NEC

PART NO. 599910742

SERVICE MANUAL

COLOR MONITOR

MultiSync® LCD1970NX

MODEL LCD1970NX (B) / (C)
LCD1970NX-BK (B) / (C)

1st Edition

NEC-MITSUBISHI ELECTRIC VISUAL SYSTEMS CORPORATION

NOVEMBER 2004

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08RJ1LCY 08RJ2LCY

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.

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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.

Caution:

When operating the MultiSync LCD1970V/MultiSync LCD1970NX 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.

When operating the MultiSync LCD1970V/MultiSync LCD1970NX with a 220-240V AC power source in Australia, use the power cord provided with the monitor. 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 MultiSync LCD1970V (L194RK)/MultiSync LCD1970NX (L194RH) are in compliance with

Council Directive 73/23/EEC:
- EN 60950-1

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

ENERGY

Canadian Department of Communications Compliance Statement

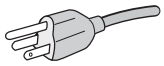
DOC: This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

C-UL: Bears the C-UL Mark and is in compliance with Canadian Safety Regulations according to CAN/CSA C22.2 No. 60950-1.

FCC Information

1. Use the attached specified cables with the MultiSync LCD1970V (L194RK)/MultiSync LCD1970NX (L194RH) 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	Non shield type, 3-conductor
Length	2.0 m
Plug shape	 U.S.A

   (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.

   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:	**500 Park Blvd, Suite 1100** **Itasca, Illinois 60143**
Tel. No.:	**(630) 467-3000**
Type of Product:	Display Monitor
Equipment Classification:	Class B Peripheral
Model:	MultiSync LCD1970V (L194RK)/MultiSync LCD1970NX (L194RH)

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

Contents

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

- MultiSync LCD monitor with tilt/swivel/height adjust stand
- Power Cord
- Video Signal Cable (15-pin mini D-SUB male to 15-pin mini D-SUB male)
- User's Manual
- CD ROM (includes complete User's Manual in PDF format).
  To see the User's Manual, Acrobat Reader 4.0 or higher must be installed on your PC.

Power Cord

User's Manual

15-pin mini D-SUB male to
15-pin mini D-SUB male

CD-ROM

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

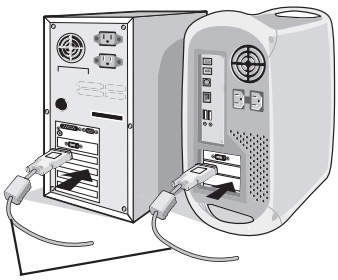
Quick Start

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

1. Turn off the power to your computer.
2. **For the PC or MAC with DVI digital output (NX only):** Connect the DVI signal cable (not included) to the connector of the display card in your system (**Figure A.1**). Tighten all screws.

   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.2**). Tighten all screws.

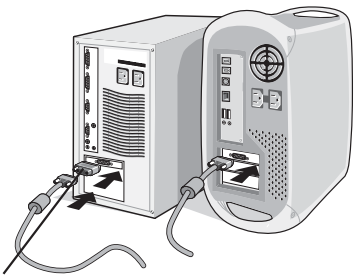
   For the MAC: Connect the Macintosh cable adapter to the computer, then attach the 15-pin mini D-SUB signal cable to the Macintosh cable adapter (**Figure B.1**). Tighten all screws.



DVI signal cable
(not included)

Figure A.1

Figure A.2



Macintosh
Cable Adapter
(not included)

Figure B.1

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

3. Place hands on each side of the monitor to tilt the LCD panel 30-degree angle and lift up to the highest position (**Figure C.1**).
4. Connect all cables to the appropriate connectors (**Figure C.1**).
5. Place power cord into the specific hooks indicated in **Figure C.2**.
6. Place the D-Sub into the specific hooks indicated in **Figure C.2**.

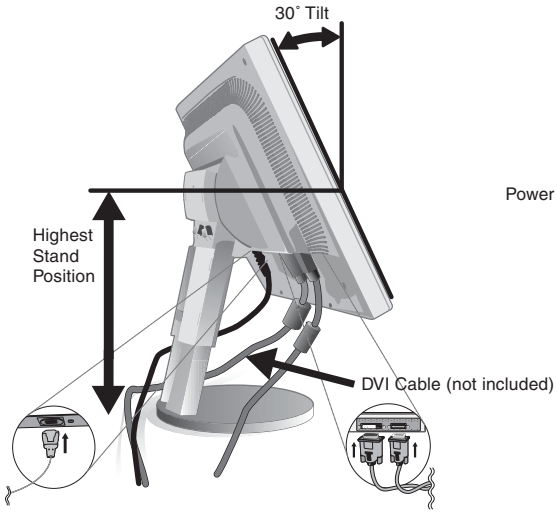


Figure C.1

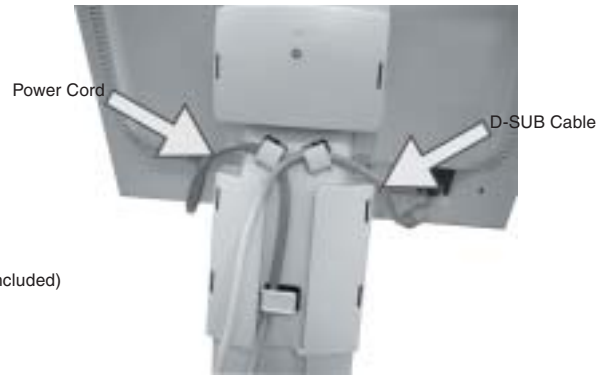


Figure C.2

7. Place the DVI cable into the specific hooks indicated in **Figure C.3**.
8. Make sure all cables are resting flat against the stand (**Figure C.3**).

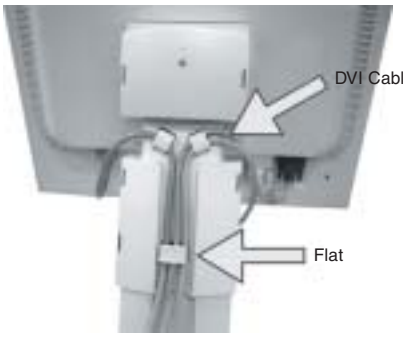


Figure C.3

9. Hold the all cables firmly and place the cable cover onto the stand (**Figure D.1**). To remove the cable cover, lift the cover off as shown in **Figure D.2**.

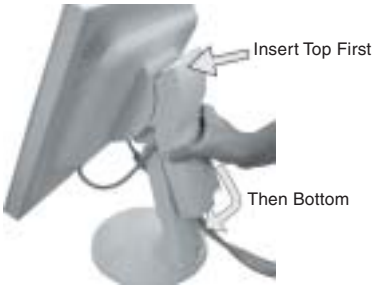


Figure D.1

Figure D.2

10. Connect the power cord to the power outlet (**Figure E.1**).

NOTE: Please refer to **Caution** section of this manual for proper selection of AC power cord.

11. The vacation switch on the back side of the monitor must be turned on (**Figure E.1**). Turn on the monitor with the front power button and the computer.

NOTE: The vacation switch is a true on/off switch. If this switch is on the OFF position, the monitor cannot be turned on using the front button. DO NOT switch on/off repeatedly.

12. 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 (Analog input only)
    - Auto Adjust (Analog input only)

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

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

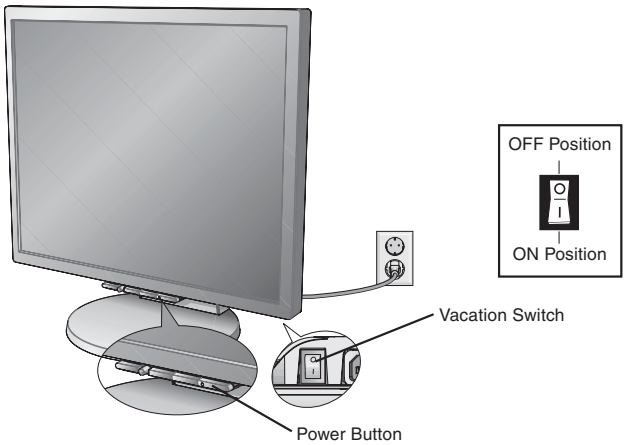


Figure E.1

Raise and Lower Monitor Screen

The monitor may be raised or lowered. To raise or lower screen, place hands on each side of the monitor and lift or lower to the desired height (**Figure RL.1**).

NOTE: Handle with care when raising or lowering the monitor screen.

