel Pitch	0.297mm
	Resolution	1024x768 pixels (XGA)
	Color	16.77 million colors (R,G, B: 6bit + FRC)
	Brightness	250cd/m^2 (Typical)
	Contrast Ratio	450:1 (Typical)
	Viewing Angle	60/60(L/R), 40/60(U/D) (CR>=10: Typical) 50/50(L/R), 30/35(U/D) (CR>=10: Minimum) 75/75(L/R), 55/75(U/D) (CR>=5: Typical)
Frequency	Horizontal	31.5 – 60.0kHz
	Vertical	56.2 – 75.1Hz
Pixel Clock		25.1 – 78.8MHz
Viewable Size		304.1 x 228.1mm
Multi Pixel		Yes (with smoothing)
Digital Control		Yes
Color Control		Yes (3 preset memory + 1 user color)
On Screen Display		Yes
Power Management		Yes (VESA DPMS)
Plug and Play		Yes (VESA DDC2B/2Bi)
USB Hub		No
Speaker		Yes
Headphone Jack		Yes
Microphone Jack		No
Auto Adjustment		Yes (Position / Size / Phase)
Brightness control range		30% - 100% *
Controllable Function	Analog	Volume, Mute, Brightness, Contrast, Auto-Contrast, Auto-Adjust, H. Posi, V. posi, H. Size, Fine, Color Control, Language, OSM Turn Off, OSM Lock Out, Resolution Nortifier, Monitor Info., Factory Reset
Input Signal (analog)	Signal Drive	Separated Direct Drive
	Video	RGB 0.7Vp-p Input Impedance 75 ohm
	Sync	Separate sync: TTL Level (Positive / Negative)
	Input	Mini D-sub 15pin
	DDC	DDC2B
	Signal Cable	Mini D-sub 15pin Signal Cable (L=1.8m)

*: When user setting is minimum,

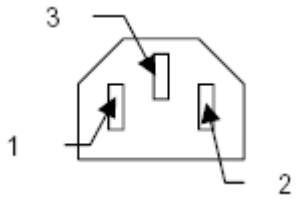
30% = (Brightness value [cd/m^2] when user controls Brightness Max) x 0.3

Power Supply		Universal AC100-240V
Current Rating		0.45A @ 100 – 120V, 0.25A @ 220 – 240V
Operational Environment	Temp.	5 - 35degC
	Humid.	30 - 80%
Storage Environment	Temp.	-10 - 60degC
	Humid.	10 - 85%
Dimension	Net	347.4(W) x 341.9(H) x 183.5(D) mm
	Gross	391(W) x 395(H) x 122(D) mm
Weight	Net	3.0kg
	Gross	4.5kg
Kensington compatible Security Lock		Yes
VESA compatible arm mounting interface		Yes, 75mm x 75mm
Tilt / Swivel / Rotation		Up 30deg / Down 5deg, No swivel, No rotation
Complied Regulatory and Guidelines		Safety: UL / C-UL, TUV-GS EMI: FCC Class B, C-tick, PCBC Ergonomics: Energy Star, TCO99 Others: Windows XP Logo, DDC/CI
Accessories		User's manual, D-SUB to D-SUB signal cable x 1(1.8m), Power cord x 1(1.8m), Audio cable x 1(1.8m), Set up Sheet, NaviSet flyer.

2. Electrical Characteristics

2.1 Power Supply

AC Input	Input Voltage (Rating)	AC100 - 240V
	Input Voltage Range	AC90-264V
	Frequency (Rating)	50 / 60Hz
	Frequency Range	47 - 63Hz
	Power Consumption	24W +20% Under 3W at Stand-by and Suspend mode. Under 3W at Complete Off mode
	Current	0.45A @ AC100-120V, 0.25A @ AC 220-240V
	Inlet connector type	3 polarity, 10A 250V 65degC VDE, UL CSA approved CEE input connector. EN60320 Class I standard compliant



Pin	Name	I/O	Definition
1	L	I	Live
2	N	I	Neutral
3	FG	I	Frame GND

2.2 LCD without Acrylic Panel

LCD	Active matrix thin-film-transistor (TFT)
Effective display size	304.1(H) x 228.1(V) mm
Pixel number	1024 x 768 pixels
Color filter arrangement	R.G.B. vertical stripe
Display method	TN with WV film, Normally white
Drive method	Active matrix (Amorphous Si TFT)
Pixel pitch	0.297(H) x 0.297(V) mm
Dot number	1024 x 768 dots
Back-light	2 CCFLs (one lamps at one side)
Luminance	250 cd/m^2 (typical: center / all white)
Contrast ratio	450:1 (typical)
Display color	16.77 million colors (R, G, B 6bit + FRC)
Viewing angle	60/60(L/R), 40/60(U/D) (CR>=10: Typical) 50/50(L/R), 30/35(U/D) (CR>=10: Minimum) 75/75(L/R), 55/75(U/D) (CR>=5: Typical)
Response time (on + off)	Rising: 8msec Falling: 17msec
Back-light Life Term	40,000 hours (Min)(Continuous operation at 25degC & 7.5mArms/ piece lamp current condition)
Brightness adjustment range	30% to 100%

2.3 Video Interface

2.3.1 Support Video Modes

Monitor shall support all signal timings shown in “Appendix”.

Monitor shall display other VIDEO MODE with down scaling if possible.

2.3.2 Full Scan Capacity

In case the input video mode is not 1024x768, the image area should be expanded to 1024x768 smoothly with the function of scaling engine.

Standard resolution: 1024x768

Expand method: Full expand mode with smoothing as follows

Down scaling: Down scaling at over 1024x768 mode

Table 2.3.2 Picture Size (In Full-Screen mode)

Multi-pixel mode	Input display	Expanded Rate		Expanded Resolution
	Resolution	Horizontal	Vertical	
Expansion	720x350	1.42	1.92	1024x672
Expansion	720x400	1.42	1.92	1024x768
Expansion	640x480	1.6	1.6	1024x768
Expansion	800x600	1.28	1.28	1024x768
Expansion	832x624	1.23	1.23	1024x768
Standard	1024x768	1	1	1024x768
Down Scale	1152x864	0.88	0.88	1024x768
Down Scale	1152x870	0.88	0.88	1024x768
Down Scale	1152×900	0.88	0.85	1024x768
Down Scale	1280×960	0.8	0.8	1024x768
Down Scale	1280×1024	0.8	0.75	1024x768

2.4 Audio System

2.4.1 Audio Input

Connector type: Φ3.5 stereo mini jack@ back side of monitor

Color of Connector: Pantone284C (Light Blue)

Input level: 500mVrms

Input impedance: 47kΩ

2.4.2 Headphone Output

Output power: 1.0 W rms/CH @ 1KHz

Total harmonic distortion(@ 1W): <1%

S/N ratio: 50db

Connector type: Φ3.5 stereo mini jack@ front side of monitor

Output power: 1W + 1W

Output level: Same loudness level of sound as build-in speaker. (headphone impedance: 32Ω)

Color: Gray (For white model)
Black (For black model)

2.4.3 Built-in speakers

Type:	Micro Speaker (8Ω, 1W + 1W) without box
Nominal Impedance:	8 Ohm
Maximum Input Power:	1 W/CH
Resonance Frequency:	less than 450Hz
Speaker Size:	40 x 20 mm

When headphone connected to headphone jack, speaker outputs should be disabled.

2.4.4 Characteristic

Frequency band:	250Hz to 20kHz
Total harmonic distortion:	3% (condition: 1W, all black)
	2% (condition: 50mW,all black)
Remaining behind hum:	5mVp-p(max)
	(Any noise shall not be heard from the point of 30cm distance from the monitor.)
Remaining behind buzz:	5mVp-p(max)
	(Any noise shall not be heard from the point of 30cm distance from the monitor.)
S/N ratio:	40dB(condition: all black)
S/buzz ratio:	40dB(condition: all white, contrast max)
Channel separation:	30dB
Right/left output deviation:	±1%

Sound noise by vibration of cabinet should not be heard at condition of 70% volume, 1kHz 500 mVrms input, 250Hz to 20kHz range.

2.4.5 Audio Control

Following functions must be controlled by OSM.

Volume Control

Mute function

Speaker Output Power at 1kHz, 500mVrms, volume max 1 + 0.05W.

Volume control characteristic is similar as gamma 2.2 curve.

2.5 External Inspection on the LCD Module

2.5.1 Inspection Conditions

Temperature: 25 ±5°C

Viewing distance: 20cm (The distance between the inspector's eye and screen.)

Direction and illumination:

Inspection for display specification: $0° \le \theta R \le 30°$, $0° \le \theta L \le 30°$
$0° \le \theta U \le 20°$
50 to 75 lx at a display surface

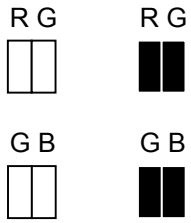
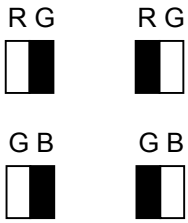
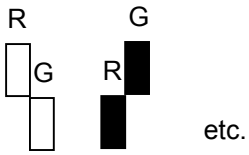
Inspection for appearance specification: $0° \le \theta R \le 45°$, $0° \le \theta L \le 45°$
$0° \le \theta U \le 45°$, $0° \le \theta D \le 45°$
700 lx at an inspection desk surface

2.5.2 Display specification (Compliant with ISO 13406-2 Pixel faults class II)

Item			Specification		Remarks
Adjacent defects dots	(1)	Adjacent 2 bright dots	R+G horizontal adjacent	≤ 2 sets	Note 1
	(2)	Adjacent 2 dark dots	G+B horizontal adjacent	≤ 2 sets	Note 2
	(3)	Adjacent 3 or more bright dots	Same color and different color	≤ 0 set	Note 3
	(4)	Adjacent 3 or more dark dots		≤ 0 set	
Dot defect	(5)	Defect dot other than (1) and (2)	R.G.B (Bright dot + Dark dot)	≤ 4 dots	Note 4
Close defect dots	(6)	Close 2 same color bright dots	Distance between 2 same color bright dots ≤ 6.5mm	R,G,B ≤ 2 sets each	Note 5
	(7)	Close each set of (6)	Distance between each set of (6) ≤ 10mm	≤ 0 set	Note 6
	(8)	Cluster	2 or more defect dots (5) in 5×5 pixels	≤ 2 clusters	Note 7
			2 or more sets of (1) in 5×5 pixels	≤ 0 set	Note 8
			2 or more sets of (2) in 5×5 pixels		
Total	Bright dots (R.G.B) + Dark dots (R.G.B)			≤ 4 dots	-
	G (bright dots)			≤ 4 dots	-
Definition of defect dot: Defect area is out of 1/3 dot size. Defect size is confirmed by using 10 times of loupe. Also dot defects include intermittent bright and dark dots which can be recognized with the naked eye.					

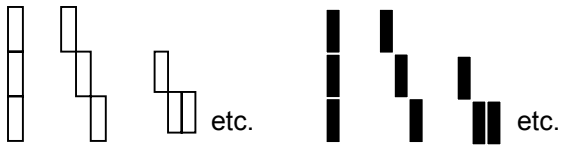
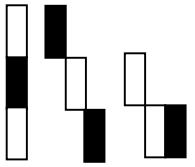
:Bright dot :Black dot

Note 1: R + G, 2 dots continued horizontally

Counted as NG	Not counted	
	Combinations of bright and dark dots 	Combinations other than horizontal adjacent 

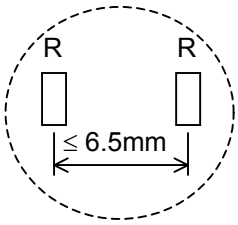
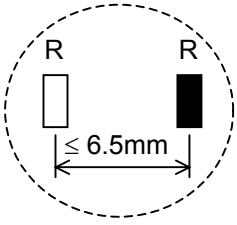
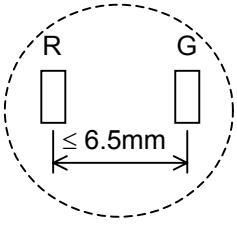
Note 2: (1) + (2) ≤ 2 sets

Note 3: Adjacent 3 dots

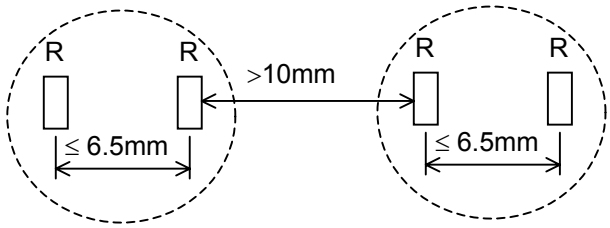
Counted as NG	Not counted
All of dots are bright dots and dark dots 	Combinations of bright and dark dots 

Note 4: Defect dots which make up (1) and (2) (R + G horizontal adjacent and G + B horizontal adjacent) are not counted.

Note 5: Close 2 same color bright dots

Counted as NG	Not counted	
	Combinations of bright and dark dots 	Combinations of different color dots 

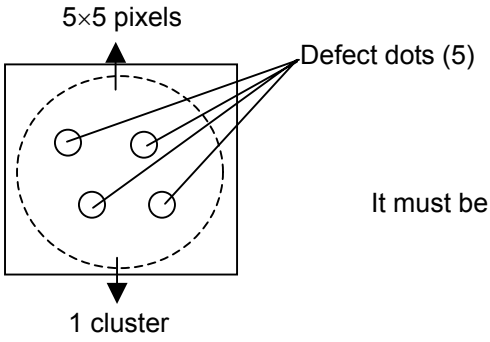
Note 6: Close each set of (6)



Distance between each set of (6) must be more than 10mm.

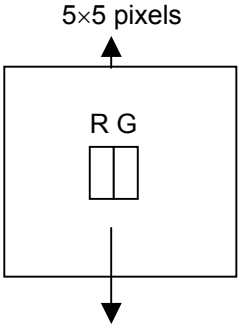
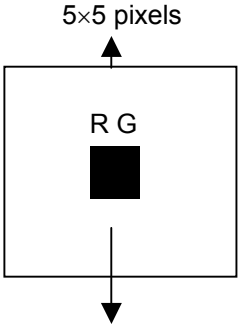
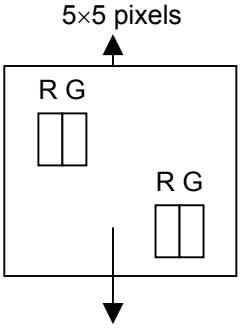
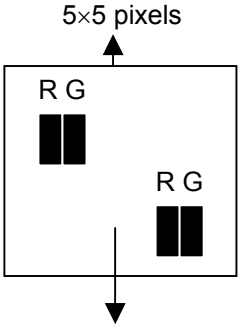
Note 7: 2 or more defect dots (5) in 5×5 pixels.

When 2 or more defect dots (5) in 5×5 pixels, the set of the dot defects is counted as 1 cluster.



It must be 2 or less than clusters in the whole screen.

Note 8: 2 or more sets of (1) and (2) in 5×5 pixels.

 Adjacent 2 bright dots (1) ≤ 1 set  Adjacent 2 dark dots (2) ≤ 1 set	Allowed
 Adjacent 2 bright dots (1) ≥ 2 sets  Adjacent 2 dark dots (2) ≥ 2 sets	Not allowed

2.5.3 Appearance specifications

<table>
<tr><th colspan="2">Defect pattern</th><th colspan="2">Condition (Note 1)</th><th>Criteria</th></tr>
<tr><td rowspan="8">Impure ingredient stains dust</td><td rowspan="4">Dot shape</td><td colspan="2">d ≤ 0.2mm</td><td>Allowed</td></tr>
<tr><td colspan="2">0.2mm < d < 0.3mm</td><td>≤ 10 points</td></tr>
<tr><td colspan="2">0.3mm ≤ d ≤ 0.5mm</td><td>≤ 3 points</td></tr>
<tr><td colspan="2">d > 0.5mm</td><td rowspan="2">0 point</td></tr>
<tr><td colspan="2">Adjacent other objects</td></tr>
<tr><td rowspan="4">Line shape</td><td colspan="2">W < 0.05mm</td><td rowspan="2">Allowed</td></tr>
<tr><td rowspan="3">0.05mm ≤ W ≤ 0.1mm</td><td>L < 0.7mm</td></tr>
<tr><td>0.7mm ≤ L ≤ 1.0mm</td><td>≤ 4 points</td></tr>
<tr><td>L > 1.0mm</td><td rowspan="2">0 point</td></tr>
<tr><td colspan="2">W > 0.1mm</td></tr>
<tr><td colspan="2" rowspan="3">Polarizer Bubbles, Wrinkles, dent</td><td colspan="2">d ≤ 0.2mm</td><td>Allowed</td></tr>
<tr><td colspan="2">0.2mm < d ≤ 0.5mm</td><td>≤ 2 points</td></tr>
<tr><td colspan="2">d > 0.5mm</td><td>0 point</td></tr>
<tr><td colspan="2" rowspan="3">Panel dent</td><td colspan="2">d ≤ 0.2mm</td><td>Allowed</td></tr>
<tr><td colspan="2">0.2mm < d ≤ 0.5mm</td><td>≤ 2 points</td></tr>
<tr><td colspan="2">d > 0.5mm</td><td>0 point</td></tr>
<tr><td colspan="2" rowspan="2">Polarizer scratch</td><td colspan="2">S ≤ 0.2mm^2</td><td>Allowed</td></tr>
<tr><td colspan="2">S > 0.2mm^2</td><td>0 point</td></tr>
<tr><td colspan="2">Form</td><td colspan="3">Specified labels and parts are put.</td></tr>
</table>

Note 1: Definition of symbols is as follows.

d: Average diameter
(This diameter is the average length of a long axis and a short axis in each defect pattern.)

W: Width L: Length S: Area

3. Electrical Inspection

3.1 Function switch check

1. Input VESA 1024X768 (75Hz) pattern “Crosshatch”.
2. Image should appear within 4 seconds after Switch ON.
3. LED is green.
4. On-screen noise should not appear while the Switch is turned ON or OFF.
5. OSM should be displayes by pushing the “Select” button.
6. Brightness short cut OSM should be indicated by push “-” button.
7. Contrast short cut OSM should be indicated by push “+” button.
8. Audio Volume short cut OSM should be indicated by push “+” button.
9. Auto Adjust short cut should be indicated by push “Auto/Reset” button.
10. While “-“ or “+” button is pushed, the value should change smoothly and on-screen should not appear.
11. Check the OSM off when push the “Select” switch with “EXIT” icon highlighted.

3.2 Frequency change

1. Change the preset timing.
2. Check the picture and the time when freq. change (less 5 sec)

3.3 Performance Check

1. Input VESA 1024X768 (75Hz) pattern “RGB 256 GRAY SCALE” PATTERN.
2. Press “Select” button.
3. Press “-“ or “+” and select AUTO CONTRAST menu.
4. Press “Select” button, and proceed Auto contrast function.
5. Check the color gray scale smooth and that data is not lost.

3.4 Check Power Manage Function

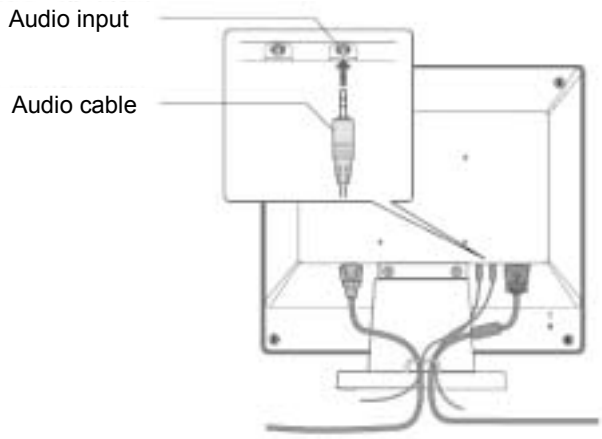
Monitor should enter to power saving mode if the following condition occurs.

Mode	Horizontal	Vertical	Power Supply	Input Timing	Power Consumption
On	ON	ON	240Vac	VESA 1024X768 (75Hz)	30W
Stand-by	OFF	ON	240Vac	VESA 1024X768 (75Hz)	3W
Suspend	ON	OFF	240Vac	VESA 1024X768 (75Hz)	3W
Off	OFF	OFF	240Vac	VESA 1024X768 (75Hz)	3W

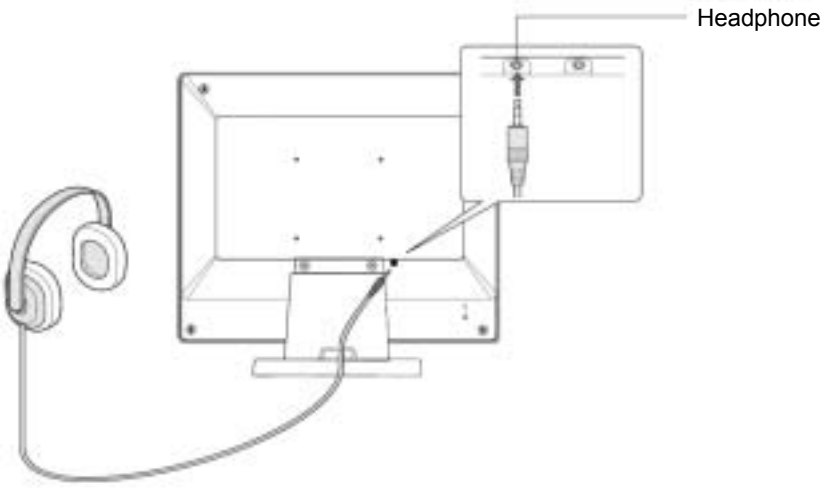
3.5 Inspection on Audio function

Purpose of inspection: Confirming that the audio function works normally.

1. Connect audio-in from a PC or an audio player and verify proper connection.



2. Input VESA 1024X768 (75Hz).
3. Display the OSM menu. Use the SELECT key to move as far as to the Volume tag.
4. Confirm that the yellow bar changes and the audio volume also changes when the (-) and (+) keys are operated.
5. Confirm that sound is output from the left-right speakers and headphones.