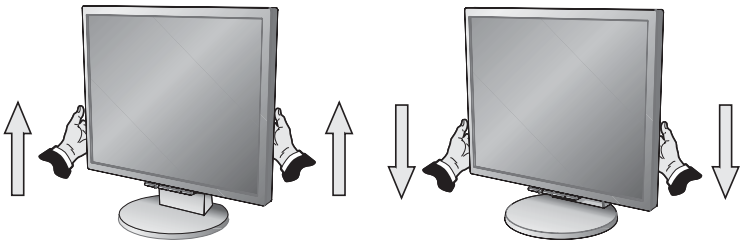


Figure RL.1

Tilt and Swivel

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

NOTE: Handle with care when tilting and swivelling the monitor screen.

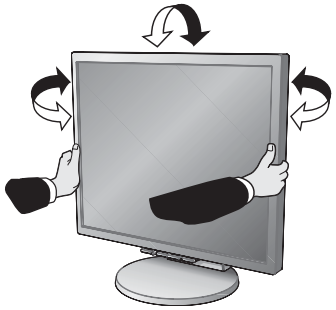


Figure TS.1

Remove Monitor Stand for Mounting

To prepare the monitor for alternate mounting purposes:

1. Place hands on each side of the monitor and lift up to the highest position. Remove the cable cover (**Figure S.1**).
2. Disconnect all cables.
3. Place monitor face down on a non-abrasive surface (**Figure S.2**).

NOTE: Handle with care when monitor facing down, for avoiding the damage to the front buttons.

4. Remove the 2 screws connecting the stand to the monitor (**Figure S.2**).

Figure S.1

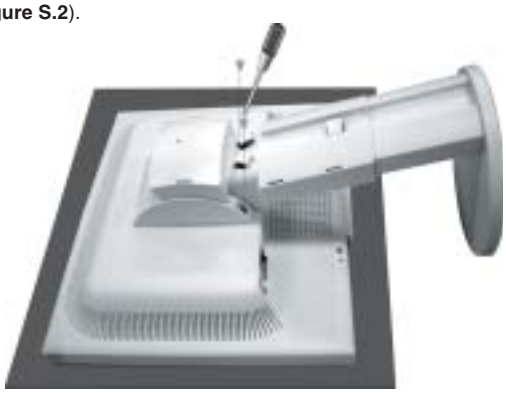


Figure S.2

5. Lift up the stand to unlatch the upper hooks and remove the stand (**Figure S.3**).
6. Remove the 2 screws on the top of the monitor (**Figure S.4**). The monitor is now ready for mounting in an alternate manner.
7. Connect the cables to the back of the monitor.
8. Reverse this process to re-attach stand.

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

Figure S.3

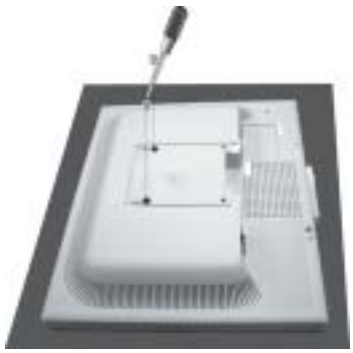


Figure S.4

Flexible Arm Installation

This LCD monitor is designed for use with a flexible arm. To mount the monitor to a flexible arm:

1. Follow the instructions on how Remove Monitor Stand for Mounting to remove the stand.
2. Using the 4 screws from the stand removal and attach the arm to the monitor (**Figure F.1**).

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

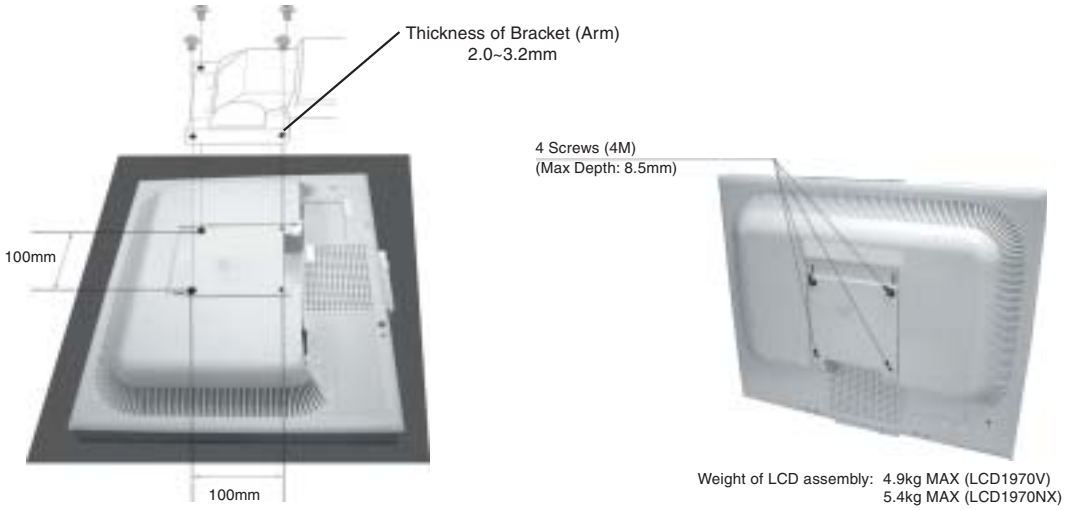


Figure F.1

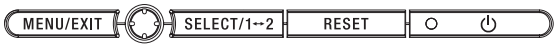
Controls

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

To access OSM menu, press any of the control buttons (MENU/EXIT, Left, Right, Down, Up).
To change signal input, press the SELECT button (NX only).
To change DV MODE, press the RESET button (NX only).

NOTE: OSM must be closed in order to change signal input.

LCD1970V



LCD1970NX

Button	Menu
MENU/EXIT	Open OSM main menu. Exits the OSM controls. Exits to the OSM main menu.
Left/Right	Moves the highlighted area left/right to select control menus. Moves the bar left/right to increase or decrease the adjustment.
Down/Up	Moves the highlighted area down/up to select one of the controls.
SELECT	Active Auto Adjust function. Enter the OSM sub menu.
RESET	Resets the highlighted control menu to the factory setting.

NOTE: When **RESET** is pressed in the main and sub-menu, a warning window will appear allowing you to cancel the **RESET** function by pressing the MENU/EXIT button.

Brightness/Contrast Controls

BRIGHTNESS
Adjusts the overall image and background screen brightness.

CONTRAST
Adjusts the image brightness in relation to the background.

DV MODE (NX only)
Alows you to select the suitable setting for Movie, Picture and etc.

AUTO CONTRAST (Analog input only)
Adjusts the image displayed to optimal settings.

Auto Adjust (Analog input only)

Automatically adjusts the Image Position, H. Size and Fine settings.

Image Controls (Analog input only)

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 System

Colour Control System: Six colour presets select the desired colour setting (sRGB and NATIVE colour presets are standard and cannot be changed).

R,G,B: Increases or decreases Red, Green or Blue colour depending upon which is selected. The change in colour will appear on screen and the direction (increase or decrease) will be shown by the bars.

NATIVE: Original colour presented by the LCD panel that is unadjustable.

sRGB: sRGB mode dramatically improves the colour fidelity in the desktop environment by a single standard RGB colour space. With this colour supported environment, the operator could easily and confidently communicate colour without further colour management overhead in the most common situations.

Tools

OFF TIMER: Monitor will automatically power-down when the end user has selected a predetermined amount of time.

HOT KEY: You can adjust the brightness and contrast directly. When this function is set to ON, you can adjust the brightness with left or right control and contrast with up or down control while the OSM menu is off.

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 take effect. Individual settings can be reset by highlighting the control to be reset and pressing the RESET button.

Menu Tools

LANGUAGE: OSM control menus are available in eight languages.

OSM LEFT/RIGHT: You can choose where you would like the OSM control image to appear horizontally on your screen.

OSM DOWN/UP: You can choose where you would like the OSM control image to appear vertically on your screen.

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.

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 controls are locked out. To activate the OSM Lock Out function, press SELECT, then right control button and hold down simultaneously. To deactivate the OSM Lock Out, press SELECT, then left control button and hold down simultaneously while in the OSM menu.

RESOLUTION NOTIFIER: This optimal resolution is 1280 x 1024. If ON is selected, a message will appear on the screen after 30 seconds, notifying you that the resolution is not at 1280 x 1024.

Information

The Information menu indicates the current input, display resolution, horizontal and vertical frequency, and polarity settings of the monitor. The model and serial numbers of your monitor are also indicated.

OSM Warning

OSM Warning menus disappear with Exit button.

NO SIGNAL: This function gives a warning when there is no Horizontal or Vertical Sync. After power is turned on or when there is a change of input signal, 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 Menu Tools.

OUT OF RANGE: When input signal is non-supported timing 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 MULTISYNC 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.
- 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.
- Do not bend power cord.
- Do not use monitor in high temperatured, humid, dusty, or oily areas.
- Do not cover vent on monitor.