4. Safety Test

- Destination : All over the world
- Applicable standards : UL60950/C-UL/EN60950
- Unit class : Class I units (the units protected against electric shocks by protective earthing, or those equipped with 3-core power cords)
- Ratings : AC100 - 240V 50/60Hz 0.7A/0.4A

4.1 Input Current Measurements

Under the measuring conditions specified below, an input current should be measured while the 50Hz input voltage is maintained at 220V AC (+0 to -5V). The input currents measured should all confirm so they satisfy the judgment standard. (The rear rating plates are the same as those for North America and Europe. Therefore, measurements should also be based on this setting.)

(1) Measuring conditions

- Condition of the set : ON mode
- Measuring conditions : The inspection signal is set at “17” and “white” is displayed throughout the screen.
  At that time, the brightness and contrast should be kept under the brightest condition.

(2) Judgment standard

- The input current should be kept below 0.35A +10%.

4.2 Power Source/Earth Connections

a. Checks on the power source/earth connections

The earth side of the cord or the earth wire of the inlet filter for the cord set should be visually checked to see that it is connected to the chassis block of the unit as specified below.

1) The earth wire color should be spiral of green and yellow.
   [Units applicable to UL60950 or IEC60950 (EN60950)]
2) The earth wire should be firmly connected to the chassis block by the use of a screw (See Note) of 3.5mm∅ in diameter.

Note: Spring washers or star washers should be used, without fail.

b. Earth resistance testing

This testing should be carried out prior to the dielectric strength test.

The earth resistance should be 0.1Ω or less when a current of 25A AC is carried between the earth side of the cord (the plug block or the section closest to the plug where no plug is provided) and the metallic block (the D-SUB connector) that is used as a safety earth for the unit.

Where the earth resistance exceeds 0.1Ω, the condition should be still acceptable if the earth resistance is 0.1Ω or less when the resistance of the power cord is excepted.

4.3 Dielectric Strength Test

To confirm the freedom from insulation breakdown, testing should be carried out under the conditions specified below.

1) Measuring conditions

- Measuring instrument: Dielectric strength tester (The specified voltage should be maintained in the state that a current of 10mA is carried.)
- Testing point: Between the electrical circuit block and the exposed metallic block (D-SUB connector)

Note: The electrical circuit block should mean the power input block (primary side). Testing should be carried out under the condition that both poles of the power plug are short-circuited. (Where a 3-core cord is used, the two poles other than the earth terminal should be short-circuited.)

2) Judgment standard

The freedom from insulation breakdown should be confirmed under the condition that the applied voltage is maintained at 1500V AC (+0 to 50V) for one minute.

Even though the result of this testing is OK, such a condition should be regarded as unacceptable if there is a leakage (flashing) around the section where the test voltage has been applied.

If the result of insulation resistance test is found unacceptable, to be carried out after this testing, such a condition should be regarded as that an insulation breakdown has occurred.

4.4 Leakage Current Test

A leakage current should be measured under the conditions specified below, in order to confirm that the requirements of the judgment standard are met.

1) Measuring conditions

- Measuring instrument: Leakage current meter (A 1500Ω resistor should be incorporated, together with a bypass capacitor of 0.15μF.)
- Testing point: Between the exposed metallic block (D-SUB connector) and Phases A and B of the power source.
- Condition of the set: A power cable should be connected. The see-saw switch on the set side should be turned ON and OFF.

2) Judgment standard

The leakage current measured should be 1.5mA or less with an input of 240V AC × 1.06 +5/-0V (60Hz).

4.5 Insulation Resistance Test

An insulation resistance should be measured under the conditions specified below, in order to confirm that the requirements of the judgment standard are met.

1) Measuring conditions

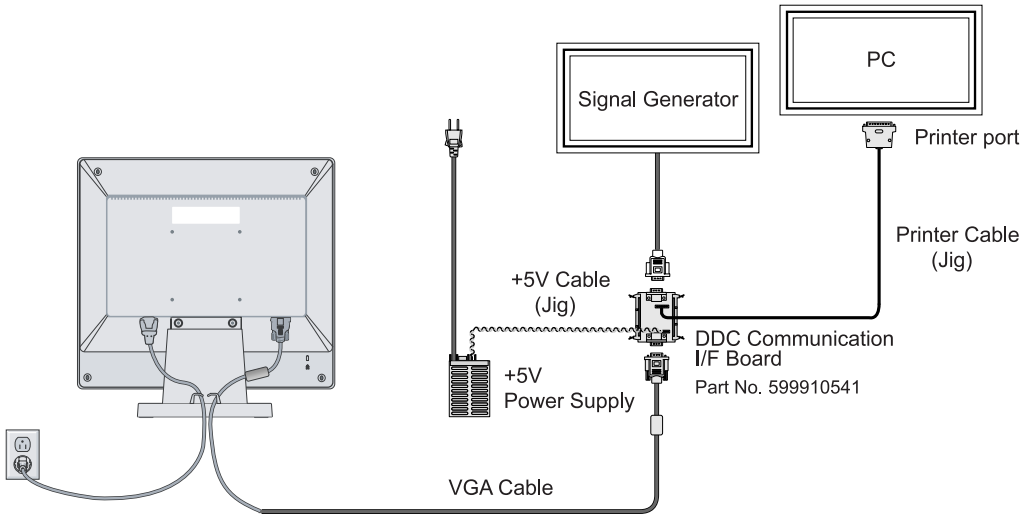
- Measuring instrument: 500V DC MEGOHM Meter
- Testing point: Between the power circuit block and the exposed metallic block (D-SUB connector)
- Measured value readout: A test voltage should be applied for one minute and the resistance value should be read out thereafter.

2) Judgment standard: 10MΩ or more

5. Inspection of PLUG & PLAY Communication and OSM "MONITOR INFORMATION" for Model Name/ Serial Number

5.1 System Connection

This system should be connected as shown below.



DDC Communication I/F BOARD
(Part No.: 599910541)

5.2 Input Signal

Horizontal synchronization frequency: 31kHz(Negative)
Vertical synchronization frequency: 42Hz(Negative)

5.3 Program

Service tool Ver. 3.14 (Parameter ver. 2.0-S14) (Part No. 599910612)

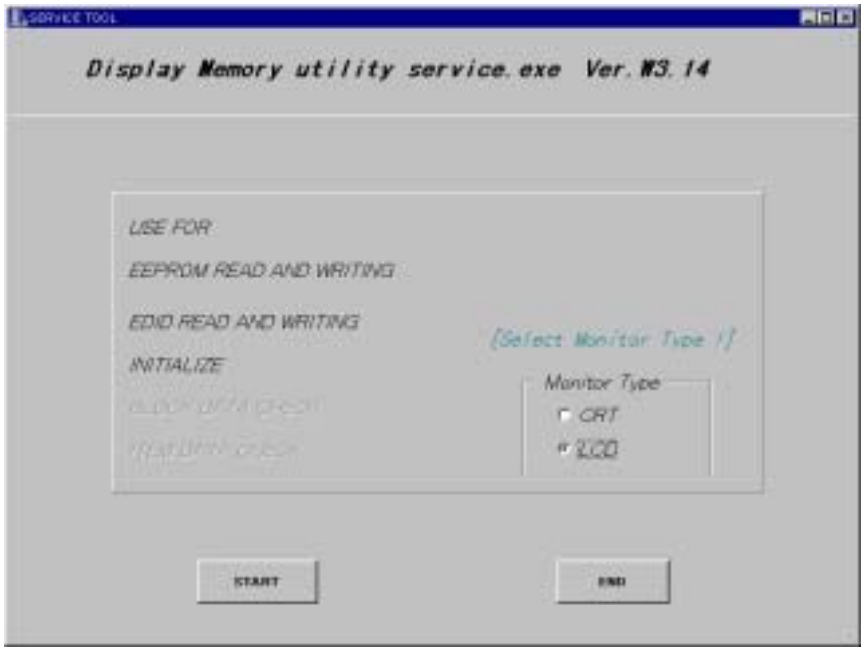
5.4 Operation

1) Connect the EDID data writing unit with jigs, etc.

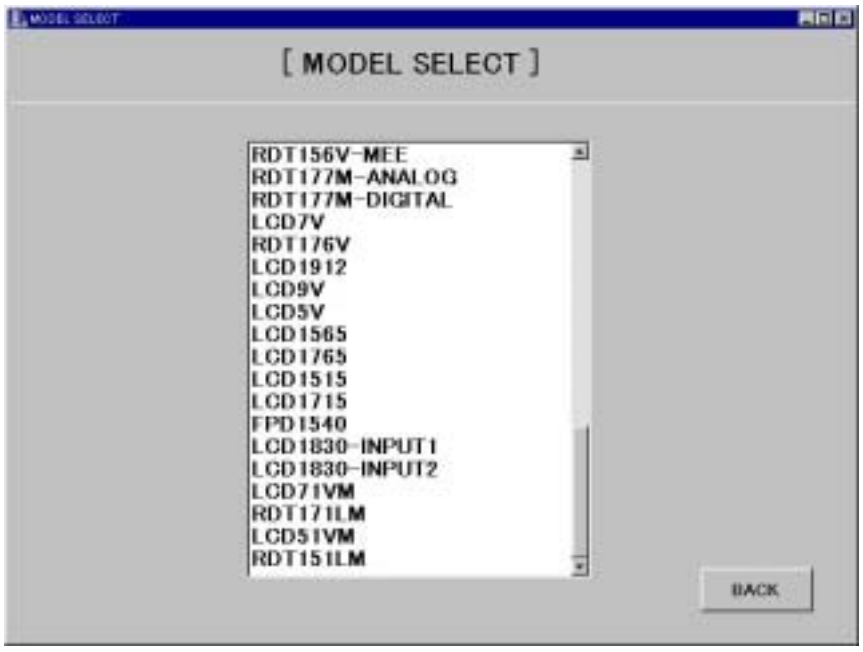
2) Copy all the files of the service tool Ver. 3.14 (Parameter ver. 2.0-S14) in a proper directory.

3) Start [Service2.EXE] of the service tool Ver. 3.14.

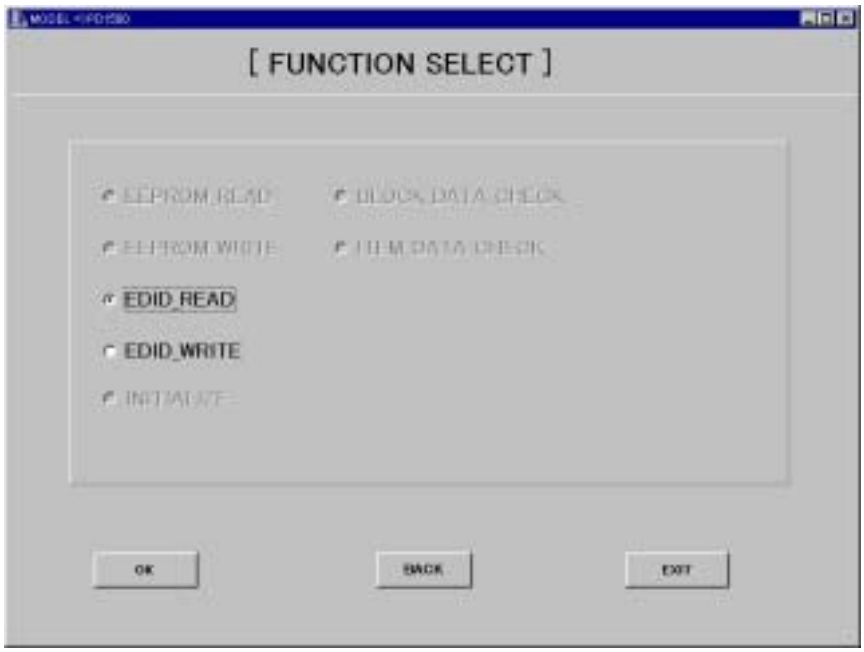
4) When the screen as shown below appears, check to [LCD] of [Monitor Type] and press the [START] button.



5) When the screen as shown below appears, adjust the cursor to [LCD51VM] and make a double click.

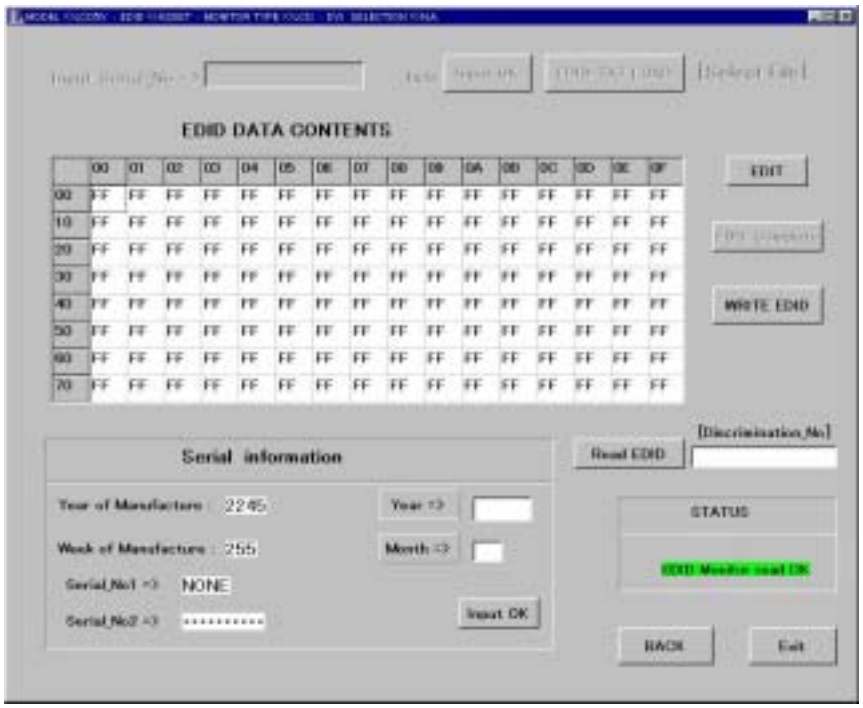


6) When the screen as shown below appears, check to [EDID_READ] and press the [OK] button.



7) When the screen as shown below appears, confirm that the correct data are displayed in the columns of EDID DATA CONTENTS and Serial information.

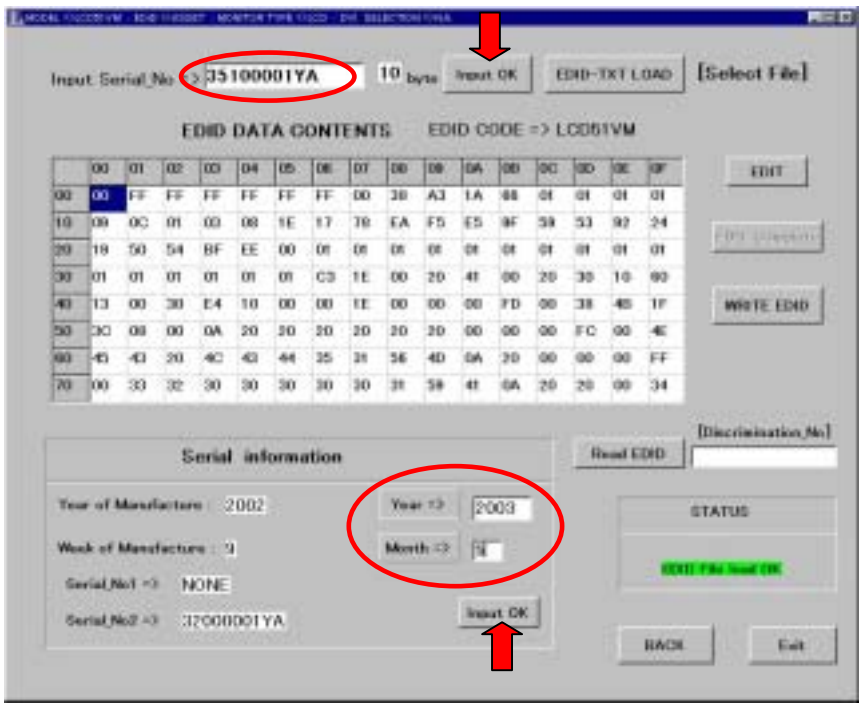
If all the displayed data are [FF] or the like, or if the serial number is different from that of the corresponding unit, then EDID data writing should be carried out.



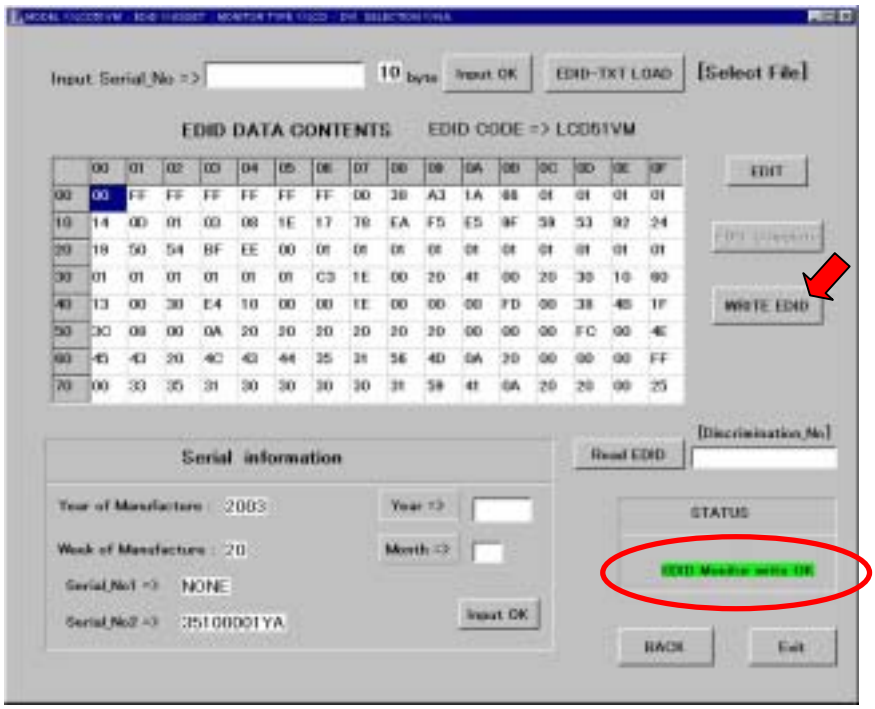
8) When a screen of Item 6 is displayed by pressing the [BACK] button, give a check to [EDID_WRITE] and press the [OK] button.

9) When the screen as shown below appears, examine the serial number of the unit, enter an input in the column of [Input Serial No.] through the keyboard, and press the [Input OK] button.

Enter an input in the column of [.Year=>] in manufactured year(A.D. four digits) and [Month=>] in manufactured month through the keyboard, and press the [Input OK] button.



10) When the [WRITE EDID] button is pressed, writing of the EDID data only is carried out. Upon the completion of correct writing, a display of [EDID Monitor Write OK] is presented in the column of [STATUS].



11) A Display “MONITOR INFORMATION.” of the OSM, and confirm that the model name (LCD51VM) and serial number have been correctly written.

12) Upon the normal completion of EDID data writing, press the [Exit] button to close the program.

5.5 EDID Data File

EDID date: LCD51VM.edi

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	00	FF	FF	FF	FF	FF	FF	00	38	A3	1A	66	01	01	01	01
10	Note1	Note2	01	03	08	1E	17	78	EA	F5	E5	9F	59	53	92	24
20	19	50	54	BF	EE	00	01	01	01	01	01	01	01	01	01	01
30	01	01	01	01	01	01	C3	1E	00	20	41	00	20	30	10	60
40	13	00	30	E4	10	00	00	1E	00	00	00	FD	00	38	4B	1F
50	3C	08	00	0A	20	20	20	20	20	20	00	00	00	FC	00	4E
60	45	43	20	4C	43	44	35	31	56	4D	0A	20	00	00	00	FF
70	00	Note3	Note3	Note3	Note3	Note3	Note3	Note3	Note3	Note3	Note3	Note3	Note3	Note3	00	Note4

Note 1: address 10h — Week of manufacture = Month of manufacture × 4

Note 2: address 11h — Year of manufacture - 1990

Note 3: address 71h ~ 7Dh — Serial Number (ASCII coded)

If less than 13 char, terminate with 0Ah and fill the rests with 20h.

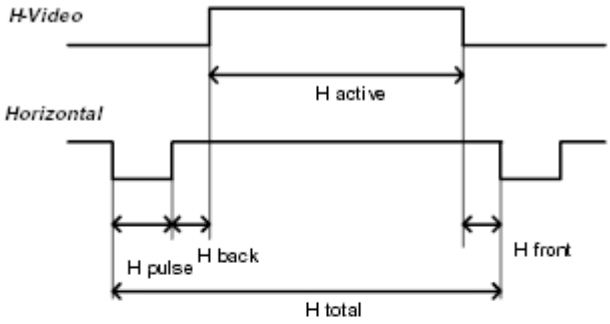
Note 4: address 7Fh — Checksum

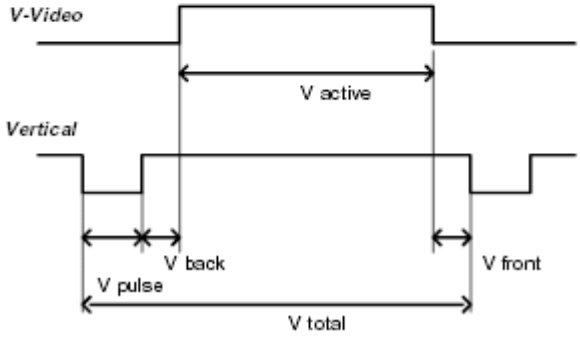
The sum of entire 128 byte shall be equal to 00h.

5.6 EDID Write Protect Cancel Signal Timing

		EDID write protect cancel	
	No.	0	
Item	Abbreviation	EDID	
Pixel frequency	fc	28.32MHz	
Horizontal frequency	fh	31.469kHz	
Line Time total	Th	31.777us	900CLK
Horizontal active display	Thd	25.422us	720CLK
Horizontal sync pulse	Thp	3.813us	108CLK
Horizontal back porch	Thb	1.907us	54CLK
Horizontal front porch	Thf	0.636us	18CLK
Horizontal sync polarity		NEG	
Vertical Frequency	fv	42.015Hz	
Frame time total	Tv	23.801ms	749H
Vertical active display	Tvd	21.768ms	685H
Vertical sync pulse	Tvp	0.095ms	3H
Vertical back porch	Tvb	1.494ms	47H
Vertical front porch	Tvf	0.445ms	14H
Vertical sync polarity		NEG	

Appendix Reference Signal Timings





	No.	1		2	
Item	Abbreviation	VGA 640x480 60Hz		MAC 640x480	
Pixel frequency	fc	25.175MHz		30.24MHz	
Horizontal frequency	fh	31.47kHz		35.00kHz	
Line Time total	Th	31.78us	800CLK	28.57us	864CLK
Horizontal active display	Thd	25.42us	640CLK	21.16us	640CLK
Horizontal sync pulse	Thp	3.81us	96CLK	2.12us	64CLK
Horizontal back porch	Thb	1.91us	48CLK	3.17us	96CLK
Horizontal front porch	Thf	0.64us	16CLK	2.12us	64CLK
Horizontal sync polarity		NEG		NEG	
Vertical Frequency	fv	59.992Hz		66.66Hz	
Frame time total	Tv	16.68ms	525H	15.00ms	525H
Vertical active display	Tvd	15.25ms	480H	13.71ms	480H
Vertical sync pulse	Tvp	0.06ms	2H	0.09ms	3H
Vertical back porch	Tvb	1.02ms	33H	1.11ms	39H
Vertical front porch	Tvf	0.35ms	10H	0.09ms	3H
Vertical sync polarity		NEG		NEG	

	No.	3		4	
Item	Abbreviation	VGA 640x480 72Hz		VESA 640x480 75Hz	
Pixel frequency	fc	31.500MHz		31.500MHz	
Horizontal frequency	fh	37.86kHz		37.50kHz	
Line Time total	Th	26.41us	832CLK	26.67us	840CLK
Horizontal active display	Thd	20.32us	640CLK	20.32us	640CLK
Horizontal sync pulse	Thp	1.27us	40CLK	2.03us	64CLK
Horizontal back porch	Thb	4.06us	128CLK	3.81us	120CLK
Horizontal front porch	Thf	0.76us	24CLK	0.51us	16CLK
Horizontal sync polarity		NEG		NEG	
Vertical Frequency	fv	72.81Hz		75.00Hz	
Frame time total	Tv	13.73ms	520H	13.33ms	500H
Vertical active display	Tvd	12.68ms	480H	12.80ms	480H
Vertical sync pulse	Tvp	0.08ms	3H	0.08ms	3H
Vertical back porch	Tvb	0.74ms	28H	0.43ms	16H
Vertical front porch	Tvf	0.24ms	9H	0.03ms	1H
Vertical sync polarity		NEG		NEG	

	No.	5		6	
Item	Abbreviation	VGA 720x350 70Hz		VGA 720x400 70Hz	
Pixel frequency	fc	28.322MHz		28.322MHz	
Horizontal frequency	fh	31.47kHz		31.47kHz	
Line Time total	Th	31.78us	900CLK	31.78us	900CLK
Horizontal active display	Thd	25.42us	720CLK	25.42us	720CLK
Horizontal sync pulse	Thp	3.81us	108CLK	3.81us	108CLK
Horizontal back porch	Thb	1.91us	54CLK	1.91us	54CLK
Horizontal front porch	Thf	0.64us	18CLK	0.63us	18CLK
Horizontal sync polarity		POS		NEG	
Vertical Frequency	fv	70.087Hz		70.087Hz	
Frame time total	Tv	14.27ms	449H	14.27ms	449H
Vertical active display	Tvd	11.12ms	350H	12.71ms	400H
Vertical sync pulse	Tvp	0.06ms	2H	0.06ms	2H
Vertical back porch	Tvb	1.91ms	60H	1.11ms	35H
Vertical front porch	Tvf	1.18ms	37H	0.38ms	12H
Vertical sync polarity		NEG		POS	

	No.	7		8	
Item	Abbreviation	VESA 800x600 56Hz		VESA 800x600 60Hz	
Pixel frequency	fc	36.00MHz		40.00MHz	
Horizontal frequency	fh	35.16kHz		37.88kHz	
Line Time total	Th	28.44us	1024CLK	26.40us	1065CLK
Horizontal active display	Thd	22.22us	800CLK	20.00us	800CLK
Horizontal sync pulse	Thp	2.00us	72CLK	3.20us	128CLK
Horizontal back porch	Thb	3.56us	128CLK	2.20us	88CLK
Horizontal front porch	Thf	0.67us	24CLK	1.00us	40CLK
Horizontal sync polarity		POS		POS	
Vertical Frequency	fv	56.25Hz		60.32Hz	
Frame time total	Tv	17.78ms	625H	16.58ms	628H
Vertical active display	Tvd	17.07ms	600H	15.84ms	600H
Vertical sync pulse	Tvp	0.06ms	2H	0.11ms	4H
Vertical back porch	Tvb	0.63ms	22H	0.61ms	23H
Vertical front porch	Tvf	0.03ms	1H	0.03ms	1H
Vertical sync polarity		POS		POS	

	No.	9		10	
Item	Abbreviation	VESA 800x600 72Hz		VESA 800x600 75Hz	
Pixel frequency	fc	50.000MHz		49.500MHz	
Horizontal frequency	fh	48.08kHz		46.88kHz	
Line Time total	Th	20.80us	1040CLK	21.33us	1056CLK
Horizontal active display	Thd	16.00us	800CLK	16.16us	800CLK
Horizontal sync pulse	Thp	2.40us	120CLK	1.62us	80CLK
Horizontal back porch	Thb	1.28us	64CLK	3.23us	160CLK
Horizontal front porch	Thf	1.12us	56CLK	0.32us	16CLK
Horizontal sync polarity		POS(/NEG)		POS	
Vertical Frequency	fv	72.19Hz		75.00Hz	
Frame time total	Tv	13.85ms	666H	13.33ms	625H
Vertical active display	Tvd	12.48ms	600H	12.80ms	600H
Vertical sync pulse	Tvp	0.13ms	6H	0.06ms	3H
Vertical back porch	Tvb	0.48ms	23H	0.45ms	21H
Vertical front porch	Tvf	0.77ms	37H	0.02ms	1H
Vertical sync polarity		POS(/NEG)		POS	

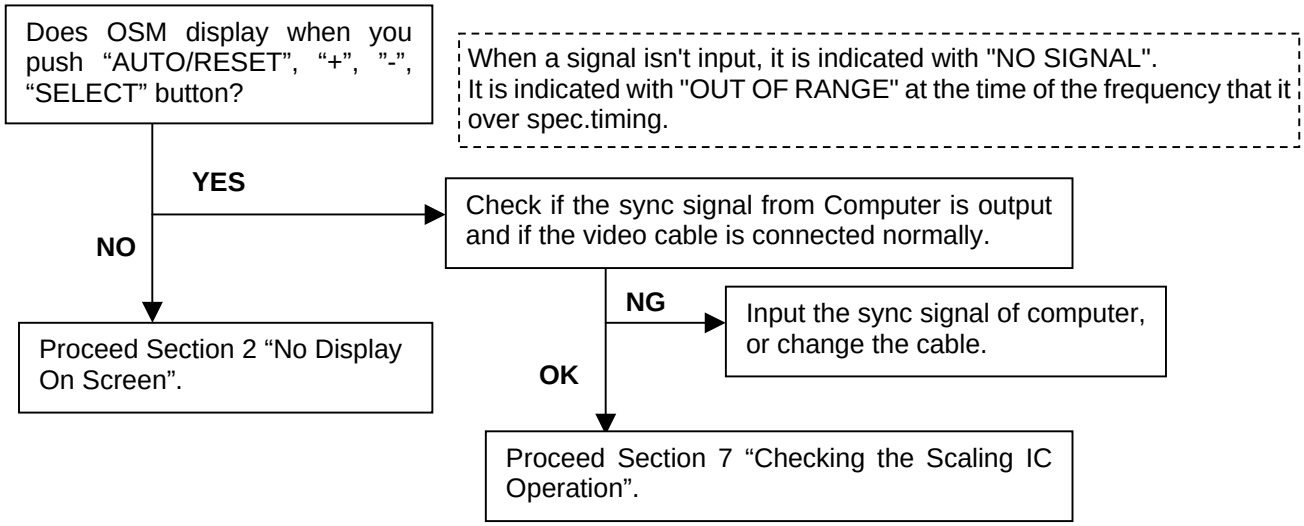
	No.	11		12	
Item	Abbreviation	MAC 832x624		VESA 1024x768 60Hz	
Pixel frequency	fc	57.28MHz		65.000MHz	
Horizontal frequency	fh	49.73kHz		48.35kHz	
Line Time total	Th	20.11us	1152CLK	20.68us	1344CLK
Horizontal active display	Thd	14.52us	832CLK	15.75us	1024CLK
Horizontal sync pulse	Thp	1.12us	64CLK	2.09us	136CLK
Horizontal back porch	Thb	3.91us	224CLK	2.46us	160CLK
Horizontal front porch	Thf	0.56us	32CLK	0.37us	24CLK
Horizontal sync polarity		NEG		NEG	
Vertical Frequency	fv	74.55Hz		60.00Hz	
Frame time total	Tv	13.41ms	667H	16.67ms	806H
Vertical active display	Tvd	12.55ms	624H	15.88ms	768H
Vertical sync pulse	Tvp	0.06ms	3H	0.12ms	6H
Vertical back porch	Tvb	0.78ms	39H	0.60ms	29H
Vertical front porch	Tvf	0.02ms	1H	0.06ms	3H
Vertical sync polarity		NEG		NEG	

	No.	13		14	
Item	Abbreviation	VESA 1024x768 70Hz		VESA 1024x768 75Hz	
Pixel frequency	fc	75.000MHz		78.75MHz	
Horizontal frequency	fh	56.48kHz		60.02kHz	
Line Time total	Th	17.71us	1328CLK	16.66us	1312CLK
Horizontal active display	Thd	13.65us	1024CLK	13.00us	1024CLK
Horizontal sync pulse	Thp	1.81us	136CLK	1.22us	96CLK
Horizontal back porch	Thb	1.92us	144CLK	2.24us	176CLK
Horizontal front porch	Thf	0.32us	24CLK	0.20us	16CLK
Horizontal sync polarity		NEG		POS	
Vertical Frequency	fv	70.07Hz		75.03Hz	
Frame time total	Tv	14.27ms	806H	13.33ms	800H
Vertical active display	Tvd	13.60ms	768H	12.80ms	768H
Vertical sync pulse	Tvp	0.11ms	6H	0.05ms	3H
Vertical back porch	Tvb	0.51ms	29H	0.47ms	28H
Vertical front porch	Tvf	0.05ms	3H	0.02ms	1H
Vertical sync polarity		NEG		POS	

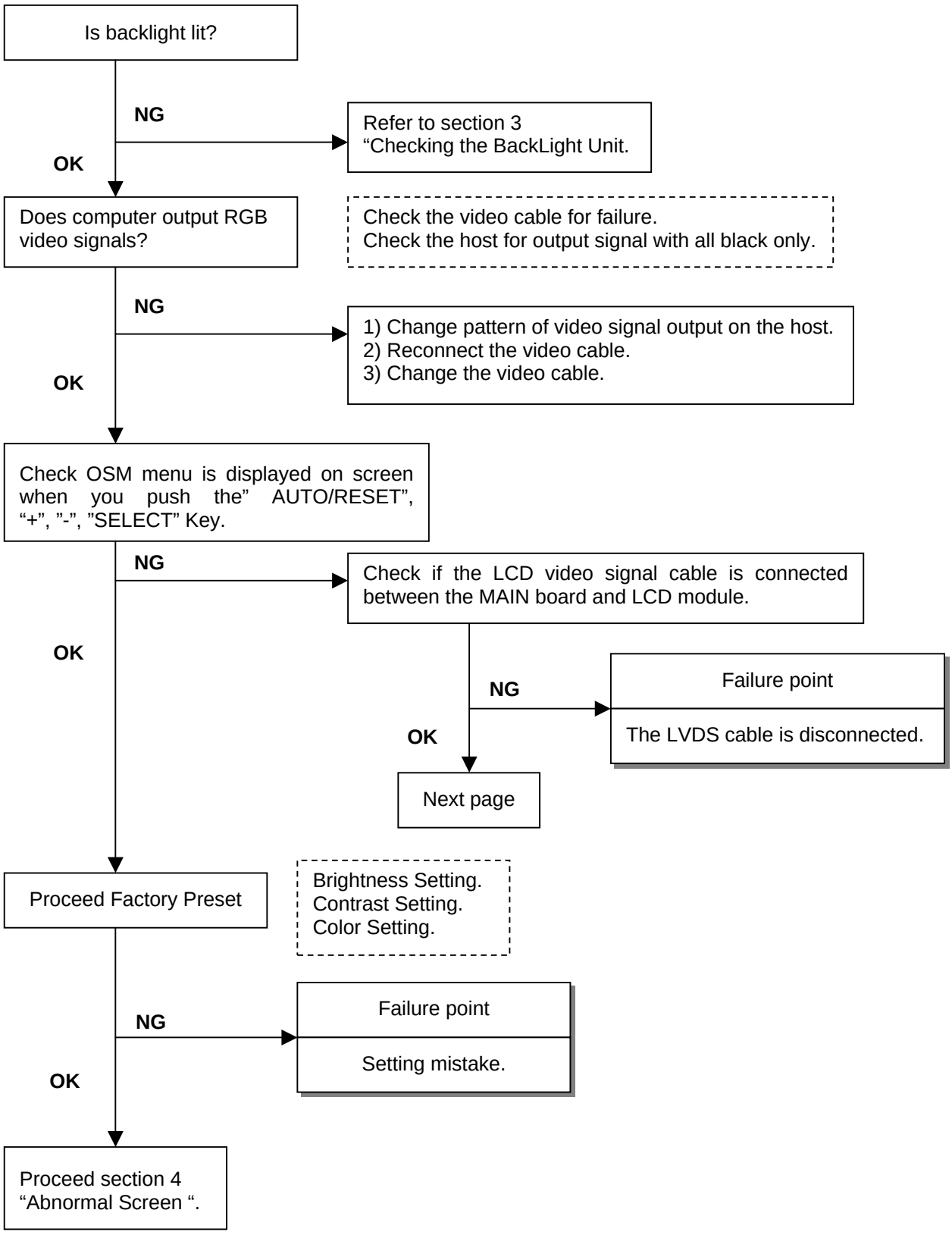
TROUBLE SHOOTING

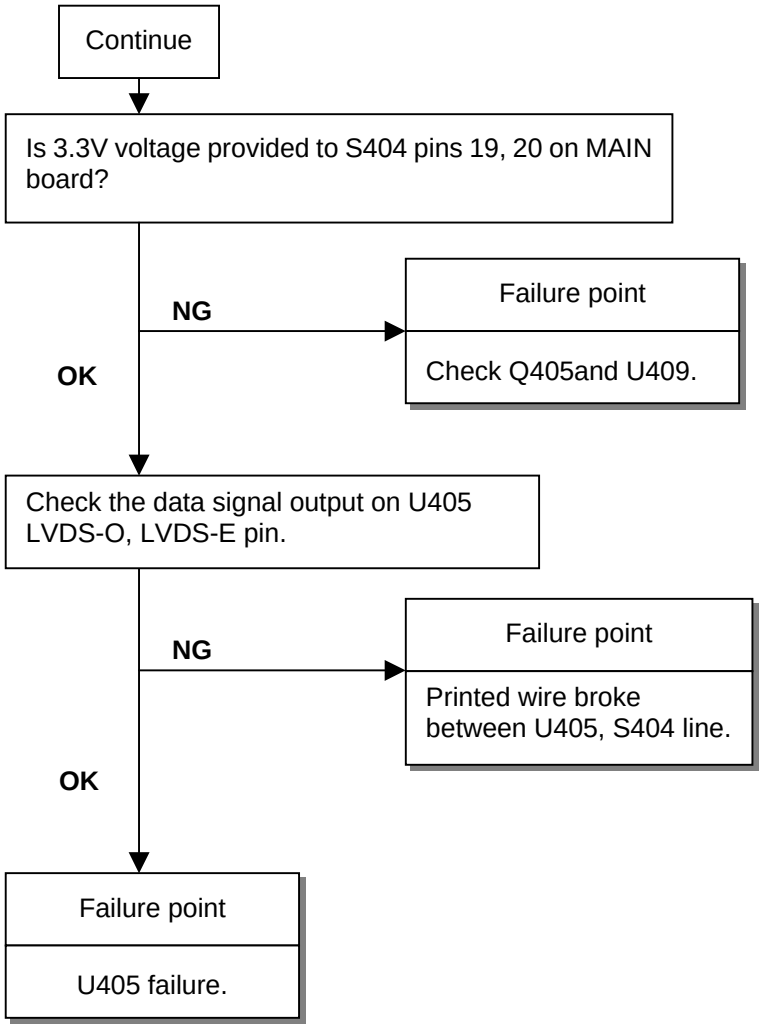
TABLE OF CONTENTS

1. No Display on Screen (Screen is Black, LED is Amber)

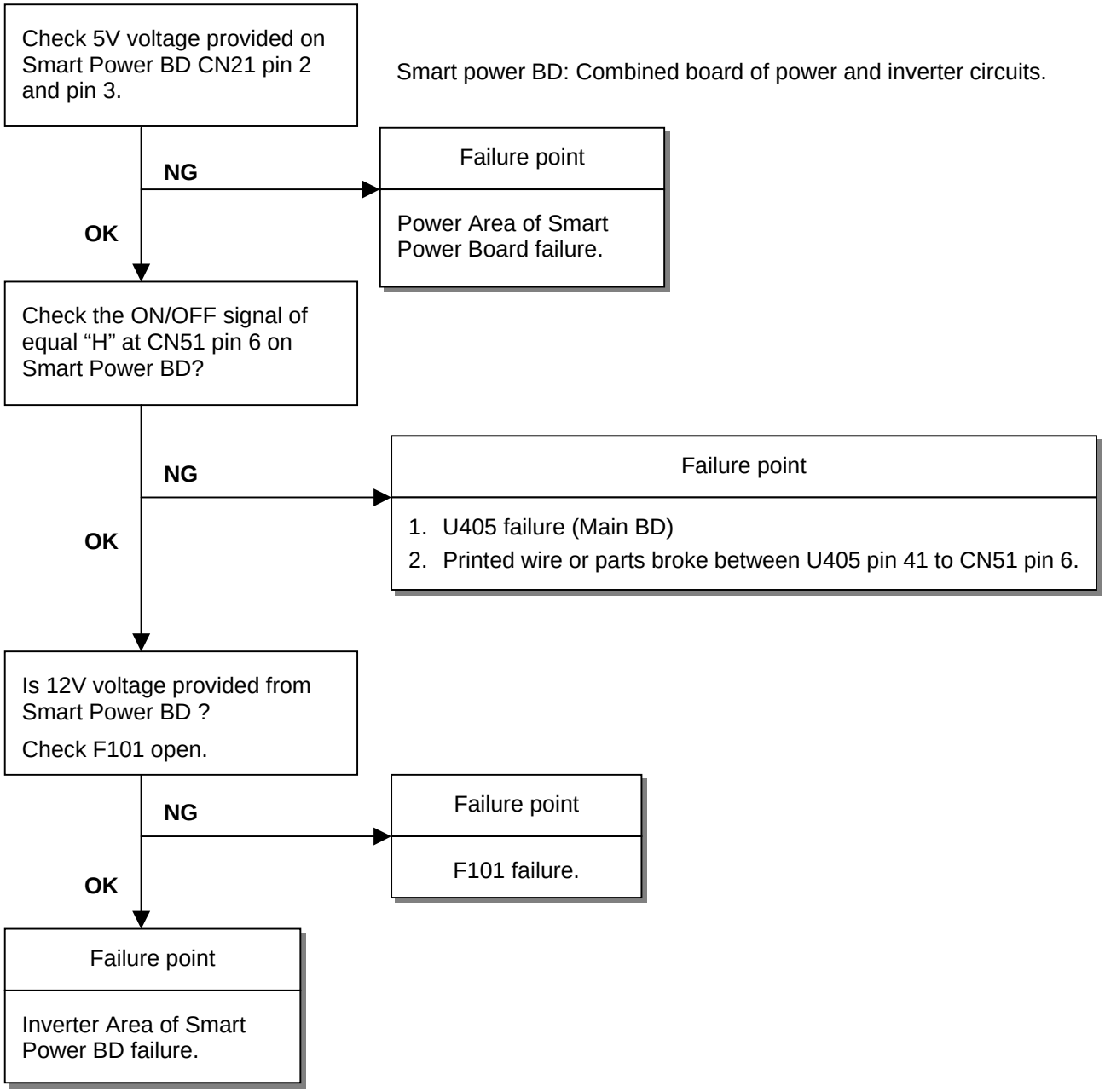


2. No Display on Screen (Screen is Black, LED is Green)

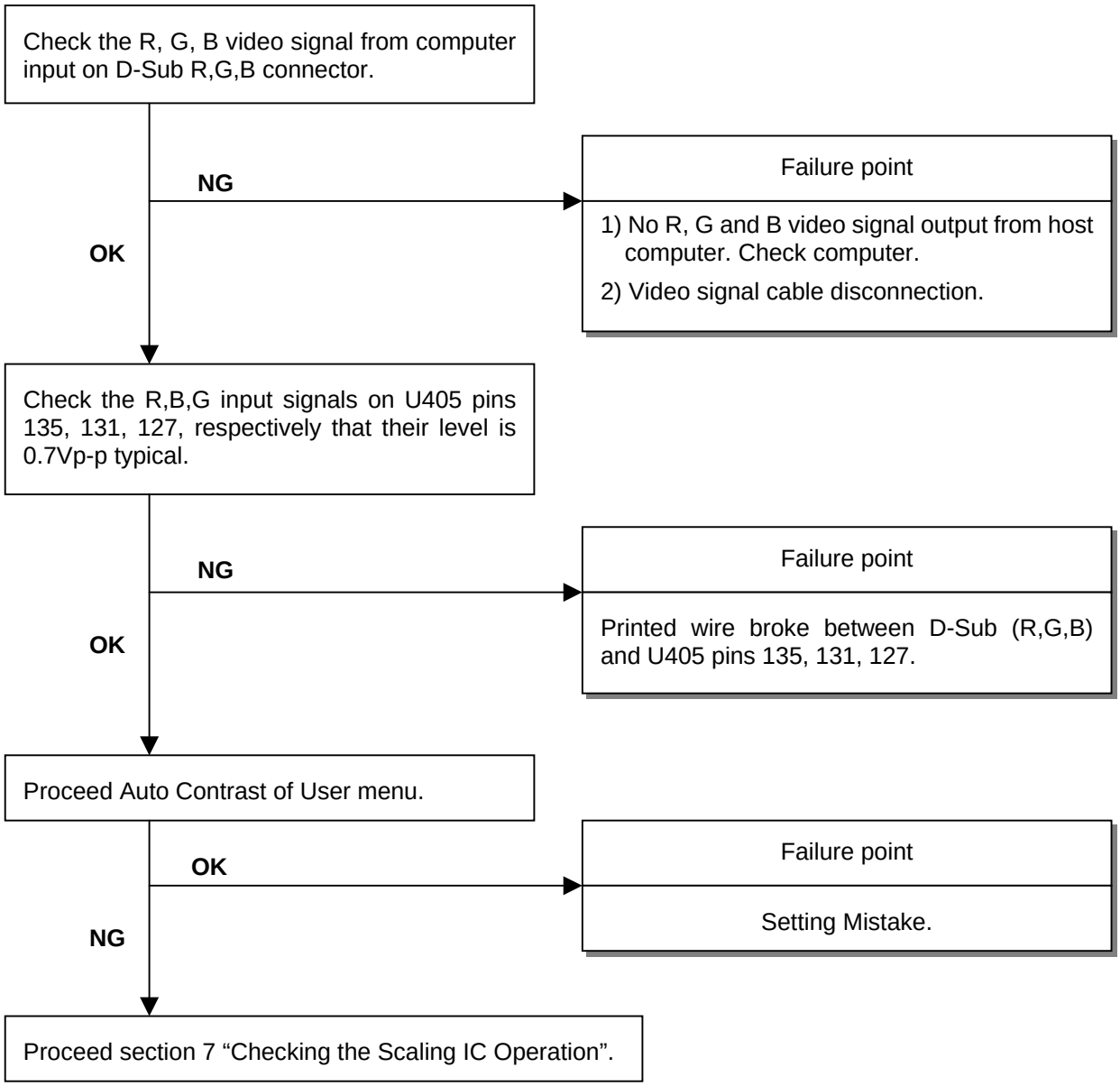



Continue
Is 3.3V voltage provided to S404 pins 19, 20 on MAIN board?
NG
Failure point
Check Q405and U409.
OK
Check the data signal output on U405 LVDS-O, LVDS-E pin.
NG
Failure point
Printed wire broke between U405, S404 line.
OK
Failure point
U405 failure.