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.
- If glass is broken, handle with care.
- If monitor or glass is broken, do not come in contact with the liquid crystal and handle with care.

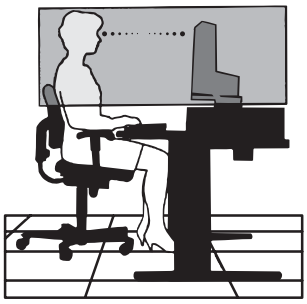
CAUTION

- 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:** Please be aware that LCD Technology may experience a phenomenon known as Image Persistence. Image Persistence occurs 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 displaying moving images and 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 50 cm.
- 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 anti-glare filter.
- 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:

- Adjust the Brightness until the background raster disappears.
- Do not position the Contrast control to its maximum setting.
- 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.

Cleaning the LCD Panel

- When the liquid crystal panel is stained with dust or dirt, please wipe with soft cloth gently.
- Please do not rub the LCD panel with hard material.
- Please do not apply pressure to the LCD surface.
- Please do not use OA cleaner it will cause deterioration or discolor on the LCD surface.

Cleaning the Cabinet

- Unplug the power supply
- Gently wipe the cabinet with a soft cloth
- To clean the cabinet, dampen the cloth with a neutral detergent and water, wipe the cabinet and follow with a dry cloth.

NOTE: Many plastics are used on the surface of the cabinet. DO NOT clean with benzene, thinner, alkaline detergent, alcoholic system detergent, glass cleaner, wax, polish cleaner, soap powder, or insecticide. Do not touch rubber or vinyl to the cabinet for a long time. These types of fluids and fabrics can cause the paint to deteriorate, crack or peel.

Specifications for LCD1970V

Monitor Specifications		MultiSync LCD1970V Monitor	Notes
LCD Module	Diagonal:	48.2 cm/19.0 inches	Active matrix; thin film transistor (TFT) liquid crystal display (LCD); 0.294 mm dot pitch; 250 cd/m^2 white luminance; 450:1 contrast ratio, typical.
	Viewable Image Size:	48.2 cm/19.0 inches	
	Native Resolution (Pixel Count):	1280 x 1024	
Input Signal	Video:	ANALOG 0.7 Vp-p/75 Ohms	
	Sync:	Separate sync.TTL Level Horizontal sync. Positive/Negative Vertical sync. Positive/Negative Composite sync. Positive/Negative*2 Sync on Green (Video 0.7 Vp-p and Sync. 0.3 Vp-p)*2	
Display Colours		16,777,216	Depends on display card used.
Synchronization Range	Horizontal:	31.5 kHz to 81.1 kHz	Automatically
	Vertical:	56.0 Hz to 75.0 Hz	Automatically
Viewing Angle	Left/Right:	80°/80° (CR > 5)	
	Up/Down:	80°/80° (CR > 5)	
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*1 at 60 Hz to 75 Hz 1152 x 870*1 at 75 Hz 1280 x 1024 at 60 Hz to 75 Hz	Some systems may not support all modes listed. NEC-Mitsubishi Electronics Display cites recommended resolution at 60 Hz for optimal display performance.
Active Display Area	Horizontal:	376.3 mm/14.8 inches	
	Vertical:	301.1 mm/11.9 inches	
Power Supply		AC 100-240V ~ 50/60Hz	
Power Consumption (without optional Sound Bar)		36W (typ)	
Current Rating		0.65-0.35A	
Dimensions		412.5 mm (W) x 386.5-496.5 mm (H) x 220.0 mm (D) 16.2 inches (W) x 15.2-19.5 inches (H) x 8.7 inches (D)	
Weight		7.0 kg (15.4 lbs)	
Environmental Considerations			
	Operating Temperature:	5°C to 35°C/41°F to 95°F	
	Humidity:	30% to 80%	
	Feet:	0 to 10,000 Feet	
	Storage Temperature:	-10°C to 60°C/14°F to 140°F	
	Humidity:	10% to 85%	
	Feet:	0 to 30,000 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.
*2 If your display is not showing a picture of the SOG and Composite Sync. Signal, please contact our hotline for further assistance.

NOTE: Technical specifications are subject to change without notice.

Specifications for LCD1970NX

Monitor Specifications		MultiSync LCD1970NX Monitor	Notes
LCD Module	Diagonal:	48.2 cm/19.0 inches	Active matrix; thin film transistor (TFT) liquid crystal display (LCD); 0.294 mm dot pitch; 250 cd/m^2 white luminance; 500:1 contrast ratio, typical.
	Viewable Image Size:	48.2 cm/19.0 inches	
	Native Resolution (Pixel Count):	1280 x 1024	
Input Signal	Video:	ANALOG 0.7 Vp-p/75 Ohms	Digital Input: DVI
	Sync:	Separate sync.TTL Level Horizontal sync. Positive/Negative Vertical sync. Positive/Negative Composite sync. Positive/Negative*2 Sync on Green (Video 0.7 Vp-p and Sync. 0.3 Vp-p)*2	
Display Colours		16,777,216	Depends on display card used.
Synchronization Range	Horizontal:	31.5 kHz to 81.1 kHz (Analog) 31.5 kHz to 81.1 kHz (Digital)	Automatically Automatically
	Vertical:	56.0 Hz to 75.0 Hz	Automatically
Viewing Angle	Left/Right:	88°/88° (CR > 10)	
	Up/Down:	88°/88° (CR > 10)	
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*1 at 60 Hz to 75 Hz 1152 x 870*1 at 75 Hz 1280 x 1024 at 60 Hz to 75 Hz	Some systems may not support all modes listed. NEC-Mitsubishi Electronics Display cites recommended resolution at 60 Hz for optimal display performance.
Active Display Area	Horizontal:	376.3 mm/14.8 inches	
	Vertical:	301.1 mm/11.9 inches	
Power Supply		AC 100-240V ~ 50/60Hz	
Power Consumption (without optional Sound Bar)		38W (typ)	
Current Rating		1.2-0.6A	
Dimensions		412.5 mm (W) x 386.5-496.5 mm (H) x 220.0 mm (D) 16.2 inches (W) x 15.2-19.5 inches (H) x 8.7 inches (D)	
Weight		7.5 kg (16.5 lbs)	
Environmental Considerations			
	Operating Temperature:	5°C to 35°C/41°F to 95°F	
	Humidity:	30% to 80%	
	Feet:	0 to 10,000 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.
*2 If your display is not showing a picture of the SOG and Composite Sync. Signal, please contact our hotline for further assistance.

NOTE: Technical specifications are subject to change without notice.

Features

Thin-frame design creates more desktop space for you to work and play, while the flat screen's crisp, bright images and crystal-clear text deliver a comfortable viewing experience.

No Touch Auto Adjust automatically adjusts your optimal image settings upon initial power-on.

Colour Control System allows you to change between six colour settings on your display to match your personal preference.

Redesigned OSM controls allow you to quickly and easily adjust all elements of your screen image.

NaViSet software offers an expanded and intuitive graphical interface, allowing you to more easily adjust OSM display settings via mouse and keyboard.

Height adjustable stand with tilt, swivel and cable management adds flexibility to your viewing preferences.

The flat screen's crisp, bright images and crystal-clear text deliver a comfortable viewing experience.

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 MultiSync 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 the Vacation Switch should be in the ON position.
- 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.
- Check the Vacation Switch on the back side of the monitor.

Image Persistence

- Please be aware that LCD Technology may experience a phenomenon known as Image Persistence. Image Persistence occurs 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 displaying moving images and 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 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 60Hz 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.
- Check the Vacation Switch should be in the ON position.

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 vacation switch off and on again.
- Make certain the computer is not in a power-saving mode (touch the keyboard or mouse).

TCO Development

Congratulations!

The display you have just purchased carries the TCO'03 Displays label. This means that your display is designed, manufactured and tested according to some of the strictest quality and environmental requirements in the world. This makes for a high performance product, designed with the user in focus that also minimizes the impact on our natural environment.

Some of the features of the TCO'03 Display requirements:

Ergonomics

- Good visual ergonomics and image quality in order to improve the working environment for the user and to reduce sight and strain problems. Important parameters are luminance, contrast, resolution, reflectance, colour rendition and image stability.

Energy

- Energy-saving mode after a certain time – beneficial both for the user and the environment
- Electrical safety

Emissions

- Electromagnetic fields
- Noise emissions

Ecology

- The product must be prepared for recycling and the manufacturer must have a certified environmental management system such as EMAS or ISO 14 001.
- Restrictions on:
  - chlorinated and brominated flame retardants and polymers
  - heavy metals such as cadmium, mercury and lead.