3. Checking the Back Light Unit

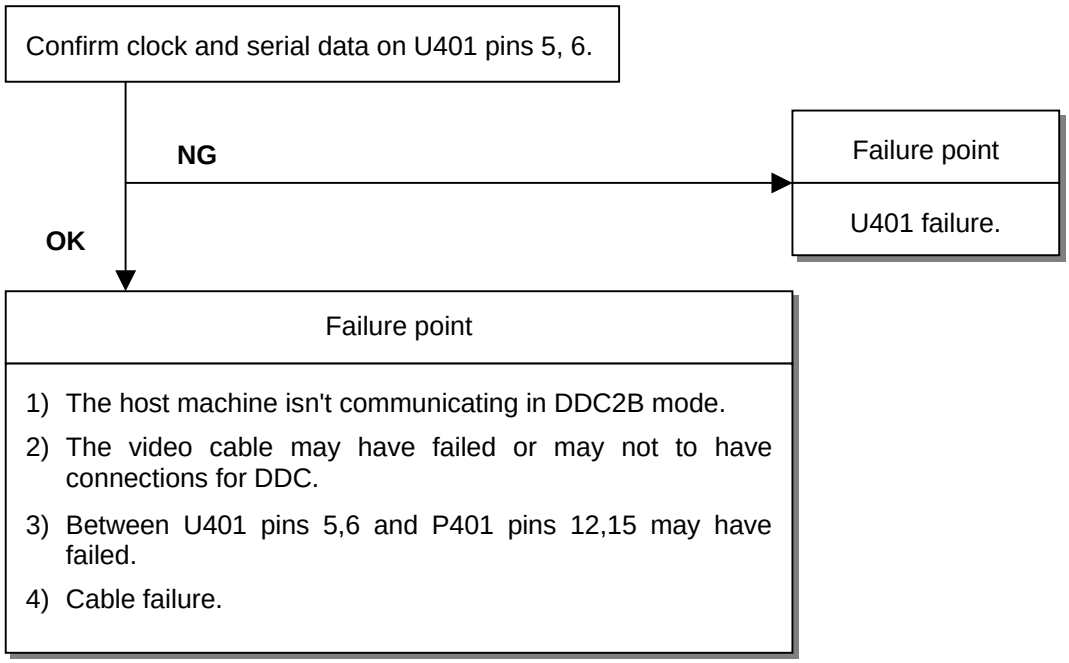


4. Abnormal Screen



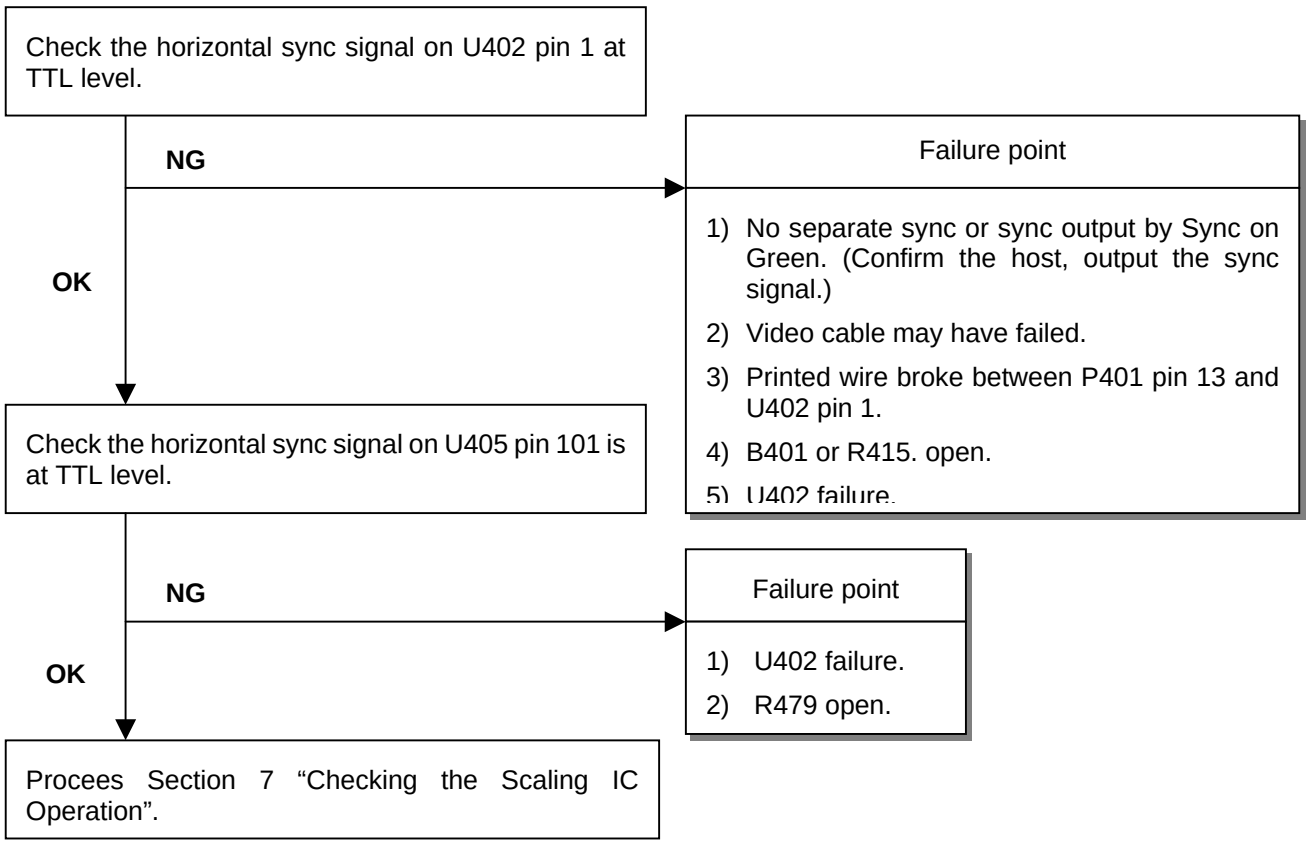
5. Abnormal Plug and Play Operation

Abnormal DDC2B

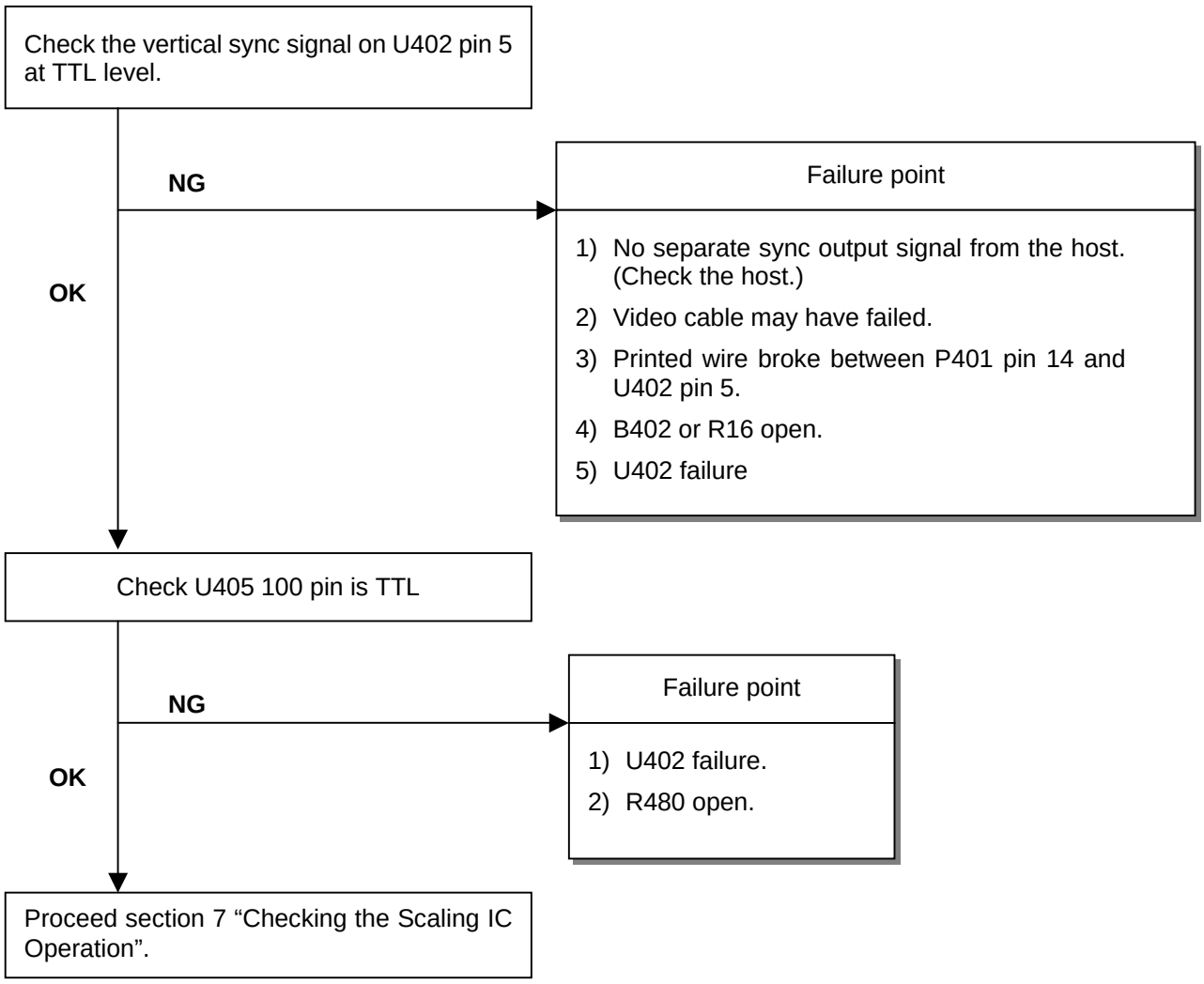


6. Checking the Sync Signal Interface Circuit

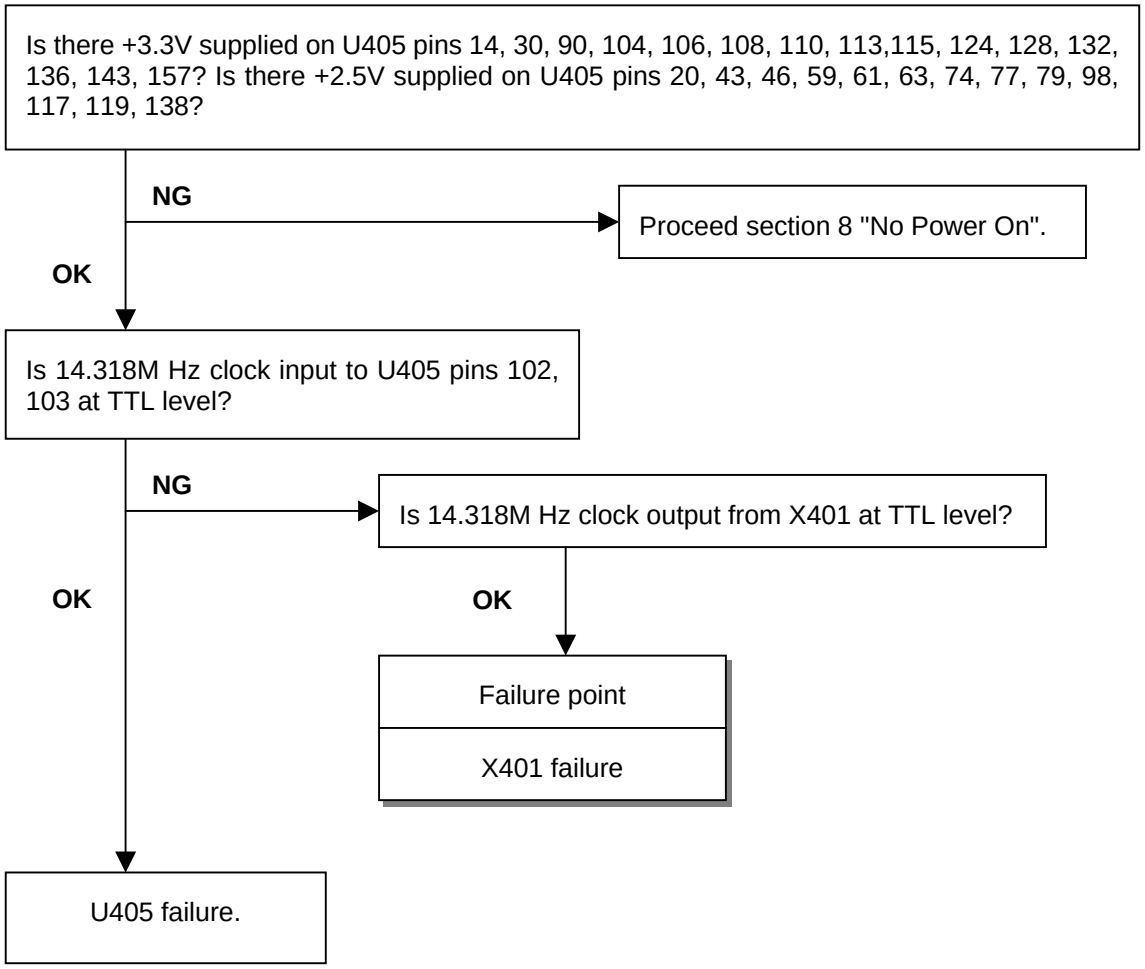
6.1 Checking the Horizontal Sync Pulse Control Circuit



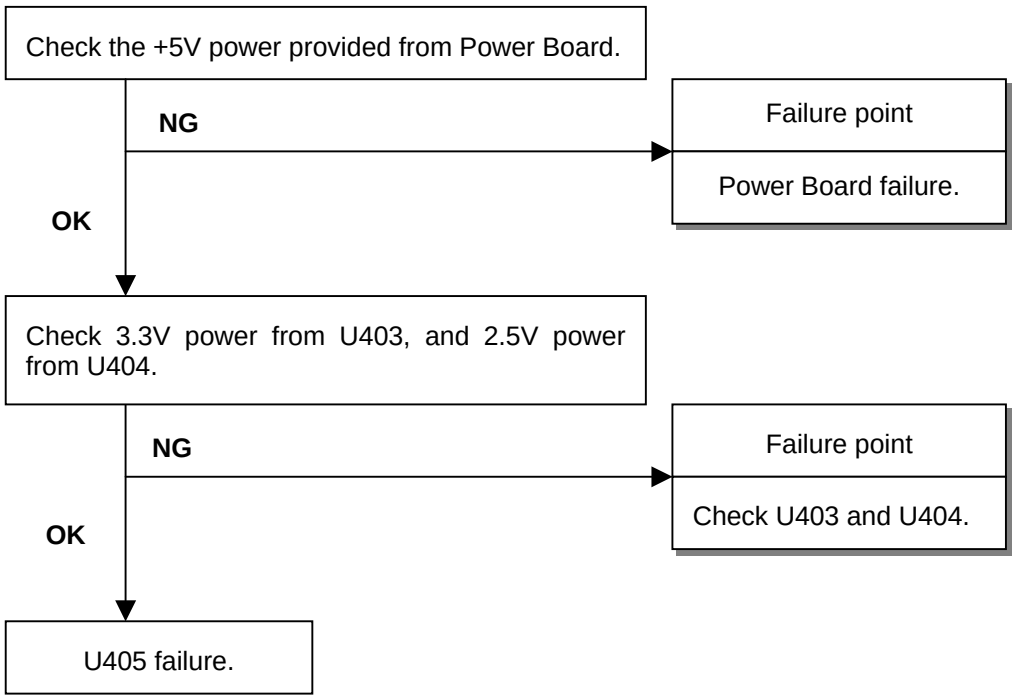
6.2 Checking the Vertical Sync Pulse Control Circuit