The requirements included in this label have been developed by TCO Development in co-operation with scientists, experts, users as well as manufacturers all over the world. Since the end of the 1980s TCO has been involved in influencing the development of IT equipment in a more user-friendly direction. Our labelling system started with displays in 1992 and is now requested by users and IT-manufacturers all over the world.

For more information, please visit
www.tcodevelopment.com

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Manufacturer's Recycling and Energy Information

NEC-Mitsubishi Electric Visual Systems Corp. is strongly committed to environmental protection and sees recycling as one of the company's top priorities in trying to minimize the burden placed on the environment. We are engaged in developing environmentally-friendly products, and always strive to help define and comply with the latest independent standards from agencies such as ISO (International Organisation for Standardization) and TCO (Swedish Trades Union).

For more information, and for help in recycling your old NEC or Mitsubishi monitors, please visit our website at

http://www.nec-mitsubishi.com (in Europe) or

http://www.nmv.co.jp/environment (in Japan) or

http://www.necmitsubishi.com/markets-solutions/totaltrade (in USA).

Country-specific recycling programmes can also be found at:

Sweden - http://www.el-retur.se

Germany - http://www.recyclingpartner.de/

Holland - http://www.mirec.nl/

Japan - http://www.diarcs.com/

Energy saving:

This monitor features an advanced energy saving capability. When a VESA Display Power Management Signaling (DPMS) Standard signal is sent to the monitor, the Energy Saving mode is activated. The monitor enters a single Energy Saving mode.

LCD1970V

Mode	Power consumption	LED colour
Normal Operation	Approx. 36W	Green
Energy Saving Mode	Less than 2W	Amber
Off Mode	Less than 1W	Unlit

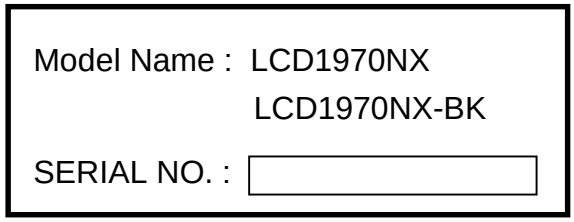
LCD1970NX

Mode	Power consumption	LED colour
Normal Operation	Approx. 38W	Green
Energy Saving Mode	Less than 2W	Amber
Off Mode	Less than 1W	Unlit

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 B ver. (Europe) : B

For C ver. (China) : C

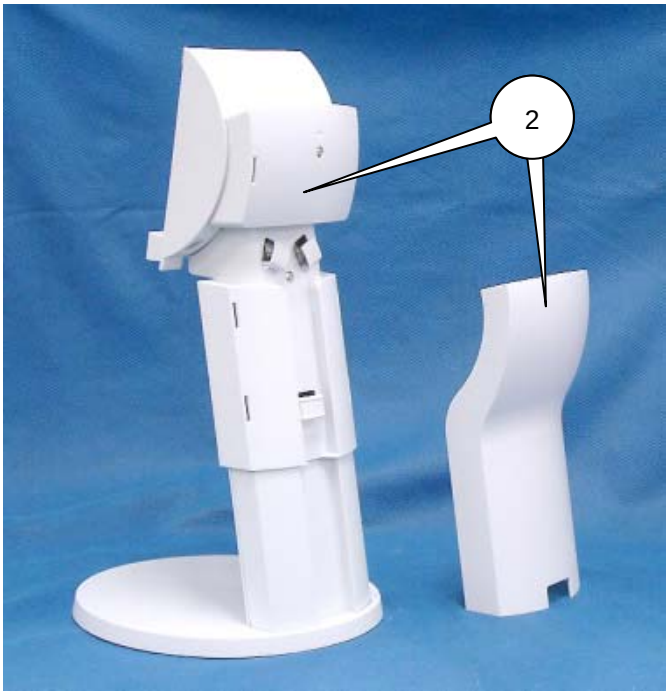
DISASSEMBLY

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

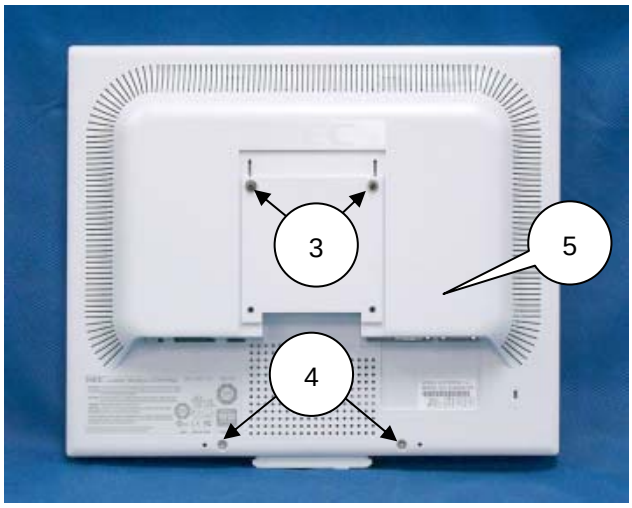
■ Use the proper screwdriver. If oversize or undersize screwdriver is used, screws may be damaged.

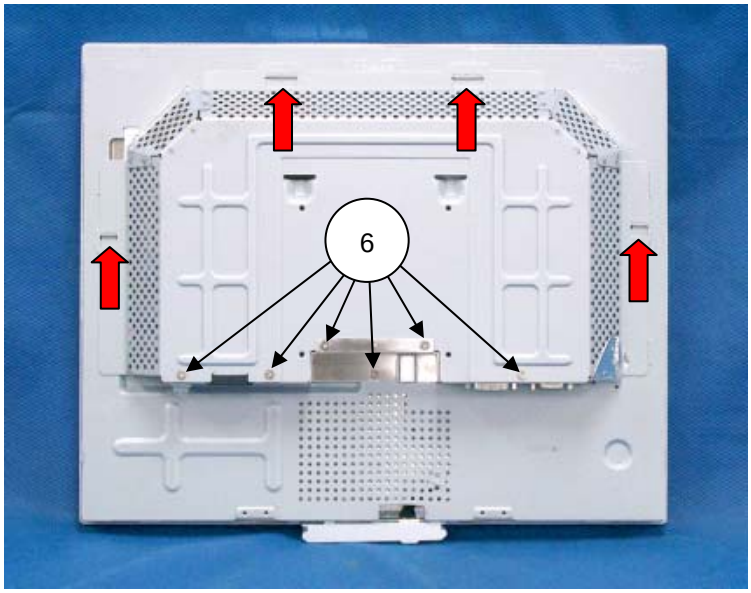
■ Assembly is the opposite process of disassembly.

Symbol	For Europe (NPG Part Number)	For China (NMV Part Number)	Description	Cabinet Color	Version
1	14300471	---	SC,PL-CPIMS4*16*3K	---	B / C
2	14900211	79PQ7860	STAND UNIT L194R WH	White	B / C
2	14900221	79PQ7861	STAND UNIT L194R BK	Black	B / C