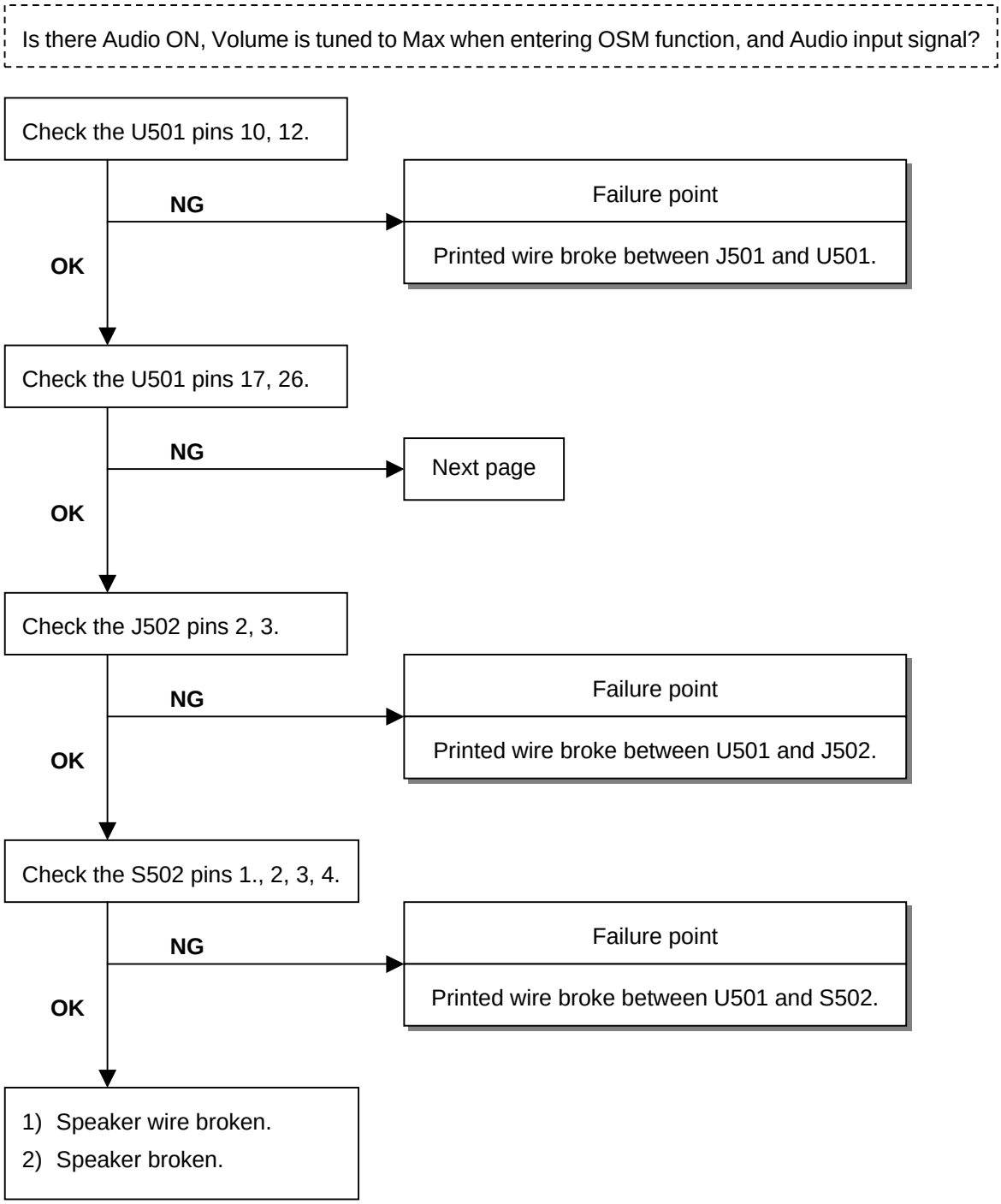
7. Checking the Scaling IC Operation

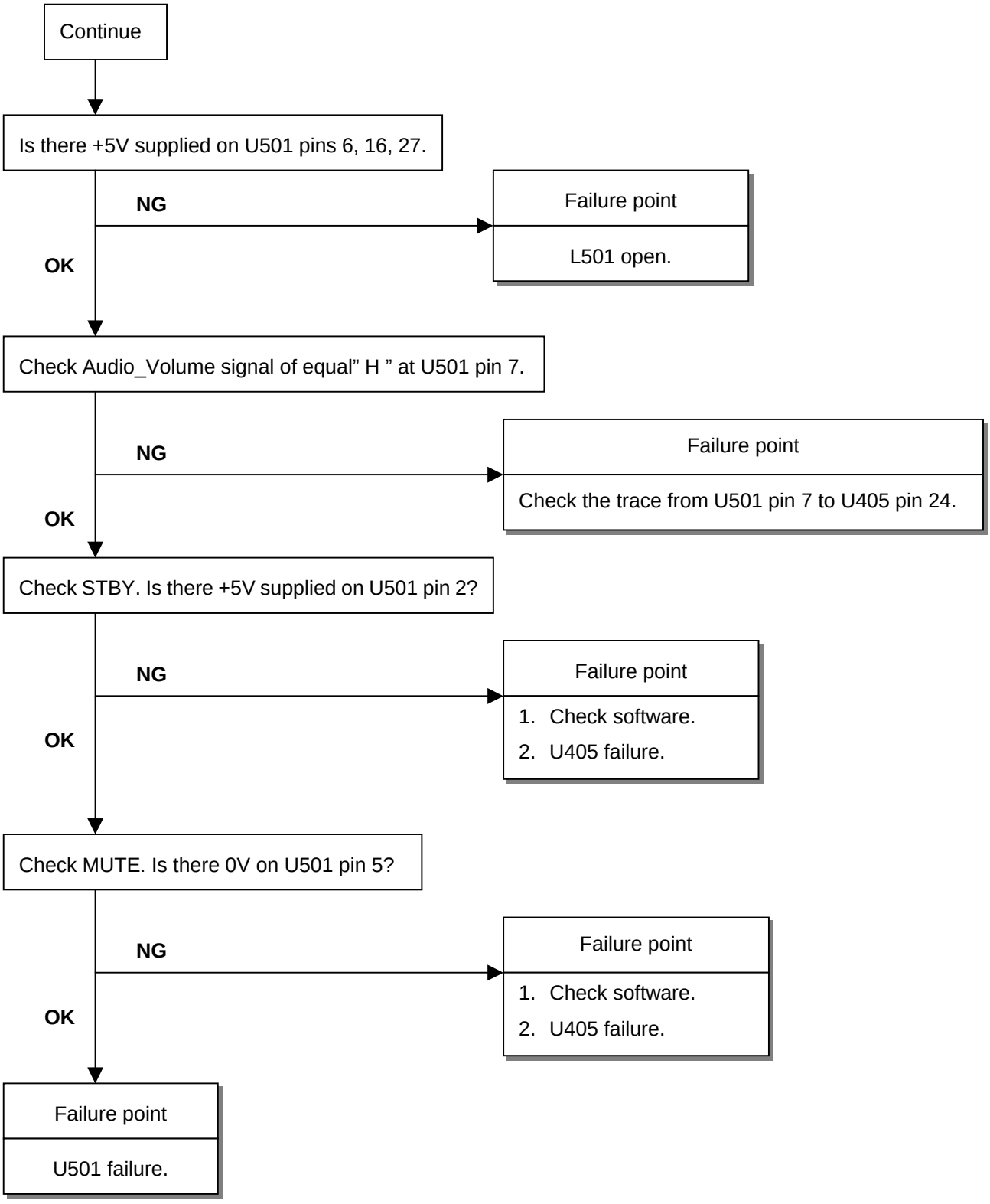


8. No Power On


Check the +5V power provided from Power Board.
NG
Failure point
Power Board failure.
OK
Check 3.3V power from U403, and 2.5V power from U404.
NG
Failure point
Check U403 and U404.
OK
U405 failure.

9. Checking the Audio Operation




Continue
Is there +5V supplied on U501 pins 6, 16, 27.
NG
Failure point
L501 open.
OK
Check Audio_Volume signal of equal” H ” at U501 pin 7.
NG
Failure point
Check the trace from U501 pin 7 to U405 pin 24.
OK
Check STBY. Is there +5V supplied on U501 pin 2?
NG
Failure point
1. Check software.
2. U405 failure.
OK
Check MUTE. Is there 0V on U501 pin 5?
NG
Failure point
1. Check software.
2. U405 failure.
OK
Failure point
U501 failure.

CIRCUIT DESCRIPTION

TABLE OF CONTENTS

1. Power Circuit

1.1 Power Input

5V DC is input (S403) from power Board to interface Board.

1.2 DC to DC Circuit

U403 generates 3.3V for scaling IC, panel and other ICs. U404 generates 2.5V for scaling IC.

Audio IC, Flash Memory use 5V directly.

1.3 Panel Vcc Control

Q405 and U409 are used for panel power control. The control signal is from scaling IC U405 (pin 40: PPWR).

While the PPWR stay at High level; the panel voltage is 5.0V.

While the PPWR stay at Low level: the panel voltage is 0V.

2. Scaling IC

Scaling IC U405 has micro controller, ADC, scaling, color control and LVDS transmit functions.

2.1 Clock Circuit

Crystal X401 generates 14.318MHz clock signal for Scaling IC.

2.2 I2C Buses

There are 2 sets of I2C bus in the circuit:

One I2C is used for DDC. EDID data is stored in U401, and this I2C bus is connected to U405 (pin 8: SDA, pin 9: SCA) for DDC/CI.

The other I2C is used for OSD parameter storing. It connects U405 (pin 36: SDA, pin 37: SCA) and U408.

2.3 Key Scanning

Following ports are used fro key scanning.

U405 pin13: “POWER” key

U405 pin34: “Auto/Reset” key

U405 pin29: “SELECT” key

U405 pin33: “+” key

U405 pin32: “-” key

2.4 Reset

U405 pin 17: reset signal for scaling IC. U406 provides reset signal.

2.5 LED Control

U405 pin 41: control Q404 for LED (GREEN)

U405 pin 25: control Q406 for LED (ORANGE)

LED (GREEN) is synchronized with the back light control, PBIAS.

2.6 AUDIO Control

U405 pin 24: control U501 for Audio Volume.

U405 pin 18: control U501 for STBY.

U405 pin 19: control U501 for MUTE.

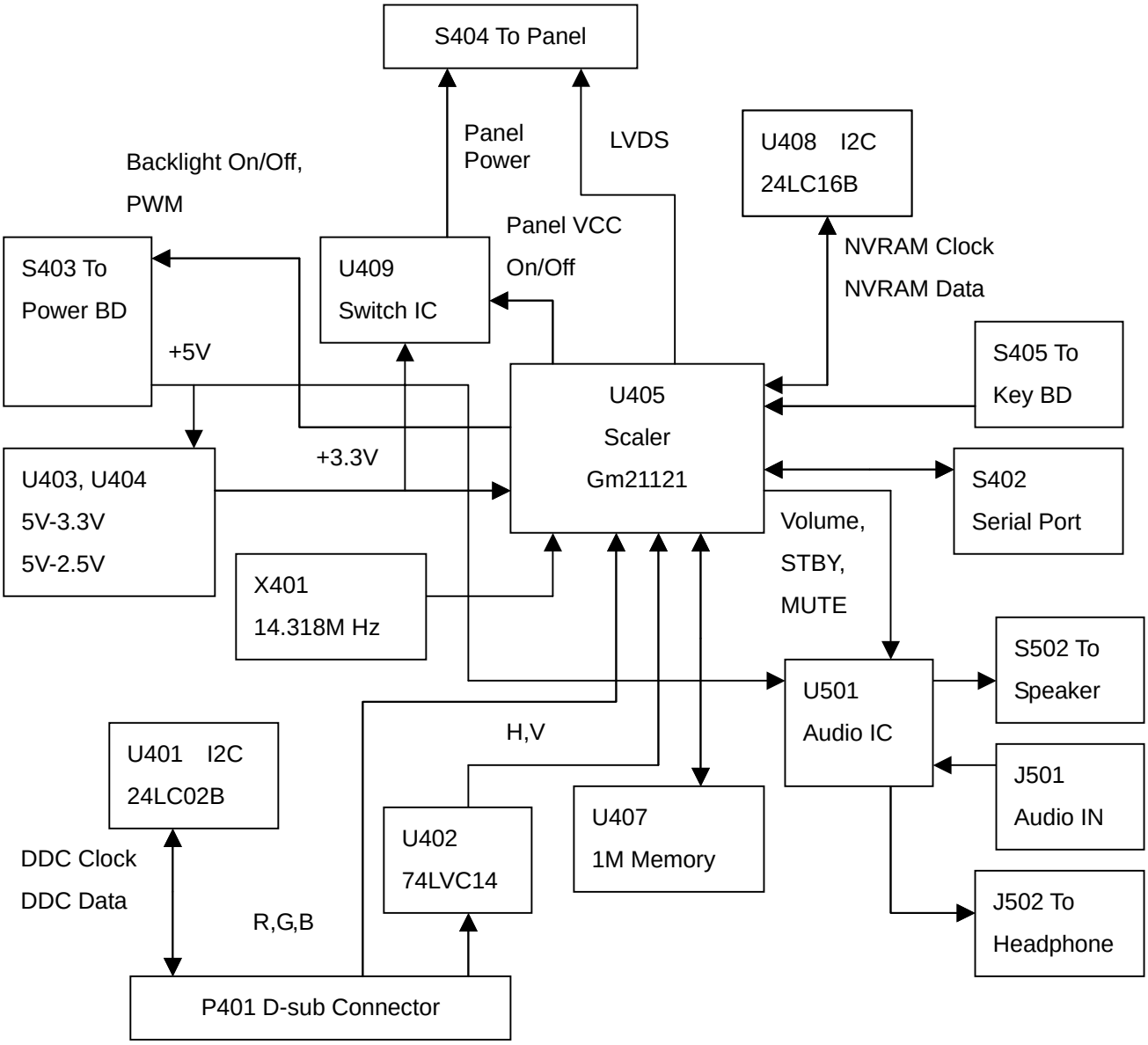
3. Memory

Flash Memory IC (U407) is used to store F/W parameters.

4. Sync Interface

U402 is schmitt trigger input IC, and it provides H and V sync to U405.

5. INTERFACE BOARD BLOCK DIAGRAM



REPLACEMENT PARTS LIST(For U.S.)

The components specified for Model LCD51VM(A)

SYMBOL	Part No for NPG	DESCRIPTION
*** ICS ***		
U401	EHA50051	IC SMD 24LC02B
U402	EHA50011	IC MOS 74LVC14
U403	EHA10561	IC SMD PJ1084CM-3.3 REGUL
U404	EH110301	IC PJ1117CZ-2.5V TO-220
U405	EHA10592	IC SMD GM2111 AD SCALER
U406	EHA10471	IC SMD MIC1815 RESET
U407	EHA11001	IC PLCC32 A290011TL-70 ME
U408	EHA10081	IC SMD 24LC16B SO8
U409	EQ500117	CHIP FET P HAT1053M
U501	EHA11061	IC SMD APA4838 AUDIO AMPL
*** TRANSISTORS ***		
D402	EX500216	CHIP DIODE DAN217 T146
D403	EX500216	CHIP DIODE DAN217 T146
D404	EX500216	CHIP DIODE DAN217 T146
Q401	EN000413	CHIP TR NPN 2SC2412K-T146
Q404	EN000413	CHIP TR NPN 2SC2412K-T146
Q405	EN000413	CHIP TR NPN 2SC2412K-T146
Q406	EN000413	CHIP TR NPN 2SC2412K-T146
Q407	EN000413	CHIP TR NPN 2SC2412K-T146
*** DIODES ***		
D401	EX700216	DIODE RB495D
D405	EJ100231	DIODE 1N4001
D801	EL200110	DIODE LED SML19460C
ZD401	EYD40562	CHIP DIODE ZENER UDZS5.6B
ZD402	EYD40562	CHIP DIODE ZENER UDZS5.6B
ZD405	EYD40562	CHIP DIODE ZENER UDZS5.6B
ZD406	EYD40562	CHIP DIODE ZENER UDZS5.6B
*** RELAYS & SWITCHES ***		
SW801	JC300111	SW-TACT SKQNAED010
SW802	JC300111	SW-TACT SKQNAED010
SW803	JC300111	SW-TACT SKQNAED010
SW804	JC300111	SW-TACT SKQNAED010
SW805	JC300111	SW-TACT SKQNAED010
*** PWB ASSYS ***		
MAININ	AM0R51MN	MAIN INSERT ASSY
POWERB	JM100061	POWER B/D (15NEC)"
SWASSY	AS0R51ML	SW INSERT ASSY

SYMBOL	Part No for NPG	DESCRIPTION

*** COILS & FILTERS ***

B401	HM011532	CHIP FERRITE BK2125HS431
B402	HM011532	CHIP FERRITE BK2125HS431
B403	HM017021	L BEAD SMD MCB1608S121G
B405	HM017031	L BEAD SMD MHC1608S121P
B406	HM017011	L BEAD SMD MCB2012S121H
B407	HM017021	L BEAD SMD MCB1608S121G
B408	HM017021	L BEAD SMD MCB1608S121G
B409	HM017021	L BEAD SMD MCB1608S121G
B410	HM017021	L BEAD SMD MCB1608S121G
B411	HM017021	L BEAD SMD MCB1608S121G
B412	HM017021	L BEAD SMD MCB1608S121G
B413	HM017021	L BEAD SMD MCB1608S121G
B414	HM017021	L BEAD SMD MCB1608S121G
B415	HM017021	L BEAD SMD MCB1608S121G
B416	HM017021	L BEAD SMD MCB1608S121G
B417	HM017021	L BEAD SMD MCB1608S121G
B418	HM017021	L BEAD SMD MCB1608S121G
B419	HM017031	L BEAD SMD MHC1608S121P
B420	HM017031	L BEAD SMD MHC1608S121P
B422	HM017021	L BEAD SMD MCB1608S121G
B423	HM017061	L BEAD SMD MCB1608H750G
B424	HM017061	L BEAD SMD MCB1608H750G
B425	HM017061	L BEAD SMD MCB1608H750G
L501	HA200271	L CHOKE 10UH 8/10

*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***

CABLAU	RE090011	CABLE AUDIO GRY 1.8M
CABLVI	RE010161	CABLE VIDEO DSUB-DSUB 1.8
J501	JD050041	SOCKET PHONE 2SJ-0513-A10
J502	JD050051	SOCKET PHONE 2SJ-0511-A13
LCD	JG555011	LCD NL10276BC30-10 NEC
POCORD	RG020061	PW CORD NA 1.8M GRAY WANS
SPEASY	JN100021	SPEAKER ASSY
WIRE20	RC200291	WIRE 20P-20P L90 LVDS
WIRE9	RC200272	WIRE 9P-9P P=2.0 L260
X401	EM100081	OSC X'TAL 14.318MHZ 49/U-

*** APPEARANCE PARTS ***

BACK	10103781	BACK,L152R5-WH-NSP
BEZEL	10104131	BEZEL,L152R5-WH-NSP-ASSY
CHASSI	12000881	CHASSIS BASE,L152R5-NSP-L
FOOT	17001441	FOOT RUBBER
KNOB	11301671	KNOB CONTROL,L152R5-WH
PADSPE	17001471	PAD,SPEAKER
STCOB	11002111	STAND COVER B,L152R5-WH
STCOT	11002101	STAND COVER T,L152R5-WH

SYMBOL	Part No for NPG	DESCRIPTION
*** PRINTED & PACKING MATERIALS ***		
CARTON	13202691	CARTON,AS51VM WH(A)-NSP
CARBO	13203381	CARTON BOARD L152R5(378X112)
FILLEB	13401221	FILLER B,L152R5(A)
FILLET	13401211	FILLER T,L152R5(A)
LABEL	15202191	LABEL SERIAL BARCODE(A,B,
MANUAL	15501681	MANUAL,L152R5 L172R6(A)-N
NAVISE	15900251	NAVI SET SHEET
PACING	13700321	PE BAG (750*450MM)
PS	13700461	PE BAG (370*270MM)
RATING	15002341	RATING LABEL,AS51VM WH(A)
SETUP	15800401	SHEET,SETUP AS51VM WH(A)-
*** RESISTORS ***		
R402	FM010101	CHIP RES 1/10W(T) 5% 100O
R403	FN012009	R SMD 1/10W 20H F 0603
R404	FM010473	CHIP 1/10W(T) 5% 47K
R405	FM010272	R SMD METAL 1/10W 2.7K J
R406	FN012009	R SMD 1/10W 20H F 0603
R407	FM010101	CHIP RES 1/10W(T) 5% 100O
R408	FN012009	R SMD 1/10W 20H F 0603
R412	FN015769	R SMD 1/10W 57.6H F 0603
R413	FN015769	R SMD 1/10W 57.6H F 0603
R414	FN015769	R SMD 1/10W 57.6H F 0603
R415	FN012009	R SMD 1/10W 20H F 0603
R416	FN012009	R SMD 1/10W 20H F 0603
R417	FM010222	CHIP RES 1/10W(T) 5% 2.2K
R418	FM010222	CHIP RES 1/10W(T) 5% 2.2K
R419	FM010104	CHIP RES 1/10W(T) 5% 100K
R420	FM010103	CHIP RES 1/10W(T) 5% 10KO
R421	FM010103	CHIP RES 1/10W(T) 5% 10KO
R423	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R425	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R426	FM010103	CHIP RES 1/10W(T) 5% 10KO
R427	FM010103	CHIP RES 1/10W(T) 5% 10KO
R428	FM010103	CHIP RES 1/10W(T) 5% 10KO
R429	FM010103	CHIP RES 1/10W(T) 5% 10KO
R430	FM010101	CHIP RES 1/10W(T) 5% 100O
R433	FM010101	CHIP RES 1/10W(T) 5% 100O
R436	FM010103	CHIP RES 1/10W(T) 5% 10KO
R438	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R439	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R440	FM010103	CHIP RES 1/10W(T) 5% 10KO
R441	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R442	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R443	FM010103	CHIP RES 1/10W(T) 5% 10KO
R444	FM010103	CHIP RES 1/10W(T) 5% 10KO
R446	FM010103	CHIP RES 1/10W(T) 5% 10KO

SYMBOL	Part No for NPG	DESCRIPTION
R448	FM010103	CHIP RES 1/10W(T) 5% 10KO
R449	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R450	FM010101	CHIP RES 1/10W(T) 5% 100O
R451	FM010101	CHIP RES 1/10W(T) 5% 100O
R453	FM010473	CHIP 1/10W(T) 5% 47K
R454	FM010472	CHIP RES 1/10W(T) 5% 4.7K
R455	FM010103	CHIP RES 1/10W(T) 5% 10KO
R456	FM010103	CHIP RES 1/10W(T) 5% 10KO
R457	FM010103	CHIP RES 1/10W(T) 5% 10KO
R459	FM010103	CHIP RES 1/10W(T) 5% 10KO
R460	FM010102	CHIP RES 1/10W (T) 5% 1KO
R461	FM010472	CHIP RES 1/10W(T) 5% 4.7K
R462	FM010103	CHIP RES 1/10W(T) 5% 10KO
R464	FM010103	CHIP RES 1/10W(T) 5% 10KO
R465	FM010103	CHIP RES 1/10W(T) 5% 10KO
R466	FM010103	CHIP RES 1/10W(T) 5% 10KO
R467	FM010103	CHIP RES 1/10W(T) 5% 10KO
R468	FM010103	CHIP RES 1/10W(T) 5% 10KO
R469	FM010103	CHIP RES 1/10W(T) 5% 10KO
R470	FM010103	CHIP RES 1/10W(T) 5% 10KO
R473	FM010103	CHIP RES 1/10W(T) 5% 10KO
R474	FM010103	CHIP RES 1/10W(T) 5% 10KO
R479	FM010101	CHIP RES 1/10W(T) 5% 100O
R480	FM010101	CHIP RES 1/10W(T) 5% 100O
R501	FN015102	R SMD METAL 1/10W 51K H F
R502	FN012002	R SMD 1/10W 20K H F 0603
R503	FM010560	CHIP RES 1/10W(T) 5% 56OH
R504	FN015102	R SMD METAL 1/10W 51K H F
R505	FN012002	R SMD 1/10W 20K H F 0603
R508	FM010560	CHIP RES 1/10W(T) 5% 56OH
R509	FM010102	CHIP RES 1/10W (T) 5% 1KO
R510	FM010102	CHIP RES 1/10W (T) 5% 1KO
R511	FM010102	CHIP RES 1/10W (T) 5% 1KO
R512	FM010104	CHIP RES 1/10W(T) 5% 100K
R513	FM010104	CHIP RES 1/10W(T) 5% 100K
R514	FM010104	CHIP RES 1/10W(T) 5% 100K
R515	FM010473	CHIP 1/10W(T) 5% 47K
R516	FM010104	CHIP RES 1/10W(T) 5% 100K
R518	FM010103	CHIP RES 1/10W(T) 5% 10KO
R519	FM010123	R SMD METAL 1/10W 12K J T
R520	FM010103	CHIP RES 1/10W(T) 5% 10KO
R521	FM010123	R SMD METAL 1/10W 12K J T

*** CAPACITORS ***

C401	GX410423	C SMD X7R 0.1U 16V K 0603
C402	GX410353	C SMD X7R 0.01U 50V K 060
C403	GX410353	C SMD X7R 0.01U 50V K 060
C404	GX410353	C SMD X7R 0.01U 50V K 060

SYMBOL	Part No for NPG	DESCRIPTION
C405	GX410353	C SMD X7R 0.01U 50V K 060
C406	GX410353	C SMD X7R 0.01U 50V K 060
C407	GX410353	C SMD X7R 0.01U 50V K 060
C408	GX447052	C SMD C0G 47P 50V J 0603
C409	GX447052	C SMD C0G 47P 50V J 0603
C410	GX410423	C SMD X7R 0.1U 16V K 0603
C411	GX410423	C SMD X7R 0.1U 16V K 0603
C412	GGM22615	C ELE105 22U 10V M(T) LOW
C413	GX410423	C SMD X7R 0.1U 16V K 0603
C414	GX410423	C SMD X7R 0.1U 16V K 0603
C415	GX410423	C SMD X7R 0.1U 16V K 0603
C416	GX410423	C SMD X7R 0.1U 16V K 0603
C417	GX410423	C SMD X7R 0.1U 16V K 0603
C418	GX410423	C SMD X7R 0.1U 16V K 0603
C419	GX410423	C SMD X7R 0.1U 16V K 0603
C420	GX410423	C SMD X7R 0.1U 16V K 0603
C421	GX410423	C SMD X7R 0.1U 16V K 0603
C422	GGR22714	VC ELE105 220U 10V M (T)L
C423	GX410423	C SMD X7R 0.1U 16V K 0603
C424	GX410423	C SMD X7R 0.1U 16V K 0603
C425	GX410423	C SMD X7R 0.1U 16V K 0603
C426	GGR68714	C ELE105 680U 10V M(T) LO
C427	GX410423	C SMD X7R 0.1U 16V K 0603
C428	GGM22615	C ELE105 22U 10V M(T) LOW
C429	GX410423	C SMD X7R 0.1U 16V K 0603
C430	GX410423	C SMD X7R 0.1U 16V K 0603
C431	GX410423	C SMD X7R 0.1U 16V K 0603
C432	GX410423	C SMD X7R 0.1U 16V K 0603
C433	GX410423	C SMD X7R 0.1U 16V K 0603
C434	GX410423	C SMD X7R 0.1U 16V K 0603
C435	GX410423	C SMD X7R 0.1U 16V K 0603
C436	GGM22615	C ELE105 22U 10V M(T) LOW
C437	GX410423	C SMD X7R 0.1U 16V K 0603
C438	GX410423	C SMD X7R 0.1U 16V K 0603
C439	GX410423	C SMD X7R 0.1U 16V K 0603
C440	GX410423	C SMD X7R 0.1U 16V K 0603
C441	GX410423	C SMD X7R 0.1U 16V K 0603
C442	GX410423	C SMD X7R 0.1U 16V K 0603
C443	GGM22615	C ELE105 22U 10V M(T) LOW
C444	GX410423	C SMD X7R 0.1U 16V K 0603
C445	GX410423	C SMD X7R 0.1U 16V K 0603
C446	GX410423	C SMD X7R 0.1U 16V K 0603
C447	GX410423	C SMD X7R 0.1U 16V K 0603
C448	GX410423	C SMD X7R 0.1U 16V K 0603
C449	GGM22615	C ELE105 22U 10V M(T) LOW
C450	GX410423	C SMD X7R 0.1U 16V K 0603
C451	GX410423	C SMD X7R 0.1U 16V K 0603
C452	GX410423	C SMD X7R 0.1U 16V K 0603

SYMBOL	Part No for NPG	DESCRIPTION
C453	GX405052	C SMD C0G 5P 50V J 0603
C454	GX405052	C SMD C0G 5P 50V J 0603
C455	GX410423	C SMD X7R 0.1U 16V K 0603
C457	GX410423	C SMD X7R 0.1U 16V K 0603
C458	GX410423	C SMD X7R 0.1U 16V K 0603
C459	GX410423	C SMD X7R 0.1U 16V K 0603
C460	GX410423	C SMD X7R 0.1U 16V K 0603
C461	GX410423	C SMD X7R 0.1U 16V K 0603
C462	GX410423	C SMD X7R 0.1U 16V K 0603
C463	GX410423	C SMD X7R 0.1U 16V K 0603
C469	GGR68714	C ELE105 680U 10V M(T) LO
C470	GX410353	C SMD X7R 0.01U 50V K 060
C471	GGR68714	C ELE105 680U 10V M(T) LO
C472	GX410353	C SMD X7R 0.01U 50V K 060
C473	GX433052	C SMD C0G 33P 50V J 0603
C474	GX433052	C SMD C0G 33P 50V J 0603
C475	GGR68714	C ELE105 680U 10V M(T) LO
C476	GGM47535	C ELE105 4.7U 25V M(T) LO
C501	GX410423	C SMD X7R 0.1U 16V K 0603
C502	GX410423	C SMD X7R 0.1U 16V K 0603
C503	GGR10714	C ELE105 100U 10V M (T) L
C504	GX410423	C SMD X7R 0.1U 16V K 0603
C505	GX410423	C SMD X7R 0.1U 16V K 0603
C506	GGR10714	C ELE105 100U 10V M (T) L
C507	GX410423	C SMD X7R 0.1U 16V K 0603
C508	GX410423	C SMD X7R 0.1U 16V K 0603
C510	GX427152	C SMD NPO 270P 50V 0603
C512	GX010558	C SMD Y5V 1U 50V Z 0805
C513	GX427152	C SMD NPO 270P 50V 0603
C514	GX410423	C SMD X7R 0.1U 16V K 0603
C515	GGR10714	C ELE105 100U 10V M (T) L
C516	GGR47724	C ELE105 470U 16V M(T) LO
C517	GGR47724	C ELE105 470U 16V M(T) LO
C518	GGM47535	C ELE105 4.7U 25V M(T) LO
C519	GGM47530	C ELE105 4.7U 25V M(T) LO

REPLACEMENT PARTS LIST(For U.S.)

The components specified for Model LCD51VM(A)-BK

SYMBOL	Part No for NPG	DESCRIPTION
*** ICS ***		
U401	EHA50051	IC SMD 24LC02B
U402	EHA50011	IC MOS 74LVC14
U403	EHA10561	IC SMD PJ1084CM-3.3 REGUL
U404	EH110301	IC PJ1117CZ-2.5V TO-220
U405	EHA10592	IC SMD GM2111 AD SCALER
U406	EHA10471	IC SMD MIC1815 RESET
U407	EHA11001	IC PLCC32 A290011TL-70 ME
U408	EHA10081	IC SMD 24LC16B SO8
U409	EQ500117	CHIP FET P HAT1053M
U501	EHA11061	IC SMD APA4838 AUDIO AMPL
*** TRANSISTORS ***		
D402	EX500216	CHIP DIODE DAN217 T146
D403	EX500216	CHIP DIODE DAN217 T146
D404	EX500216	CHIP DIODE DAN217 T146
Q401	EN000413	CHIP TR NPN 2SC2412K-T146
Q404	EN000413	CHIP TR NPN 2SC2412K-T146
Q405	EN000413	CHIP TR NPN 2SC2412K-T146
Q406	EN000413	CHIP TR NPN 2SC2412K-T146
Q407	EN000413	CHIP TR NPN 2SC2412K-T146
*** DIODES ***		
D401	EX700216	DIODE RB495D
D405	EJ100231	DIODE 1N4001
D801	EL200110	DIODE LED SML19460C
ZD401	EYD40562	CHIP DIODE ZENER UDZS5.6B
ZD402	EYD40562	CHIP DIODE ZENER UDZS5.6B
ZD405	EYD40562	CHIP DIODE ZENER UDZS5.6B
ZD406	EYD40562	CHIP DIODE ZENER UDZS5.6B
*** PWB ASSYS ***		
MAININ	AM0R51MN	MAIN INSERT ASSY
POWERB	JM100061	POWER B/D (15NEC)"
SWASSY	AS0R51ML	SW INSERT ASSY
*** COILS & FILTERS ***		
B401	HM011532	CHIP FERRITE BK2125HS431
B402	HM011532	CHIP FERRITE BK2125HS431
B403	HM017021	L BEAD SMD MCB1608S121G
B405	HM017031	L BEAD SMD MHC1608S121P
B406	HM017011	L BEAD SMD MCB2012S121H

SYMBOL	Part No for NPG	DESCRIPTION
B407	HM017021	L BEAD SMD MCB1608S121G
B408	HM017021	L BEAD SMD MCB1608S121G
B409	HM017021	L BEAD SMD MCB1608S121G
B410	HM017021	L BEAD SMD MCB1608S121G
B411	HM017021	L BEAD SMD MCB1608S121G
B412	HM017021	L BEAD SMD MCB1608S121G
B413	HM017021	L BEAD SMD MCB1608S121G
B414	HM017021	L BEAD SMD MCB1608S121G
B415	HM017021	L BEAD SMD MCB1608S121G
B416	HM017021	L BEAD SMD MCB1608S121G
B417	HM017021	L BEAD SMD MCB1608S121G
B418	HM017021	L BEAD SMD MCB1608S121G
B419	HM017031	L BEAD SMD MHC1608S121P
B420	HM017031	L BEAD SMD MHC1608S121P
B422	HM017021	L BEAD SMD MCB1608S121G
B423	HM017061	L BEAD SMD MCB1608H750G
B424	HM017061	L BEAD SMD MCB1608H750G
B425	HM017061	L BEAD SMD MCB1608H750G
B501	HC006002	BEAD 3.5X4.7/T
L501	HA200271	L CHOKE 10UH 8/10

*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***

CABLEA	RE090021	CABLE AUDIO BLK 1.8M
CABLEV	RE010171	CABLE VIDEO DSUB-DSUB 1.8
J501	JD050041	SOCKET PHONE 2SJ-0513-A10
J502	JD050051	SOCKET PHONE 2SJ-0511-A13
LCD	JG555011	LCD NL10276BC30-10 NEC
PWCORD	RG020021	PW CORD NA 1.8M BLK WANSH
SPEASS	JN100021	SPEAKER ASSY
WIRE20	RC200291	WIRE 20P-20P L90 LVDS
WIRE9	RC200272	WIRE 9P-9P P=2.0 L260
X401	EM100081	OSC X'TAL 14.318MHZ 49/U-

*** APPEARANCE PARTS ***

BACK	10104211	BACK,L152R5-BK-NSP
BEZEL	10104221	BEZEL,L152R5-BK-NSP-ASSY
CHASSI	12000881	CHASSIS BASE,L152R5-NSP-L
FOOT	17001441	FOOT RUBBER
KNOB	11301681	KNOB CONTROL,L152R5-BK
PADSPE	17001471	PAD,SPEAKER
STCOL	11002151	STAND COVER B,L152R5-BK
STCOT	11002141	STAND COVER T,L152R5-BK

*** PRINTED & PACKING MATERIALS ***

CARTON	13202931	CARTON,AS51VM BK(A)-NSP
CARBO	13203381	CARTON BOARD L152R5(378X112)
FILLB	13401221	FILLER B,L152R5(A)
FILLT	13401211	FILLER T,L152R5(A)
MANUAL	15501681	MANUAL,L152R5 L172R6(A)-N

SYMBOL	Part No for NPG	DESCRIPTION
NAVISE	15900251	NAVI SET SHEET
PACKIN	13700321	PE BAG (750*450MM)
PEBAG	13700461	PE BAG (370*270MM)
RATING	15002581	RATING LABEL,AS51VM BK(A)
SETUP	15800401	SHEET,SETUP AS51VM WH(A)-

*** RESISTORS ***

R402	FM010101	CHIP RES 1/10W(T) 5% 100O
R403	FN012009	R SMD 1/10W 20H F 0603
R404	FM010473	CHIP 1/10W(T) 5% 47K
R405	FM010272	R SMD METAL 1/10W 2.7K J
R406	FN012009	R SMD 1/10W 20H F 0603
R407	FM010101	CHIP RES 1/10W(T) 5% 100O
R408	FN012009	R SMD 1/10W 20H F 0603
R409	FN517509	R CHIP 1/3W(T) 1% 75
R410	FN517509	R CHIP 1/3W(T) 1% 75
R411	FN517509	R CHIP 1/3W(T) 1% 75
R412	FN015769	R SMD 1/10W 57.6H F 0603
R413	FN015769	R SMD 1/10W 57.6H F 0603
R414	FN015769	R SMD 1/10W 57.6H F 0603
R415	FN012009	R SMD 1/10W 20H F 0603
R416	FN012009	R SMD 1/10W 20H F 0603
R417	FM010222	CHIP RES 1/10W(T) 5% 2.2K
R418	FM010222	CHIP RES 1/10W(T) 5% 2.2K
R419	FM010104	CHIP RES 1/10W(T) 5% 100K
R420	FM010103	CHIP RES 1/10W(T) 5% 10KO
R421	FM010103	CHIP RES 1/10W(T) 5% 10KO
R423	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R425	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R426	FM010103	CHIP RES 1/10W(T) 5% 10KO
R427	FM010103	CHIP RES 1/10W(T) 5% 10KO
R428	FM010103	CHIP RES 1/10W(T) 5% 10KO
R429	FM010103	CHIP RES 1/10W(T) 5% 10KO
R430	FM010101	CHIP RES 1/10W(T) 5% 100O
R433	FM010101	CHIP RES 1/10W(T) 5% 100O
R436	FM010103	CHIP RES 1/10W(T) 5% 10KO
R438	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R439	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R440	FM010103	CHIP RES 1/10W(T) 5% 10KO
R441	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R442	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R443	FM010103	CHIP RES 1/10W(T) 5% 10KO
R444	FM010103	CHIP RES 1/10W(T) 5% 10KO
R446	FM010103	CHIP RES 1/10W(T) 5% 10KO
R448	FM010103	CHIP RES 1/10W(T) 5% 10KO
R449	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R450	FM010101	CHIP RES 1/10W(T) 5% 100O
R451	FM010101	CHIP RES 1/10W(T) 5% 100O

SYMBOL	Part No for NPG	DESCRIPTION
R453	FM010473	CHIP 1/10W(T) 5% 47K
R454	FM010472	CHIP RES 1/10W(T) 5% 4.7K
R455	FM010103	CHIP RES 1/10W(T) 5% 10KO
R456	FM010103	CHIP RES 1/10W(T) 5% 10KO
R457	FM010103	CHIP RES 1/10W(T) 5% 10KO
R459	FM010103	CHIP RES 1/10W(T) 5% 10KO
R460	FM010102	CHIP RES 1/10W (T) 5% 1KO
R461	FM010472	CHIP RES 1/10W(T) 5% 4.7K
R462	FM010103	CHIP RES 1/10W(T) 5% 10KO
R464	FM010103	CHIP RES 1/10W(T) 5% 10KO
R465	FM010103	CHIP RES 1/10W(T) 5% 10KO
R466	FM010103	CHIP RES 1/10W(T) 5% 10KO
R467	FM010103	CHIP RES 1/10W(T) 5% 10KO
R468	FM010103	CHIP RES 1/10W(T) 5% 10KO
R469	FM010103	CHIP RES 1/10W(T) 5% 10KO
R470	FM010103	CHIP RES 1/10W(T) 5% 10KO
R473	FM010103	CHIP RES 1/10W(T) 5% 10KO
R474	FM010103	CHIP RES 1/10W(T) 5% 10KO
R479	FM010101	CHIP RES 1/10W(T) 5% 100O
R480	FM010101	CHIP RES 1/10W(T) 5% 100O
R501	FN015102	R SMD METAL 1/10W 51K H F
R502	FN012002	R SMD 1/10W 20K H F 0603
R503	FM010560	CHIP RES 1/10W(T) 5% 56OH
R504	FN015102	R SMD METAL 1/10W 51K H F
R505	FN012002	R SMD 1/10W 20K H F 0603
R508	FM010560	CHIP RES 1/10W(T) 5% 56OH
R509	FM010102	CHIP RES 1/10W (T) 5% 1KO
R510	FM010102	CHIP RES 1/10W (T) 5% 1KO
R511	FM010102	CHIP RES 1/10W (T) 5% 1KO
R512	FM010104	CHIP RES 1/10W(T) 5% 100K
R513	FM010104	CHIP RES 1/10W(T) 5% 100K
R514	FM010104	CHIP RES 1/10W(T) 5% 100K
R515	FM010473	CHIP 1/10W(T) 5% 47K
R516	FM010104	CHIP RES 1/10W(T) 5% 100K
R518	FM010103	CHIP RES 1/10W(T) 5% 10KO
R519	FM010123	R SMD METAL 1/10W 12K J T
R520	FM010103	CHIP RES 1/10W(T) 5% 10KO
R521	FM010123	R SMD METAL 1/10W 12K J T

*** CAPACITORS ***

C401	GX410423	C SMD X7R 0.1U 16V K 0603
C402	GX410353	C SMD X7R 0.01U 50V K 060
C403	GX410353	C SMD X7R 0.01U 50V K 060
C404	GX410353	C SMD X7R 0.01U 50V K 060
C405	GX410353	C SMD X7R 0.01U 50V K 060
C406	GX410353	C SMD X7R 0.01U 50V K 060
C407	GX410353	C SMD X7R 0.01U 50V K 060
C408	GX447052	C SMD C0G 47P 50V J 0603

SYMBOL	Part No for NPG	DESCRIPTION
C409	GX447052	C SMD C0G 47P 50V J 0603
C410	GX410423	C SMD X7R 0.1U 16V K 0603
C411	GX410423	C SMD X7R 0.1U 16V K 0603
C412	GGM22615	C ELE105 22U 10V M(T) LOW
C413	GX410423	C SMD X7R 0.1U 16V K 0603
C414	GX410423	C SMD X7R 0.1U 16V K 0603
C415	GX410423	C SMD X7R 0.1U 16V K 0603
C416	GX410423	C SMD X7R 0.1U 16V K 0603
C417	GX410423	C SMD X7R 0.1U 16V K 0603
C418	GX410423	C SMD X7R 0.1U 16V K 0603
C419	GX410423	C SMD X7R 0.1U 16V K 0603
C420	GX410423	C SMD X7R 0.1U 16V K 0603
C421	GX410423	C SMD X7R 0.1U 16V K 0603
C422	GGR22714	VC ELE105 220U 10V M (T)L
C423	GX410423	C SMD X7R 0.1U 16V K 0603
C424	GX410423	C SMD X7R 0.1U 16V K 0603
C425	GX410423	C SMD X7R 0.1U 16V K 0603
C426	GGR68714	C ELE105 680U 10V M(T) LO
C427	GX410423	C SMD X7R 0.1U 16V K 0603
C428	GGM22615	C ELE105 22U 10V M(T) LOW
C429	GX410423	C SMD X7R 0.1U 16V K 0603
C430	GX410423	C SMD X7R 0.1U 16V K 0603
C431	GX410423	C SMD X7R 0.1U 16V K 0603
C432	GX410423	C SMD X7R 0.1U 16V K 0603
C433	GX410423	C SMD X7R 0.1U 16V K 0603
C434	GX410423	C SMD X7R 0.1U 16V K 0603
C435	GX410423	C SMD X7R 0.1U 16V K 0603
C436	GGM22615	C ELE105 22U 10V M(T) LOW
C437	GX410423	C SMD X7R 0.1U 16V K 0603
C438	GX410423	C SMD X7R 0.1U 16V K 0603
C439	GX410423	C SMD X7R 0.1U 16V K 0603
C440	GX410423	C SMD X7R 0.1U 16V K 0603
C441	GX410423	C SMD X7R 0.1U 16V K 0603
C442	GX410423	C SMD X7R 0.1U 16V K 0603
C443	GGM22615	C ELE105 22U 10V M(T) LOW
C444	GX410423	C SMD X7R 0.1U 16V K 0603
C445	GX410423	C SMD X7R 0.1U 16V K 0603
C446	GX410423	C SMD X7R 0.1U 16V K 0603
C447	GX410423	C SMD X7R 0.1U 16V K 0603
C448	GX410423	C SMD X7R 0.1U 16V K 0603
C449	GGM22615	C ELE105 22U 10V M(T) LOW
C450	GX410423	C SMD X7R 0.1U 16V K 0603
C451	GX410423	C SMD X7R 0.1U 16V K 0603
C452	GX410423	C SMD X7R 0.1U 16V K 0603
C453	GX405052	C SMD C0G 5P 50V J 0603
C454	GX405052	C SMD C0G 5P 50V J 0603
C455	GX410423	C SMD X7R 0.1U 16V K 0603
C457	GX410423	C SMD X7R 0.1U 16V K 0603

SYMBOL	Part No for NPG	DESCRIPTION
C458	GX410423	C SMD X7R 0.1U 16V K 0603
C459	GX410423	C SMD X7R 0.1U 16V K 0603
C460	GX410423	C SMD X7R 0.1U 16V K 0603
C461	GX410423	C SMD X7R 0.1U 16V K 0603
C462	GX410423	C SMD X7R 0.1U 16V K 0603
C463	GX410423	C SMD X7R 0.1U 16V K 0603
C469	GGR68714	C ELE105 680U 10V M(T) LO
C470	GX410353	C SMD X7R 0.01U 50V K 060
C471	GGR68714	C ELE105 680U 10V M(T) LO
C472	GX410353	C SMD X7R 0.01U 50V K 060
C473	GX433052	C SMD C0G 33P 50V J 0603
C474	GX433052	C SMD C0G 33P 50V J 0603
C475	GGR68714	C ELE105 680U 10V M(T) LO
C476	GGM47535	C ELE105 4.7U 25V M(T) LO
C478	GX410253	C SMD X7R 1000P 50V K 060
C501	GX410423	C SMD X7R 0.1U 16V K 0603
C502	GX410423	C SMD X7R 0.1U 16V K 0603
C503	GGR10714	C ELE105 100U 10V M (T) L
C504	GX410423	C SMD X7R 0.1U 16V K 0603
C505	GX410423	C SMD X7R 0.1U 16V K 0603
C506	GGR10714	C ELE105 100U 10V M (T) L
C507	GX410423	C SMD X7R 0.1U 16V K 0603
C508	GX410423	C SMD X7R 0.1U 16V K 0603
C510	GX427152	C SMD NPO 270P 50V 0603
C512	GX010558	C SMD Y5V 1U 50V Z 0805
C513	GX427152	C SMD NPO 270P 50V 0603
C514	GX410423	C SMD X7R 0.1U 16V K 0603
C515	GGR10714	C ELE105 100U 10V M (T) L
C516	GGR47724	C ELE105 470U 16V M(T) LO
C517	GGR47724	C ELE105 470U 16V M(T) LO
C518	GGM47535	C ELE105 4.7U 25V M(T) LO
C519	GGM47530	C ELE105 4.7U 25V M(T) LO