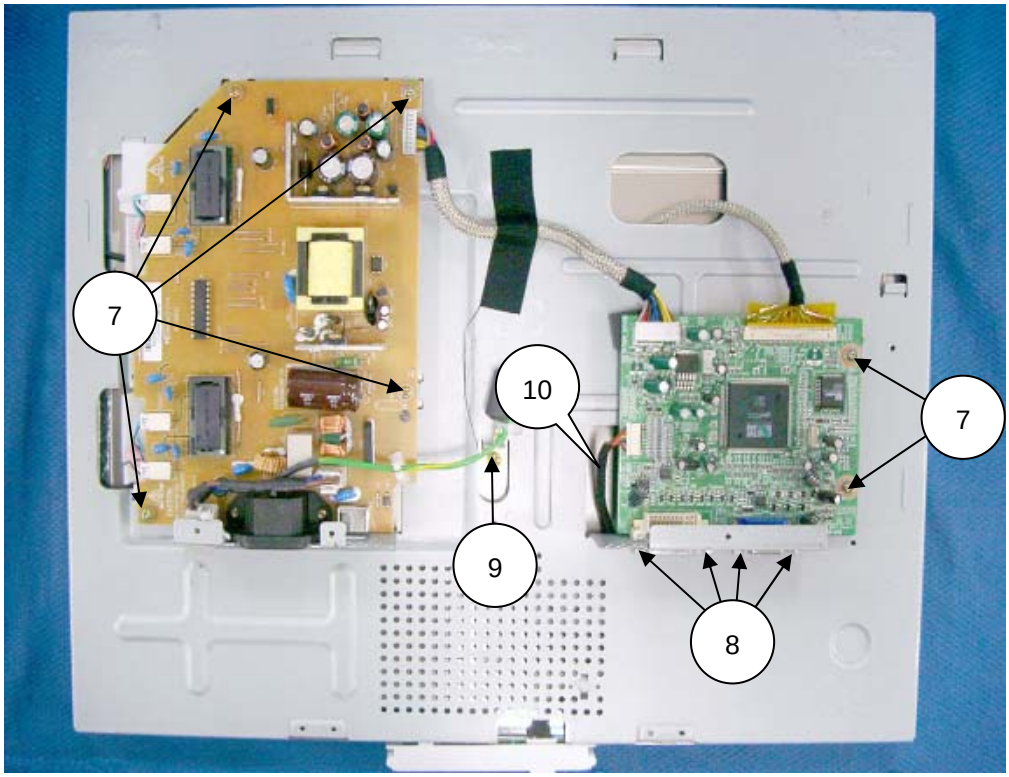


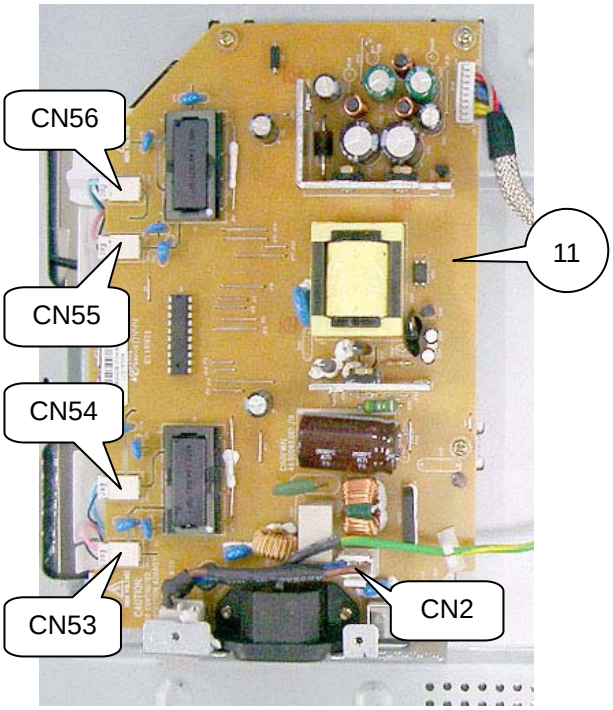
Symbol	For Europe (NPG Part Number)	For China (NMV Part Number)	Description	Cabinet Color	Version
3	14300471	---	SC,PL-CPIMS4*16*3K	---	B / C
4	14300271	---	P3X8 ML(IN)	White	B / C
4	14300311	---	P3.0*8 MC(ZN)	Black	B / C
5	10107361	79PQ7832	BACK L194RJ (N) WH	White	B / C
5	10107371	79PQ7833	BACK L194RJ (N) BK	Black	B / C
6	14300801	---	SC #3FSUSMS*3*6*15K	---	B / C

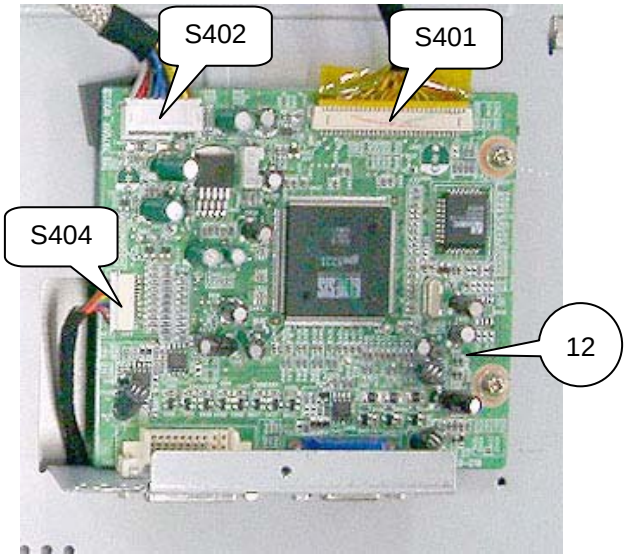




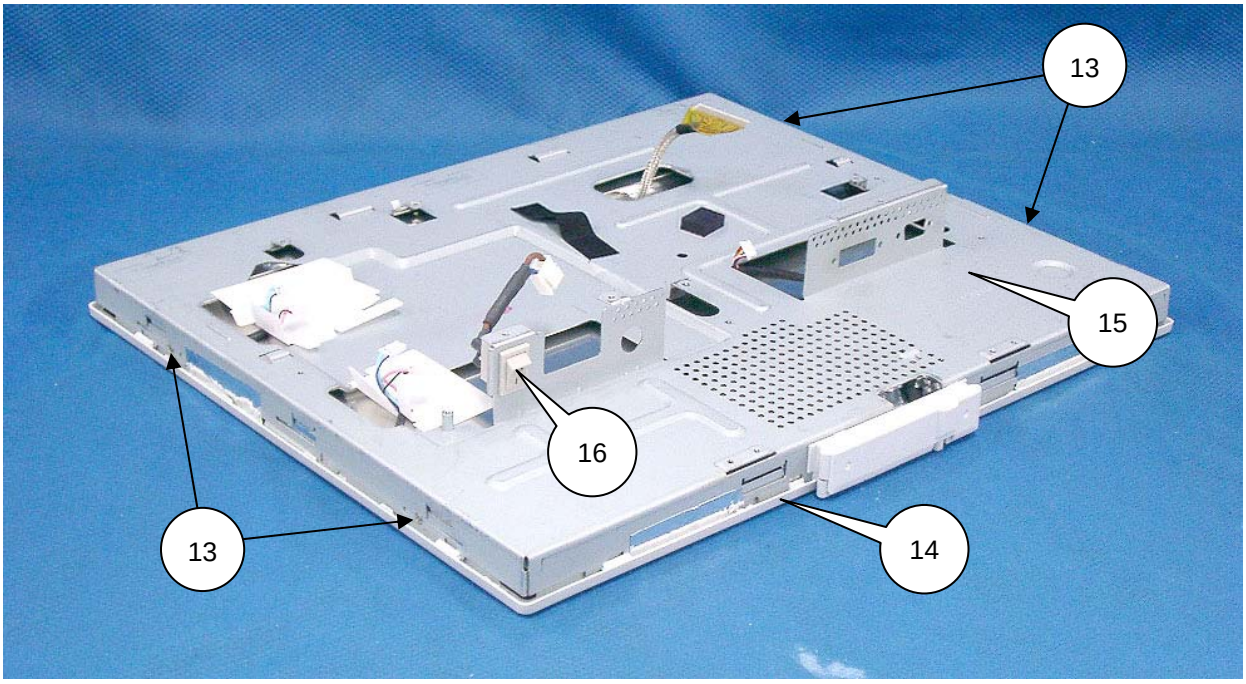
Symbol	For Europe (NPG Part Number)	For China (NMV Part Number)	Description	Cabinet Color	Version
7	14000121	---	SCREW (CUP)3x8x15BF	---	B / C
8	14300201	---	SCREW 4#-40Tx4.8HLx4HLx5	---	B / C
9	14000491	---	SC,CBIPSx4x8x15B	---	B / C
10	R3201481	79PQ7825	WIRE CC12P 1571#30L180	---	B / C
11	JM100401	79PQ7815	U INVERT-POWER 1970V AU	---	B / C
12	AM0RJ1ML	79PQ7808	MAIN INSERT ASSY	---	B / C