REPLACEMENT PARTS LIST(For Europe)

The components specified for Model LCD51VM(B)-BK

SYMBOL	Part No for NPG	DESCRIPTION
*** ICS ***		
U401	EHA50051	IC SMD 24LC02B
U402	EHA50011	IC MOS 74LVC14
U403	EHA10561	IC SMD PJ1084CM-3.3 REGUL
U404	EH110301	IC PJ1117CZ-2.5V TO-220
U405	EHA10592	IC SMD GM2111 AD SCALER
U406	EHA10471	IC SMD MIC1815 RESET
U407	EHA11001	IC PLCC32 A290011TL-70 ME
U408	EHA10081	IC SMD 24LC16B SO8
U409	EQ500117	CHIP FET P HAT1053M
U501	EHA11061	IC SMD APA4838 AUDIO AMPL
*** TRANSISTORS ***		
D402	EX500216	CHIP DIODE DAN217 T146
D403	EX500216	CHIP DIODE DAN217 T146
D404	EX500216	CHIP DIODE DAN217 T146
Q401	EN000413	CHIP TR NPN 2SC2412K-T146
Q404	EN000413	CHIP TR NPN 2SC2412K-T146
Q405	EN000413	CHIP TR NPN 2SC2412K-T146
Q406	EN000413	CHIP TR NPN 2SC2412K-T146
Q407	EN000413	CHIP TR NPN 2SC2412K-T146
*** DIODES ***		
D401	EX700216	DIODE RB495D
D405	EJ100231	DIODE 1N4001
D801	EL200110	DIODE LED SML19460C
ZD401	EYD40562	CHIP DIODE ZENER UDZS5.6B
ZD402	EYD40562	CHIP DIODE ZENER UDZS5.6B
ZD405	EYD40562	CHIP DIODE ZENER UDZS5.6B
ZD406	EYD40562	CHIP DIODE ZENER UDZS5.6B
*** RELAYS & SWITCHES ***		
SW801	JC300111	SW-TACT SKQNAED010
SW802	JC300111	SW-TACT SKQNAED010
SW803	JC300111	SW-TACT SKQNAED010
SW804	JC300111	SW-TACT SKQNAED010
SW805	JC300111	SW-TACT SKQNAED010
*** PWB ASSYS ***		
MAINAS	AM0R51MN	MAIN INSERT ASSY
POWEBD	JM100061	POWER B/D (15NEC)"
SWASSY	AS0R51ML	SW INSERT ASSY

SYMBOL	Part No for NPG	DESCRIPTION

*** COILS & FILTERS ***

B401	HM011532	CHIP FERRITE BK2125HS431
B402	HM011532	CHIP FERRITE BK2125HS431
B403	HM017021	L BEAD SMD MCB1608S121G
B405	HM017031	L BEAD SMD MHC1608S121P
B406	HM017011	L BEAD SMD MCB2012S121H
B407	HM017021	L BEAD SMD MCB1608S121G
B408	HM017021	L BEAD SMD MCB1608S121G
B409	HM017021	L BEAD SMD MCB1608S121G
B410	HM017021	L BEAD SMD MCB1608S121G
B411	HM017021	L BEAD SMD MCB1608S121G
B412	HM017021	L BEAD SMD MCB1608S121G
B413	HM017021	L BEAD SMD MCB1608S121G
B414	HM017021	L BEAD SMD MCB1608S121G
B415	HM017021	L BEAD SMD MCB1608S121G
B416	HM017021	L BEAD SMD MCB1608S121G
B417	HM017021	L BEAD SMD MCB1608S121G
B418	HM017021	L BEAD SMD MCB1608S121G
B419	HM017031	L BEAD SMD MHC1608S121P
B420	HM017031	L BEAD SMD MHC1608S121P
B422	HM017021	L BEAD SMD MCB1608S121G
B423	HM017061	L BEAD SMD MCB1608H750G
B424	HM017061	L BEAD SMD MCB1608H750G
B425	HM017061	L BEAD SMD MCB1608H750G
B501	HC006002	BEAD 3.5X4.7/T
L501	HA200271	L CHOKE 10UH 8/10

*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***

CABLEA	RE090021	CABLE AUDIO BLK 1.8M
CABLEV	RE010171	CABLE VIDEO DSUB-DSUB 1.8
J501	JD050041	SOCKET PHONE 2SJ-0513-A10
J502	JD050051	SOCKET PHONE 2SJ-0511-A13
LCD	JG555011	LCD NL10276BC30-10 NEC
PWCORD	RG030041	PW CORD EU 1.8M BLK WANSH
SPEAKA	JN100021	SPEAKER ASSY
WIRE20	RC200291	WIRE 20P-20P L90 LVDS
WIRE9P	RC200272	WIRE 9P-9P P=2.0 L260
X401	EM100081	OSC X'TAL 14.318MHZ 49/U-

*** APPEARANCE PARTS ***

BACK	10104211	BACK,L152R5-BK-NSP
BEZELA	10104231	BEZEL,L152R5-BK(B)-NSP-AS
CHASSI	12000881	CHASSIS BASE,L152R5-NSP-L
FOOT	17001441	FOOT RUBBER
KNOB	11301681	KNOB CONTROL,L152R5-BK
STCOVB	11002151	STAND COVER B,L152R5-BK
STCOVT	11002141	STAND COVER T,L152R5-BK

SYMBOL	Part No for NPG	DESCRIPTION

*** PRINTED & PACKING MATERIALS ***

CARTON	13202941	CARTON,AS51VM BK(B)-NSP
CARTSH	13202401	CARTON SHEET FOR 15 IN LC
CAUTSH	15800231	CAUTION SHEET
CARBO	13203381	CARTON BOARD L152R5(378X112)
CDASSY	19700381	CD,AS51VM(B)-NSP
CDROM	19700371	CD-ROM, LCD71VM(B)
EPEBAG	13700621	EPE BAG (390*440)
FILLB	13401221	FILLER B,L152R5(A)
FILLT	13401211	FILLER T,L152R5(A)
MANUAL	15501701	MANUAL,L152R5 L172R6(B)
MONITO	13700321	PE BAG (750*450MM)
NAVISE	15900251	NAVI SET SHEET
NMCLUB	15800171	NM CLUB SHEET
PADSPE	17001471	PAD,SPEAKER
PEBAG	13700461	PE BAG (370*270MM)
RATING	15002591	RATING LABEL,AS51VM BK(B)
SALES	15900055	SALES OFFICE LIST
SALESL	15900056	SALES OFFICE LIST
SETUP	15800411	SHEET,SETUP AS51VM(B)-NSP

*** RESISTORS ***

R402	FM010101	CHIP RES 1/10W(T) 5% 100O
R403	FN012009	R SMD 1/10W 20H F 0603
R404	FM010473	CHIP 1/10W(T) 5% 47K
R405	FM010272	R SMD METAL 1/10W 2.7K J
R406	FN012009	R SMD 1/10W 20H F 0603
R407	FM010101	CHIP RES 1/10W(T) 5% 100O
R408	FN012009	R SMD 1/10W 20H F 0603
R409	FN517509	R SMD METAL 1/3W 75 F T 1
R410	FN517509	R SMD METAL 1/3W 75 F T 1
R411	FN517509	R SMD METAL 1/3W 75 F T 1
R412	FN015769	R SMD 1/10W 57.6H F 0603
R413	FN015769	R SMD 1/10W 57.6H F 0603
R414	FN015769	R SMD 1/10W 57.6H F 0603
R415	FN012009	R SMD 1/10W 20H F 0603
R416	FN012009	R SMD 1/10W 20H F 0603
R417	FM010222	CHIP RES 1/10W(T) 5% 2.2K
R418	FM010222	CHIP RES 1/10W(T) 5% 2.2K
R419	FM010104	CHIP RES 1/10W(T) 5% 100K
R420	FM010103	CHIP RES 1/10W(T) 5% 10KO
R421	FM010103	CHIP RES 1/10W(T) 5% 10KO
R423	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R425	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R426	FM010103	CHIP RES 1/10W(T) 5% 10KO
R427	FM010103	CHIP RES 1/10W(T) 5% 10KO
R428	FM010103	CHIP RES 1/10W(T) 5% 10KO
R429	FM010103	CHIP RES 1/10W(T) 5% 10KO

SYMBOL	Part No for NPG	DESCRIPTION
R430	FM010101	CHIP RES 1/10W(T) 5% 100O
R433	FM010101	CHIP RES 1/10W(T) 5% 100O
R436	FM010103	CHIP RES 1/10W(T) 5% 10KO
R438	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R439	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R440	FM010103	CHIP RES 1/10W(T) 5% 10KO
R441	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R442	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R443	FM010103	CHIP RES 1/10W(T) 5% 10KO
R444	FM010103	CHIP RES 1/10W(T) 5% 10KO
R446	FM010103	CHIP RES 1/10W(T) 5% 10KO
R448	FM010103	CHIP RES 1/10W(T) 5% 10KO
R449	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R450	FM010101	CHIP RES 1/10W(T) 5% 100O
R451	FM010101	CHIP RES 1/10W(T) 5% 100O
R453	FM010473	CHIP 1/10W(T) 5% 47K
R454	FM010472	CHIP RES 1/10W(T) 5% 4.7K
R455	FM010103	CHIP RES 1/10W(T) 5% 10KO
R456	FM010103	CHIP RES 1/10W(T) 5% 10KO
R457	FM010103	CHIP RES 1/10W(T) 5% 10KO
R459	FM010103	CHIP RES 1/10W(T) 5% 10KO
R460	FM010102	CHIP RES 1/10W (T) 5% 1KO
R461	FM010472	CHIP RES 1/10W(T) 5% 4.7K
R462	FM010103	CHIP RES 1/10W(T) 5% 10KO
R464	FM010103	CHIP RES 1/10W(T) 5% 10KO
R465	FM010103	CHIP RES 1/10W(T) 5% 10KO
R466	FM010103	CHIP RES 1/10W(T) 5% 10KO
R467	FM010103	CHIP RES 1/10W(T) 5% 10KO
R468	FM010103	CHIP RES 1/10W(T) 5% 10KO
R469	FM010103	CHIP RES 1/10W(T) 5% 10KO
R470	FM010103	CHIP RES 1/10W(T) 5% 10KO
R473	FM010103	CHIP RES 1/10W(T) 5% 10KO
R474	FM010103	CHIP RES 1/10W(T) 5% 10KO
R479	FM010101	CHIP RES 1/10W(T) 5% 100O
R480	FM010101	CHIP RES 1/10W(T) 5% 100O
R501	FN015102	R SMD METAL 1/10W 51K H F
R502	FN012002	R SMD 1/10W 20K H F 0603
R503	FM010560	CHIP RES 1/10W(T) 5% 56OH
R504	FN015102	R SMD METAL 1/10W 51K H F
R505	FN012002	R SMD 1/10W 20K H F 0603
R508	FM010560	CHIP RES 1/10W(T) 5% 56OH
R509	FM010102	CHIP RES 1/10W (T) 5% 1KO
R510	FM010102	CHIP RES 1/10W (T) 5% 1KO
R511	FM010102	CHIP RES 1/10W (T) 5% 1KO
R512	FM010104	CHIP RES 1/10W(T) 5% 100K
R513	FM010104	CHIP RES 1/10W(T) 5% 100K
R514	FM010104	CHIP RES 1/10W(T) 5% 100K
R515	FM010473	CHIP 1/10W(T) 5% 47K

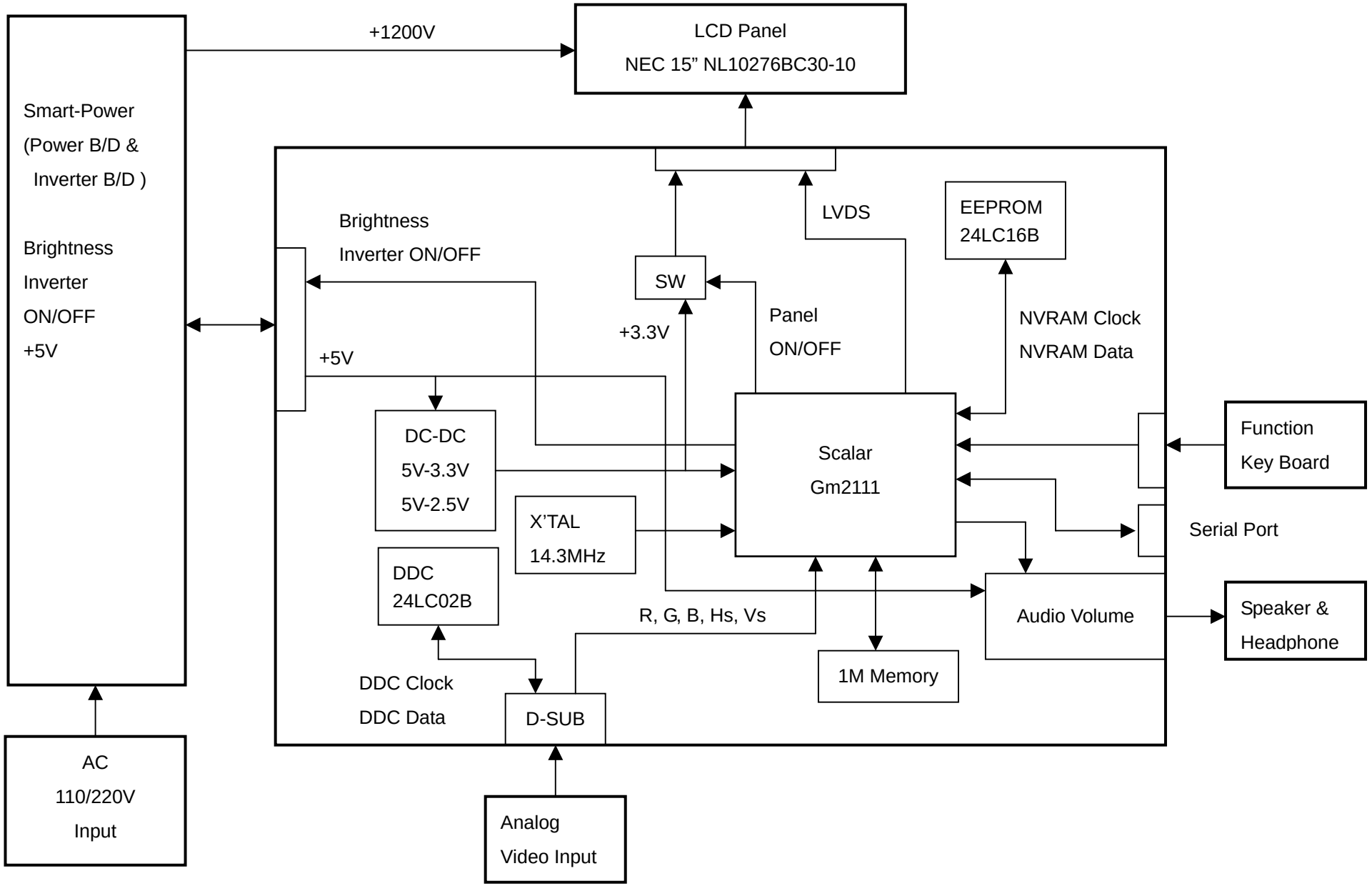
SYMBOL	Part No for NPG	DESCRIPTION
R516	FM010104	CHIP RES 1/10W(T) 5% 100K
R518	FM010103	CHIP RES 1/10W(T) 5% 10KO
R519	FM010123	R SMD METAL 1/10W 12K J T
R520	FM010103	CHIP RES 1/10W(T) 5% 10KO
R521	FM010123	R SMD METAL 1/10W 12K J T

*** CAPACITORS ***

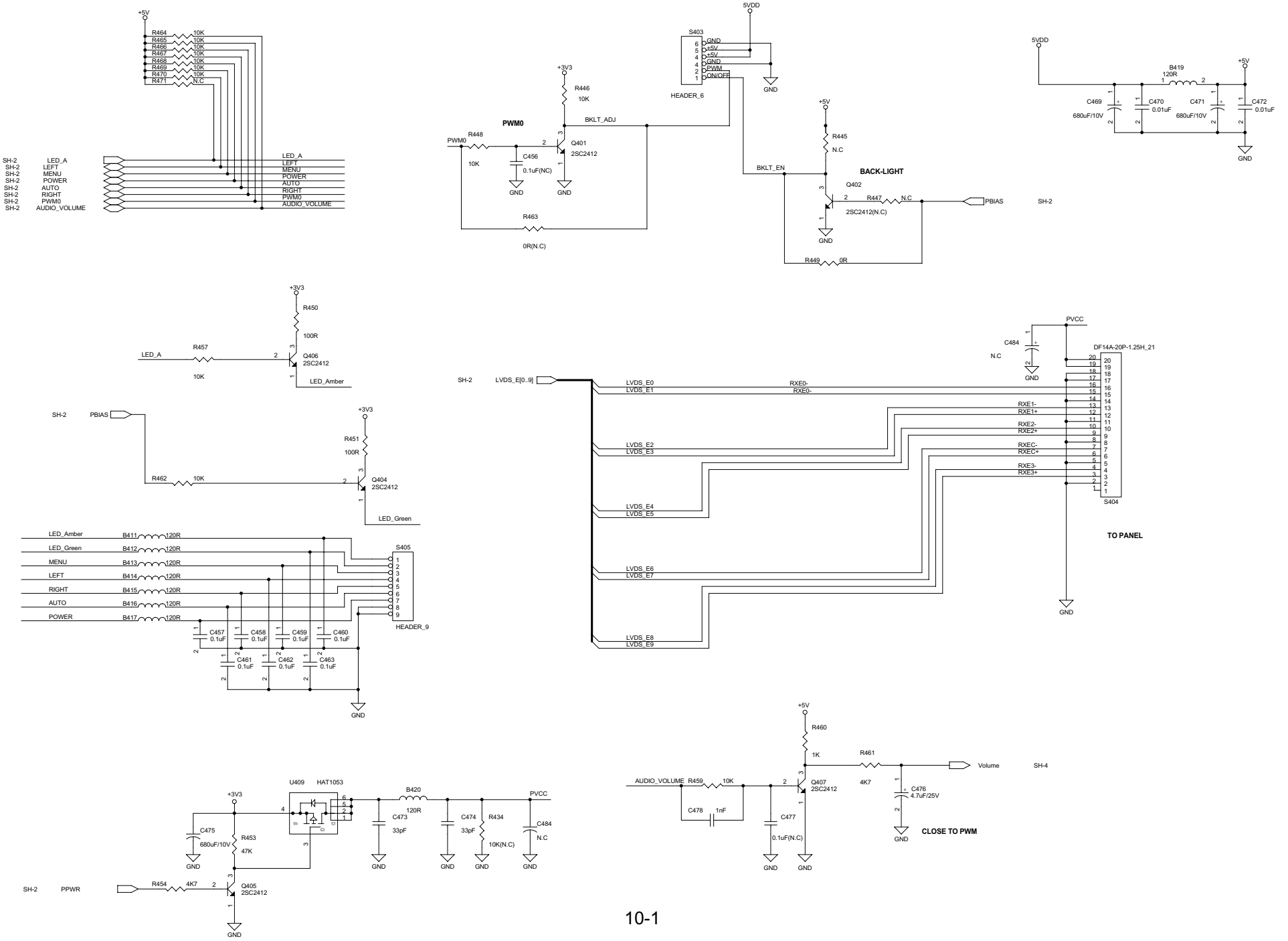
C401	GX410423	C SMD X7R 0.1U 16V K 0603
C402	GX410353	C SMD X7R 0.01U 50V K 060
C403	GX410353	C SMD X7R 0.01U 50V K 060
C404	GX410353	C SMD X7R 0.01U 50V K 060
C405	GX410353	C SMD X7R 0.01U 50V K 060
C406	GX410353	C SMD X7R 0.01U 50V K 060
C407	GX410353	C SMD X7R 0.01U 50V K 060
C408	GX447052	C SMD C0G 47P 50V J 0603
C409	GX447052	C SMD C0G 47P 50V J 0603
C410	GX410423	C SMD X7R 0.1U 16V K 0603
C411	GX410423	C SMD X7R 0.1U 16V K 0603
C412	GGM22615	C ELE105 22U 10V M(T) LOW
C413	GX410423	C SMD X7R 0.1U 16V K 0603
C414	GX410423	C SMD X7R 0.1U 16V K 0603
C415	GX410423	C SMD X7R 0.1U 16V K 0603
C416	GX410423	C SMD X7R 0.1U 16V K 0603
C417	GX410423	C SMD X7R 0.1U 16V K 0603
C418	GX410423	C SMD X7R 0.1U 16V K 0603
C419	GX410423	C SMD X7R 0.1U 16V K 0603
C420	GX410423	C SMD X7R 0.1U 16V K 0603
C421	GX410423	C SMD X7R 0.1U 16V K 0603
C422	GGR22714	VC ELE105 220U 10V M (T)L
C423	GX410423	C SMD X7R 0.1U 16V K 0603
C424	GX410423	C SMD X7R 0.1U 16V K 0603
C425	GX410423	C SMD X7R 0.1U 16V K 0603
C426	GGR68714	C ELE105 680U 10V M(T) LO
C427	GX410423	C SMD X7R 0.1U 16V K 0603
C428	GGM22615	C ELE105 22U 10V M(T) LOW
C429	GX410423	C SMD X7R 0.1U 16V K 0603
C430	GX410423	C SMD X7R 0.1U 16V K 0603
C431	GX410423	C SMD X7R 0.1U 16V K 0603
C432	GX410423	C SMD X7R 0.1U 16V K 0603
C433	GX410423	C SMD X7R 0.1U 16V K 0603
C434	GX410423	C SMD X7R 0.1U 16V K 0603
C435	GX410423	C SMD X7R 0.1U 16V K 0603
C436	GGM22615	C ELE105 22U 10V M(T) LOW
C437	GX410423	C SMD X7R 0.1U 16V K 0603
C438	GX410423	C SMD X7R 0.1U 16V K 0603
C439	GX410423	C SMD X7R 0.1U 16V K 0603
C440	GX410423	C SMD X7R 0.1U 16V K 0603
C441	GX410423	C SMD X7R 0.1U 16V K 0603