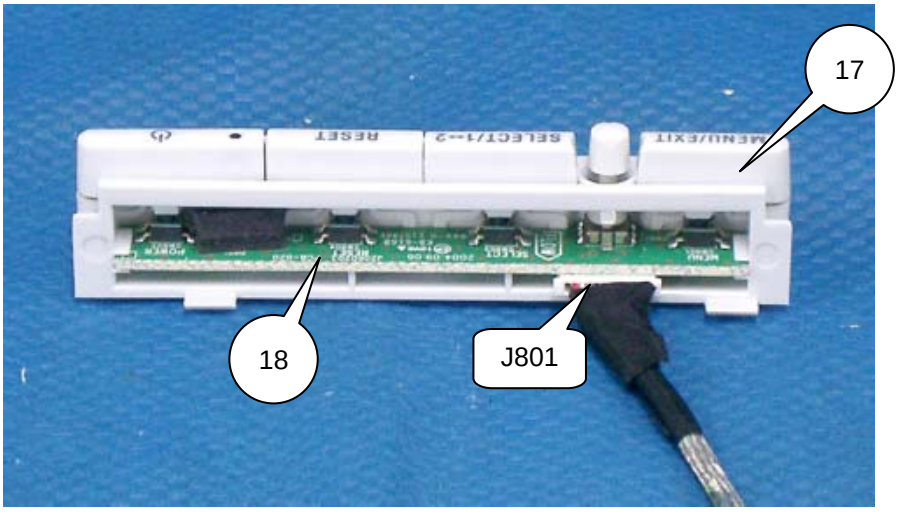




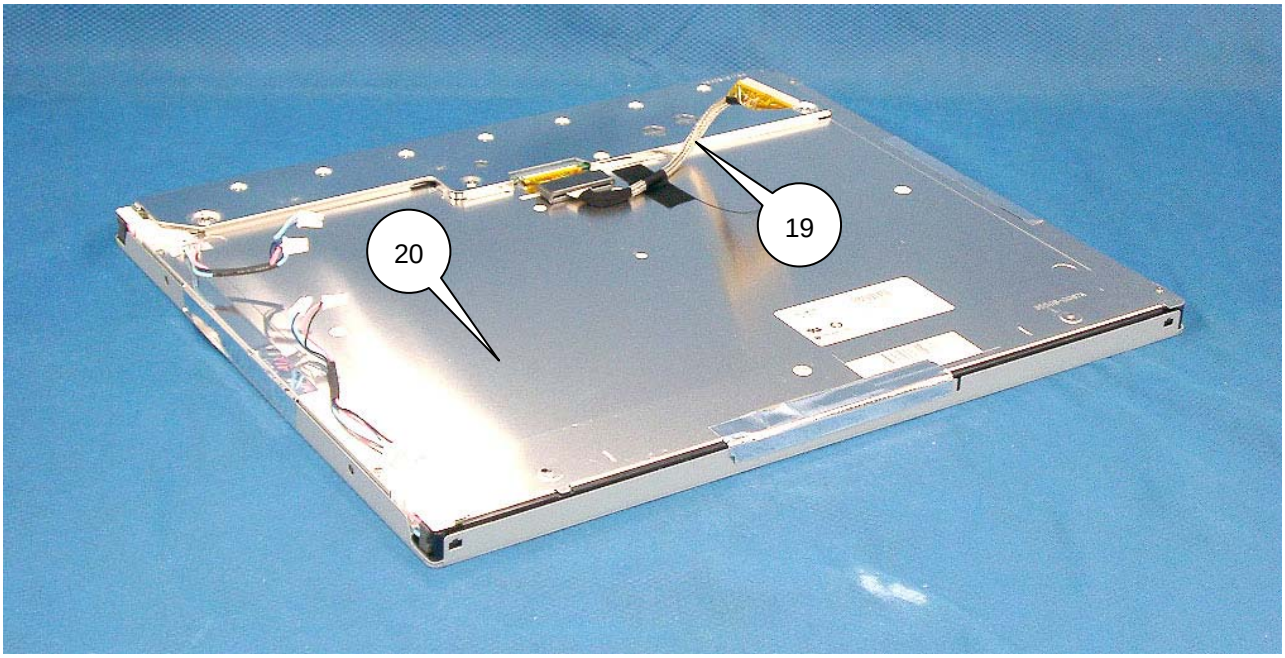


Symbol	For Europe (NPG Part Number)	For China (NMV Part Number)	Description	Cabinet Color	Version
13	14300801	---	SC #3FSUSMS*3*6*15K	---	B / C
14	10107611	79PQ7840	BEZEL WH(N) BC L194RJ	White	B /C
14	10107611	---	BEZEL WH(N) BC L194RJ	Black	B
14	---	79PQ7842	BEZEL BK(N) C L194RJ	Black	C
15	12001211	79PQ7855	CHASSIS BASE 1970NXH,(LPL	---	B / C
16	R3900251	79PQ7804	WIRE SW 1015#18L60 GRAY	White	B / C
16	R3900241	79PQ7803	WIRE SW 1015#18L60 BLK	Black	B / C
17	11700771	79PQ7849	COVER UNIT WH L194RJ	White	B / C
17	11700781	79PQ7850	COVER UNIT BK L194RJ	Black	B / C
18	AS0RH1ML	79PQ7812	SW INSERT ASSY	---	B / C





Symbol	For Europe (NPG Part Number)	For China (NMV Part Number)	Description	Cabinet Color	Version
19	R3201471	79PQ7824	WIRE CC30P 1589#30L220	---	B / C
20	3A684091 (NMV Part Number)	3A684091	TFT LM190E02-A4K5	---	B / C



ADJUSTMENT PROCEDURES

TABLE OF CONTENTS

1. Application

This adjustment specification should be applied to the adjustment of the LCD1970NX (L194RJ).

2. Adjustment Conditions

2.1 Time for Adjustment

Adjustments should be made only when the unit is fully assembled.

2.2 Measuring Instruments, Jigs, and Tools

When adjusting the unit, use measurement instruments, jigs, and tools specified below.

a. Use a signal generator that can produce an all white, or all black screens. Signal timing should be VG-819.

The amplitude of each signal (R, G, B) output should be maintained at 0.7Vp-p ± 0.05V when a load of 75 Ω is connected.

2.3 Power Supply Voltage

INPUT: 100Vac ~ 240Vac ±10%, 47~63Hz

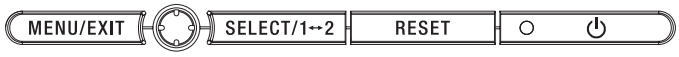
2.4 Aging

Not required.

3. Default Setting

Item		Condition
Power Supply		AC100V~240V
Input Freq.		1280×1024@75Hz
OSM Setting	BRIGHTNESS	100%
	CONTRAST	50%
	Color Temp.	NATIVE
	OSM TRUN OFF	45 sec.
	OSM LOOK OUT	NO
	Resolution notifier	ON
	OFF TIMER	OFF
	OSD/OSM SETTING	OSM
	URL SETTING	WWW.NECMITSUBISHI.COM
	HOT KEY	ON
	LANGUAGE	ENGLISH

4. Basic Operation (Front Control Panel Layouts)



(1) (2) (3) (4) (5) (6)

	BUTTON		MENU
(1)	MENU/EXIT		Open OSM main menu. Exits the OSM controls. Exits to the OSM main menu.
(2)	4 Direction Control Key	Left/Right	Moves the highlighted area left/right to select control menus. Moves the bar left/right to increase or decrease the adjustment.
		Down/Up	Moves the highlighted area down/up to select one of the controls.
(3)	SELECT/1 ◄► 2		Active Auto Adjust function. Enter the OSM sub menu.
(4)	RESET		Resets the highlighted control menu to the factory setting.
(5)	Power LED		Power LED, is green when monitor is on; amber when in power saving mode.
(6)	POWER		Switch on/off monitor power.

5. Set Adjustments

5.1 Power On

1) Plug the AC power cable into the wall outlet. Then press the POWER key. Confirm that the status LED is amber, and that the OSM [NO SIGNAL] is displayed.

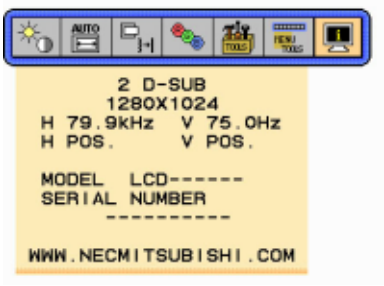
NOTE: If the status LED is not amber after the POWER key is pressed check that the power cable is properly connected. If the power cable is properly connected, the POWER key is pressed, and the status LED does not show amber, the unit will require further troubleshooting.

2) Input a signal of 1280 x 1024@75Hz. Confirm that the status LED changes from amber to green.

NOTE: If the status LED did not change from amber to green, the unit will require further troubleshooting.

3) Press the “MENU/EXIT” key. Confirm that the OSM is shown on the LCD screen.

Information



Indicate the Input signal-timing mode.

Resolution /Frequency

▸:	Moves the right group icon
◂:	Moves the left group icon
▲:	No function
▼:	No function
SELECT:	No function
RESET:	No function
EXIT:	OSM is close

Press, “RESET” + “SELECT” at the same time under the condition of the above OSM to enter Factory mode.

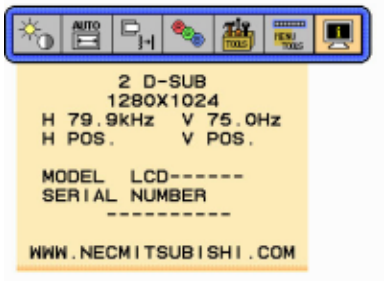
5.2 Factory Mode

The following pages comprise the Service Menu.

The Warning Message

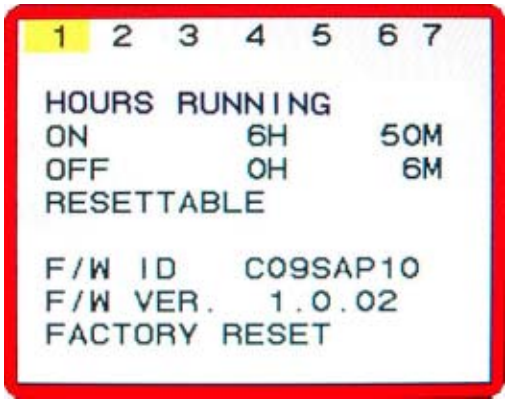
5.2.1 How to Enter Service Mode

1. Open Information menu (Signal information).
2. Press “SELECT”+”RESET”.
3. The Warning Message will be shown.
4. Then press “Select” to enter the Service Mode.
5. Press, “EXIT” to close OSM menu.



Information Menu

5.2.2 How to Use Service Mode



Page1: This page is used to check user's HOURS RUNNING and system's total HOURS RUNNING.

1. Press "SELECT" to move cursor on HOURS RUNNING.
2. Press " ◀ (LEFT)" + "RESET" at the same time to check HOURS RUNNING.
3. Press " ▼ (DOWN)" or " ▲ (UP)" to move cursor to FACTORY PRESET.
4. Press, "SELECT" to reset all function to initial status (include user's HOURS RUNNING and AUTO INFORMATION).

HOURS RUNNING

This Indicates On time and Off mode (power save) time (hours, minutes).
There are two timers.

RESETTABLE: Display Reset-able timers.

UNRESETTABLE: Display Un reset-able timers.

The following key operation changes the timer indication.

Select "HOURS RUNNING".

Press, " ▶ (RIGHT)" + "RESET":	Display Un reset-able timers.
Press, " ◀ (LEFT)" + "RESET":	Display Reset-able timers.
Press, " ◀ (LEFT)" + " ▶ (RIGHT)" + "RESET":	Timer is cleared

The indicated number will change every 5minutes.

On mode time: xxxH xxM

Off Mode time: xxxH xxM

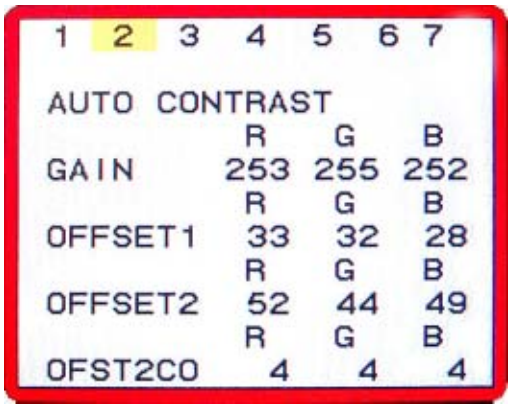
F/W ID and F/W VER.

Indicate Firmware ID and Firmware version.

F/W ID (LCD1970NX): C59SLP10

FACTORY RESET

When the proceed key is pushed during Factory reset, Hours Running and Auto Count is cleared.



Page2: This page is used to adjust RGB offset, and gain.

AUTO CONTRAST

A gain, offset1 and offset2 are auto adjusted.
Input frequency: Analog signal, white frame and gray pattern.

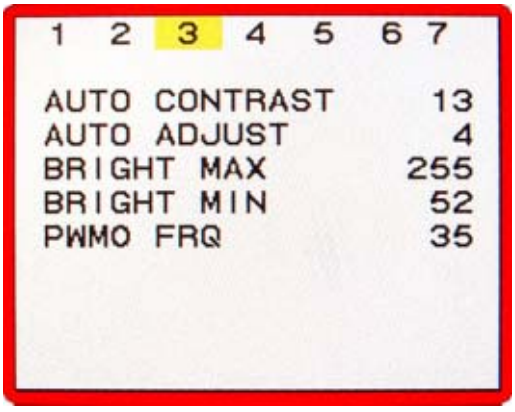
1. Press "▼(DOWN)" or "▲(UP)" to move cursor to AUTO CONTRAST.
2. Press, "SELECT" for auto balance.

GAIN: The manual adjustment of the gain of analog input each color can be carried out.

OFFSET1: The manual adjustment of the preceding stage offset of analog input each color can be carried out.

OFFSET2: The manual adjustment of the latter stage offset of analog input each color can be carried out.

OFST2CO: Only this value is lowered from OFFSET2 after performing AUTO CONTRAST. (Initial: 4)



Page3:

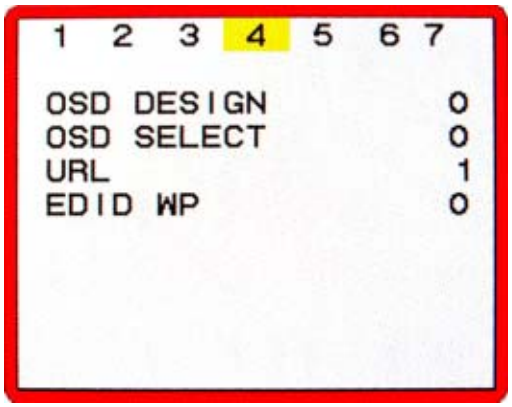
AUTO CONTRAST: No. of auto-contrast control trials conducted by the user.
* This value can be reset by factory preset in the service menu.

AUTO ADJUST: No. of auto-adjustment trials conducted by the user.
* This value can be reset by factory preset in the service menu.

BRIGHT MAX: Brightness control Max. (Initial: 255)

BRIGHT MIN: Brightness control Min. (Initial: 52)

PWM0 FRQ: Backlight brightness control frequency it decides by the multiple of this figure and a vertical synchronization signal. (Initial: 35 = 3.5 times)



Page4:

OSD DESIGN: It does not operate.

OSD SELECT: The OSD/OSM display is modified for the OSD user menu.

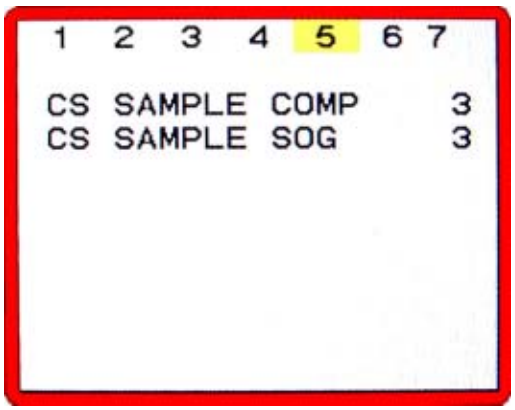
0: OSD: (Japanese destination)
1: OSM: Setting for shipment (overseas destination) (setting for shipment)

URL: Display/non-display of the Internet address is modified for MONITOR INFO.

0: No displayed
1: Display: WWW.NECMITSUBISHI.COM (overseas destination) (setting for shipment)
2: Display: WWW.NMV.CO.JP (Japanese destination)

EDID WP: EDID write-protected function is changed.

0: Enable
1: Disable (Setting for shipment)



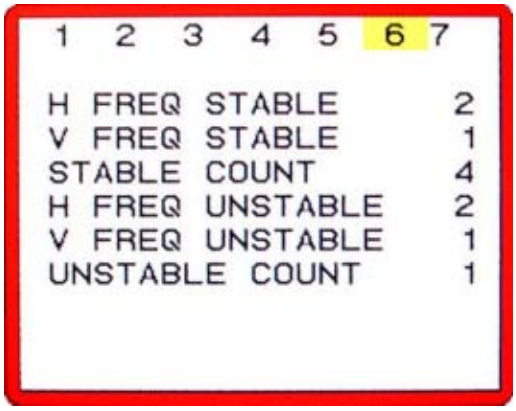
Page5:

CS SAMPLE COMP: The position that detects the synchronized signal of a composite signal is adjusted.

0: A synchronized signal is detected in a 2/8 level synchronous position.
1: A synchronized signal is detected in a 3/8 level synchronous position.
2: A synchronized signal is detected in a 4/8 level synchronous position.
3: A synchronized signal is detected in a 5/8 level synchronous position. (Setting for shipment)

CS SAMPLE SOG: The position that detects the synchronized signal of sync on green signal is adjusted.

0: A synchronized signal is detected in a 2/8 level synchronous position.
1: A synchronized signal is detected in a 3/8 level synchronous position.
2: A synchronized signal is detected in a 4/8 level synchronous position.
3: A synchronized signal is detected in a 5/8 level synchronous position. (Setting for shipment)



Page6: It does not operate.