SYMBOL	Part No for NPG	DESCRIPTION
C442	GX410423	C SMD X7R 0.1U 16V K 0603
C443	GGM22615	C ELE105 22U 10V M(T) LOW
C444	GX410423	C SMD X7R 0.1U 16V K 0603
C445	GX410423	C SMD X7R 0.1U 16V K 0603
C446	GX410423	C SMD X7R 0.1U 16V K 0603
C447	GX410423	C SMD X7R 0.1U 16V K 0603
C448	GX410423	C SMD X7R 0.1U 16V K 0603
C449	GGM22615	C ELE105 22U 10V M(T) LOW
C450	GX410423	C SMD X7R 0.1U 16V K 0603
C451	GX410423	C SMD X7R 0.1U 16V K 0603
C452	GX410423	C SMD X7R 0.1U 16V K 0603
C453	GX405052	C SMD C0G 5P 50V J 0603
C454	GX405052	C SMD C0G 5P 50V J 0603
C455	GX410423	C SMD X7R 0.1U 16V K 0603
C457	GX410423	C SMD X7R 0.1U 16V K 0603
C458	GX410423	C SMD X7R 0.1U 16V K 0603
C459	GX410423	C SMD X7R 0.1U 16V K 0603
C460	GX410423	C SMD X7R 0.1U 16V K 0603
C461	GX410423	C SMD X7R 0.1U 16V K 0603
C462	GX410423	C SMD X7R 0.1U 16V K 0603
C463	GX410423	C SMD X7R 0.1U 16V K 0603
C469	GGR68714	C ELE105 680U 10V M(T) LO
C470	GX410353	C SMD X7R 0.01U 50V K 060
C471	GGR68714	C ELE105 680U 10V M(T) LO
C472	GX410353	C SMD X7R 0.01U 50V K 060
C473	GX433052	C SMD C0G 33P 50V J 0603
C474	GX433052	C SMD C0G 33P 50V J 0603
C475	GGR68714	C ELE105 680U 10V M(T) LO
C476	GGM47535	C ELE105 4.7U 25V M(T) LO
C478	GX410253	C SMD X7R 1000P 50V K 060
C501	GX410423	C SMD X7R 0.1U 16V K 0603
C502	GX410423	C SMD X7R 0.1U 16V K 0603
C503	GGR10714	C ELE105 100U 10V M (T) L
C504	GX410423	C SMD X7R 0.1U 16V K 0603
C505	GX410423	C SMD X7R 0.1U 16V K 0603
C506	GGR10714	C ELE105 100U 10V M (T) L
C507	GX410423	C SMD X7R 0.1U 16V K 0603
C508	GX410423	C SMD X7R 0.1U 16V K 0603
C510	GX427152	C SMD NPO 270P 50V 0603
C512	GX010558	C SMD Y5V 1U 50V Z 0805
C513	GX427152	C SMD NPO 270P 50V 0603
C514	GX410423	C SMD X7R 0.1U 16V K 0603
C515	GGR10714	C ELE105 100U 10V M (T) L
C516	GGR47724	C ELE105 470U 16V M(T) LO
C517	GGR47724	C ELE105 470U 16V M(T) LO
C518	GGM47535	C ELE105 4.7U 25V M(T) LO
C519	GGM47530	C ELE105 4.7U 25V M(T) LO

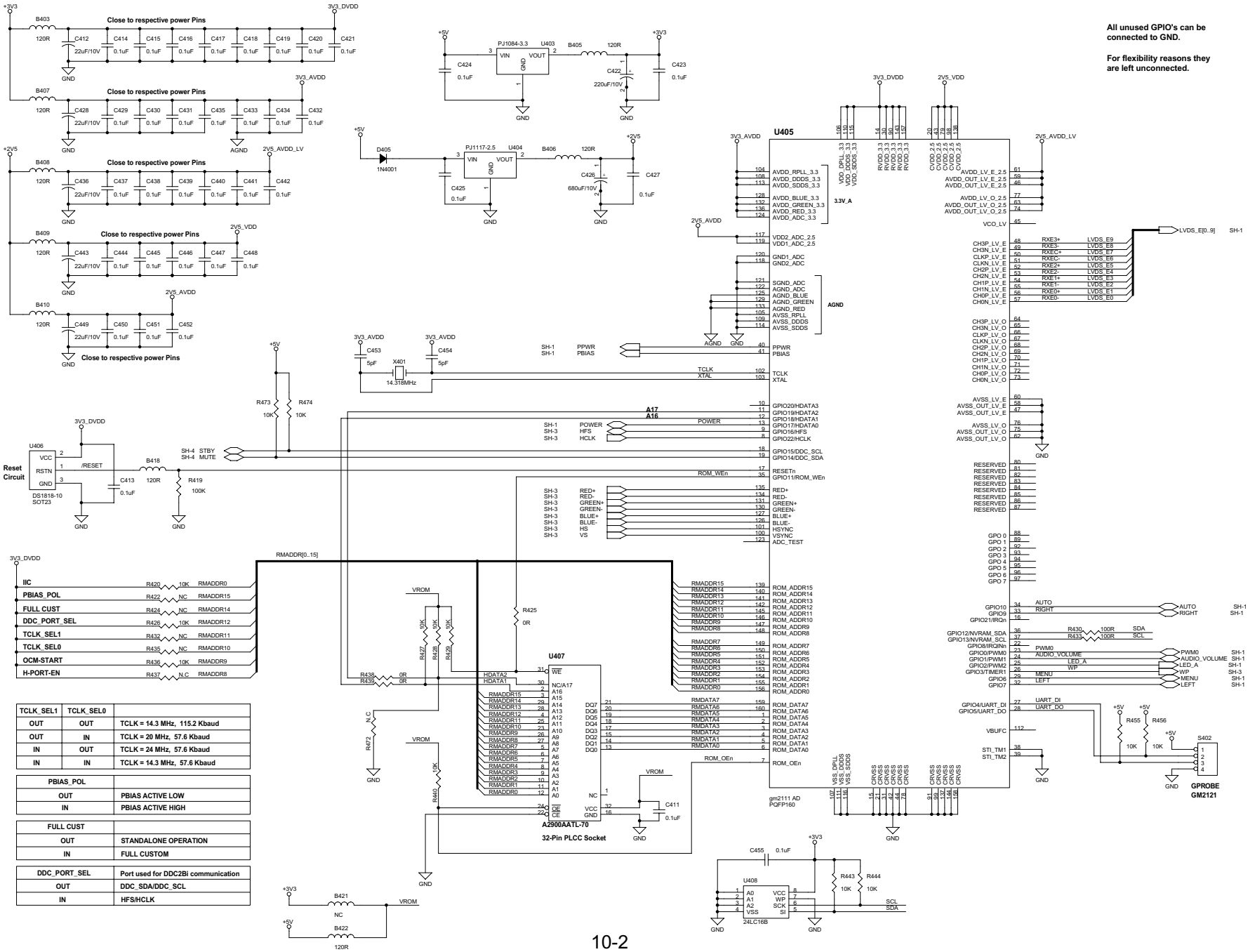
BLOCK DIAGRAM Internal Power type (L152R5-15VM-NEC)



MODEL LCD51VM / LCD51V SCHEMATIC DIAGRAM MAIN BOARD (Display) (1/4)



MODEL LCD51VM / LCD51V SCHEMATIC DIAGRAM MAIN BOARD (Scaler) (2/4)



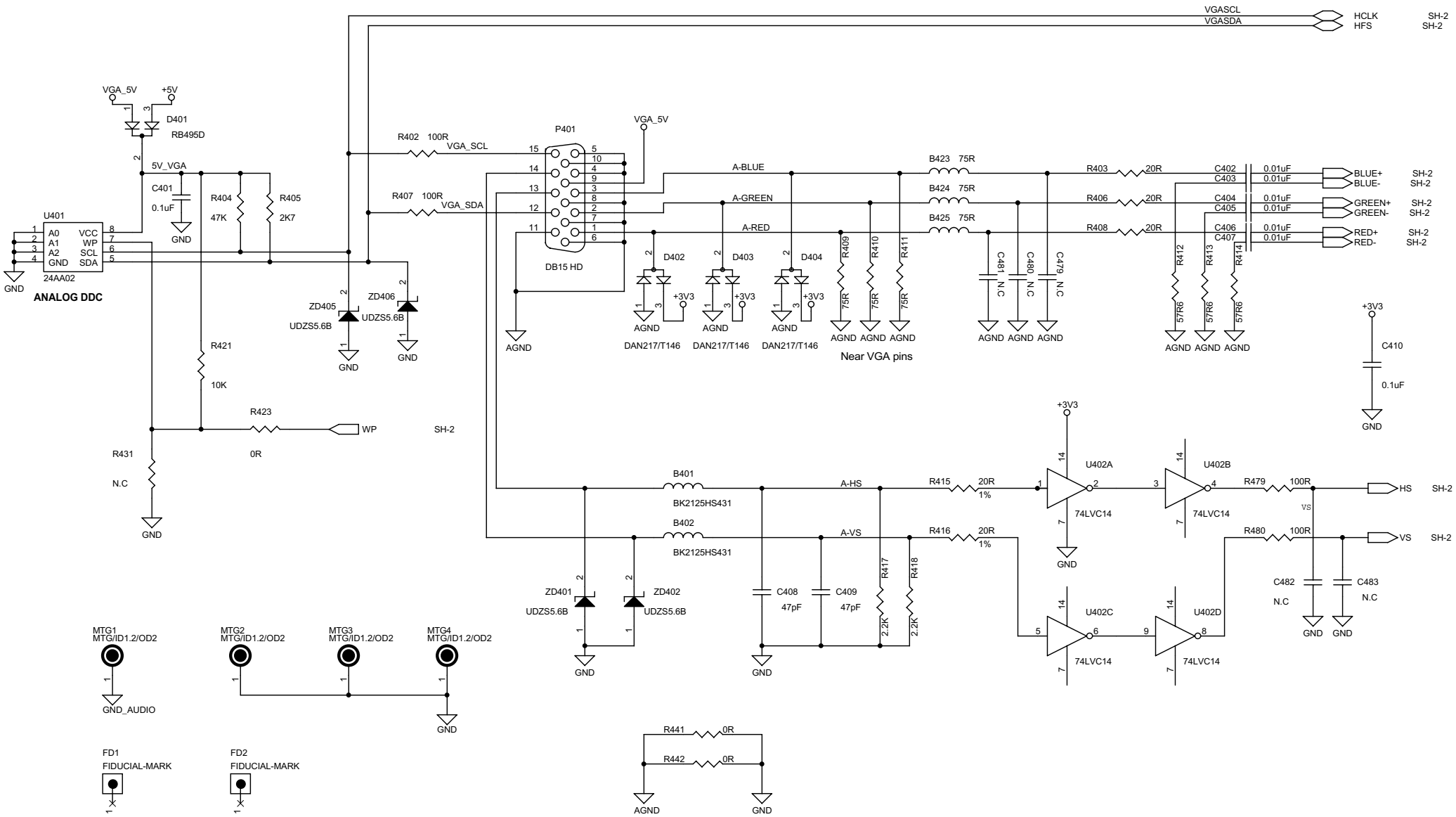
TCLK_SEL1	TCLK_SEL0	
OUT	OUT	TCLK = 14.3 MHz, 115.2 Kbaud
OUT	IN	TCLK = 20 MHz, 57.6 Kbaud
IN	OUT	TCLK = 24 MHz, 57.6 Kbaud
IN	IN	TCLK = 14.3 MHz, 57.6 Kbaud

PBIAS_POL	
OUT	PBIAS ACTIVE LOW
IN	PBIAS ACTIVE HIGH

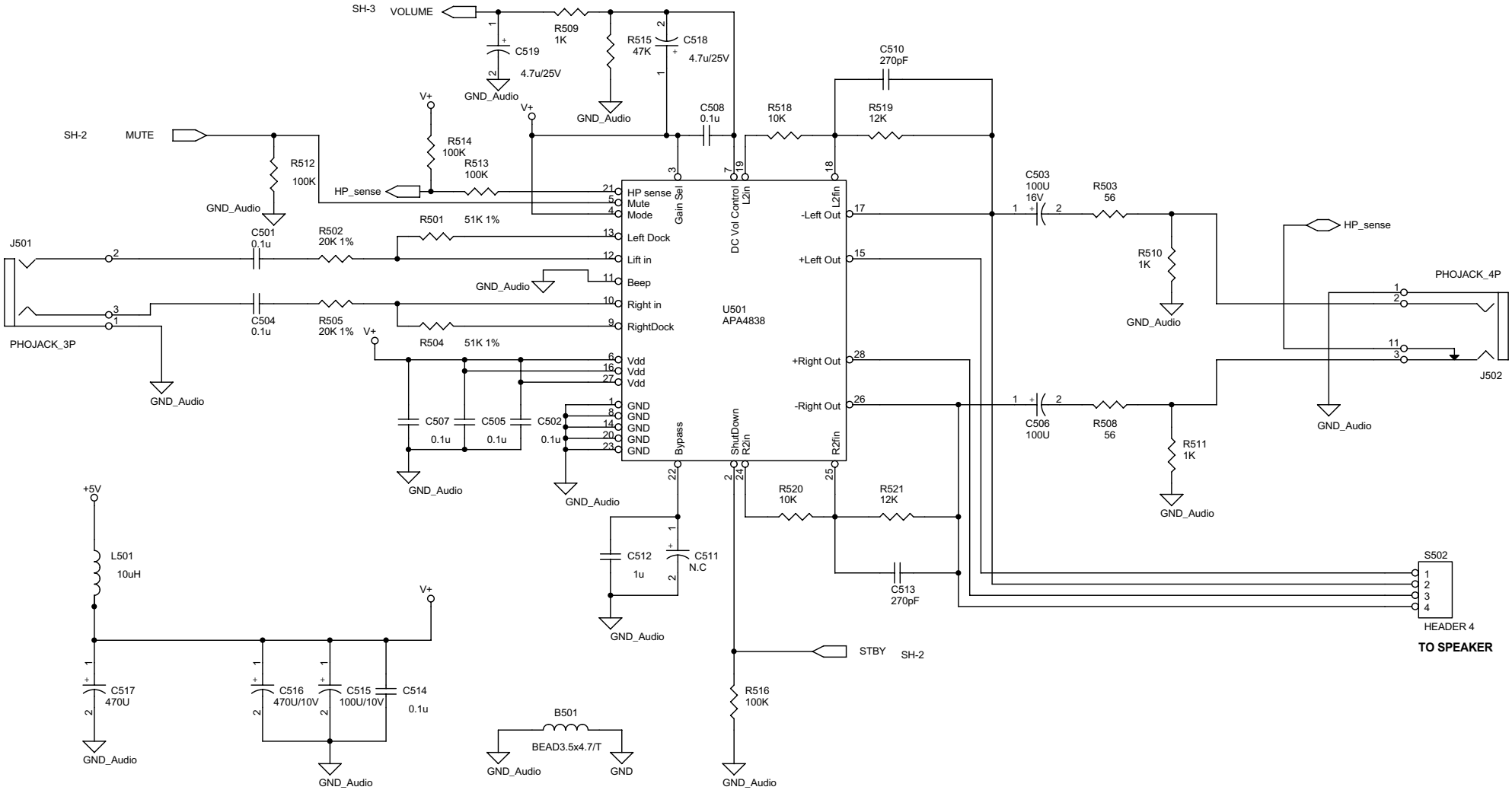
FULL CUST	
OUT	STANDALONE OPERATION
IN	FULL CUSTOM

DDC_PORT_SEL	Port used for DDC2Bi communication
OUT	DDC_SDA/DDC_SCL
IN	HFS/HCLK

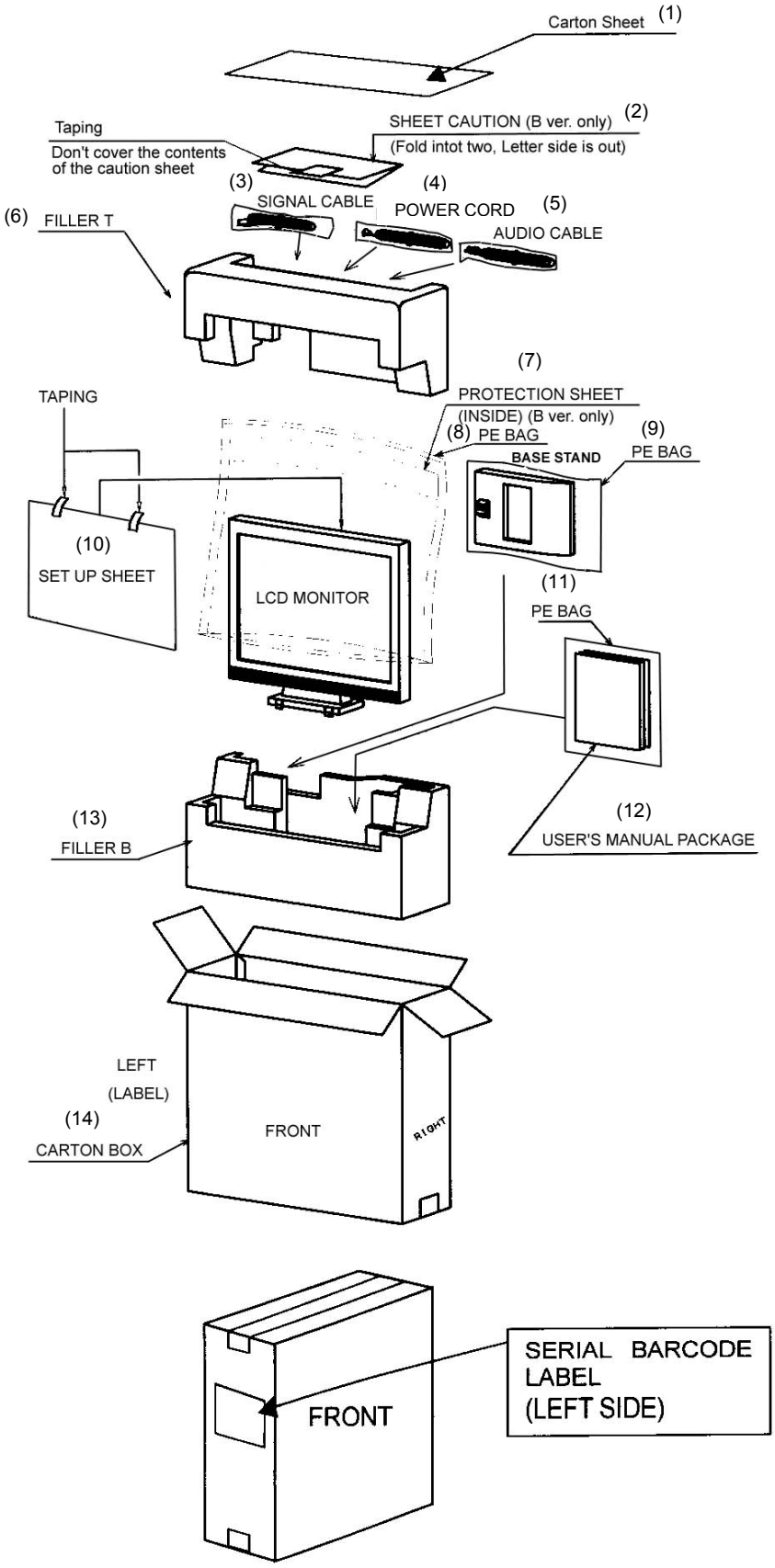
MODEL LCD51VM / LCD51V SCHEMATIC DIAGRAM MAIN BOARD (Input) (3/4)



MODEL LCD51VM SCHEMATIC DIAGRAM MAIN BOARD (Audio) (4/4)



Packing specification



ITEM	DESCRIPTION	Part No for NPG	Ver.	Cabinet color
(1)	CARTON BOARD L152R5(378X112)	13203381	A/B	White/Black
(2)	CAUTION SHEET	15800231	B	Black
(3)	CABLE VIDEO DSUB-DSUB 1.8	RE010161	A	White
(3)	CABLE VIDEO DSUB-DSUB 1.8	RE010171	A/B	Black
(4)	PW CORD NA 1.8M GRAY WANS	RG020061	A	White
(4)	PW CORD NA 1.8M BLK WANSH	RG020021	A	Black
(4)	PW CORD EU 1.8M BLK WANSH	RG030041	B	Black
(5)	CABLE AUDIO GRY 1.8M	RE090011	A	White
(5)	CABLE AUDIO BLK 1.8M	RE090021	A/B	Black
(6)	FILLER T,L152R5(A)	13401211	A/B	White/Black
(7)	EPE BAG(390*440)	13700621	B	Black
(8)	PE BAG (750*450MM)	13700321	A/B	White/Black
(9)	PE BAG (370*270MM)	13700461	A/B	White/Black
(10)	SHEET,SETUP AS51VM WH(A)-	15800401	A	White/Black
(10)	SHEET,SETUP AS51VM(B)-NSP	15800411	B	Black
(11)	PE BAG (370*270MM)	13700461	A/B	White/Black
(12)	MANUAL,L152R5 L172R6(A)-N	15501681	A	White/Black
(12)	MANUAL,L152R5 L172R6(B)	15501701	B	Black
(12)	NAVI SET SHEET	15900251	A/B	White/Black
(12)	CARTON SHEET FOR 15 IN LC	13202401	A/B	White/Black
(12)	CD-ROM, LCD71VM(B)	19700371	B	Black
(12)	SALES OFFICE LIST	15900056	B	Black
(13)	FILLER B,L152R5(A)	13401221	A/B	White/Black
(14)	CARTON,AS51VM WH(A)-NSP	13202691	A	White
(14)	CARTON,AS51VM BK(A)-NSP	13202931	A	Black
(14)	CARTON,AS51VM BK(B)-NSP	13202941	B	Black