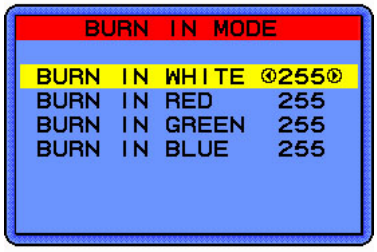
5.2.3 How to Exit Service Mode

Press the “EXIT” key to close OSM menu (Service mode).
If you turn off (power off) the monitor in the Service mode, it will exit the Service mode.
Likewise, if you unplug the power cord while in the Service mode, it will exit the Service mode.

5.2.4 Burn in Mode

The monitor can display color image without signal for aging.

Enter “Burn in mode” if Press “RESET” and “SELECT” key simultaneously when “No signal” OSM is shown.



Display Color can be changed by “Burn in mode” menu.

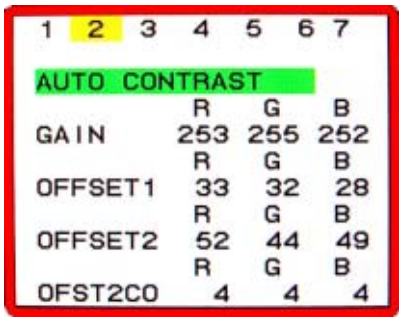
Exit “Burn in mode” by pressing “MENU/EXIT” or turning on video signal input or turning off “Monitor power” that is hardware off or software off.

Default setting: White, Red, Green, Blue = 255

6. Auto Contrast Adjustment

6.1 ADC Bias and Gain Control

a: Enter the input signal of VESA 640x480 (75Hz) in 8Grayscale+Window+Frame pattern.
Input signal level: 0.7Vp-p
b: OSM into factory mode
c: OSM select to “auto contrast” then press “Left” or “Right” button, then push down key.
d: Press “SELECT” key to auto BIAS and GAIN execute.



6.2 Panel Brightness Check

a: Enter the input signal of VESA 1280x1024 (75Hz) in full white pattern.
Input signal level: 0.7Vp-p
b: OSM setting “brightness” to Max. and “contrast” to 50%.
c: Color temperature setting to “NATIVE” mode.
d: Check the center luminance: 200 cd/m2

6.3 Panel Color Check

a: Enter the input signal of VESA 1280x1024 (75Hz) in full white pattern.
Input signal level: 0.7Vp-p.
b: Color temperature setting to “NATIVE” mode.
c: Check the center color coordination.
x=313 ±30
y=329 ±30

6.4 Color Temperature Check

a: Enter the input signal of VESA 1280x1024 (75Hz) in full white pattern.
Input signal level: 0.7Vp-p.
b: OSM “brightness” setting to MAX (100) and “contrast” setting to 50%.
c: OSM into factory mode, and adjust R, G, B GAIN to meet below color temperature table.
d: Each color temperature SPEC. as below:
Control the color temperature according to the correlation data as follows.
Measurement of correlation data is available only for preset white color 9300K～5000K.

Color Temp.	True value		Product check Tolerance	Auto-alignment adjust Tolerance
	x	y		
9300K	0.283	0.297	± 0.011	± 0.005
8200K	0.292	0.307	± 0.011	± 0.005
7500K	0.299	0.315	± 0.011	± 0.005
6500K (sRGB)	0.313	0.329	± 0.011	(1) ± 0.005 (2) Δ E94 < 15
5000K	0.346	0.359	± 0.011	± 0.005
Native	Native color of LCD panel.			

6.5 Reference Signal Timing

Item	Abbreviation	VESA 1280x1024 75Hz		VESA 640x480 75Hz	
Pixel frequency	fc	135.00MHz		31.500MHz	
Horizontal frequency	fh	79.98kHz		37.50kHz	
Line Time total	Th	12.50us	1688CLK	26.67us	840CLK
Horizontal active display	Thd	9.48us	1280CLK	20.32us	640CLK
Horizontal sync pulse	Thp	1.07us	144CLK	2.03us	64CLK
Horizontal back porch	Thb	1.84us	248CLK	3.81us	120CLK
Horizontal front porch	Thf	0.12us	16CLK	0.51us	16CLK
Horizontal sync polarity		POS		NEG	
Vertical Frequency	fv	75.03Hz		75.00Hz	
Frame time total	Tv	13.33ms	1066H	13.33ms	500H
Vertical active display	Tvd	12.80ms	1024H	12.80ms	480H
Vertical sync pulse	Tvp	0.04ms	3H	0.08ms	3H
Vertical back porch	Tvb	0.48us	38H	0.43ms	16H
Vertical front porch	Tvf	0.01ms	1H	0.03ms	1H
Vertical sync polarity		POS		NEG	

INSPECTION

TABLE OF CONTENTS

1. General Description

Product Specifications

		LG.Philips LM190E02-A4K5	
		Analog Input	Digital Input
LCD Module	Pixel Pitch	0.294mm	
	Resolution	1280x1024 dots (SXGA)	
	Color	16.7 million colors (8 bit)	
	Brightness *1)	250cd/m^2 (Typical)	
	Contrast Ratio	500:1 (Typical)	
	Viewing Angle	88/88(L/R), 88/88(U/D) (CR>10: Typical)	
Frequency	Horizontal	31.5 – 81.1 kHz	31.5 – 81.1 kHz
	Vertical	56.0 – 76.0 Hz	56.0 – 76.0 Hz
Pixel Clock		25.1 – 135.0 MHz	25.1 – 135.0 MHz
Viewable Size		376.32 x 301.056 mm	
Multi Pixel		Yes (with smoothing)	
Digital Control		Yes	
Color Control		Yes	
On Screen Display		Yes	
Power Management		Yes (VESA DPMS, EPA, GEEA lavel)	
Plug and Play		Yes (VESA DDC2B)	
USB Hub		Yes (USB Version 2.0 Self Powered Hub 1 up-stream / 4 down-stream)	
Speaker		No	
Headphone Jack		No	
Microphone Jack		No	
Auto Adjustment		Yes (Position / Size / Phase)	
Brightness control range		50% - 100%	
Controllable Function	OSM	Brightness, Contrast, Auto contrast, DV mode, Auto adjust, H. Position, V. Position, Fine, Color control, Resolution notifier, Hot key, Factory preset, Language, OSM position, Off timer, OSM turn off, OSM lock out, Monitor inf.	
Input Signal	Video	RGB 0.7Vp-p Input Impedance 75 ohm	
	Sync	Separate sync: TTL Level Composite, Sync on Green Video	TMDS
	Input	Mini D-sub 15pin	DVI-D
	DDC	DDC2B	
	Signal Cable	Mini D-sub 15pin to Mini D-sub 15pin (L=2.0m) DVI-D to DVI-D (L=2.0m)	

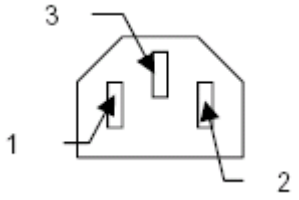
*1): You should satisfy this value for products of 60% and more.
*2): Soft off mode

Power Supply		Universal AC100 – 240V
Current Rating		1.2A (AC100V) / 0.6A (AC240V)
Operational Environment	Temp.	5 – 35°C
	Humid.	30 – 80% (without condensation)
Dimension	Net	367.0(W) x 362.0 – 472.0(H) x 198(D) mm
	Gross	426.0(W) x 446.0(H) x 252.0(D) mm
Weight	Net	7.5kg
	Gross	9.8kg
VESA compatible arm mounting interface		Yes, 100mm x 100mm
Tilt / Swivel / Rotation		Up & Down 30° to -5° / Yes ±170° / NA
Complied Regulatory and Guidelines		Safety: UL / c-UL, TuV GS EMC: FCC-B VLF / ELF: MPR-II, TCO'03 Others: CE, Ctick, PSB, AS, TCO'03(AN), TCO'99(ANBK), GOST, PCBC, BSMI
Accessories		User's manual, AC Power code (2.0m), Analog Cable (2.0m, mind-sub 15 pin), Digital Cable (2.0m, DVI-D), USB Cable (2.0m)

2. Electrical Characteristics

2.1 Power Supply

AC Input	Input Voltage (Rating)	100 – 240VAC
	Input Voltage Range	90 – 264VAC
	Frequency (Rating)	50 / 60Hz
	Frequency Range	47 – 63Hz
	Power Consumption	38W (Typ.)
	AC Leakage Current	< 0.25 mA @AC 100V, < 3.5mA @AC230V
	Inrush Current (Cold Start)	< 30A $_{0\text{-}P}$@AC110V, < 50A $_{0\text{-}P}$@AC220V
	KK+Inlet connector type	3 polarity, 10A 250V 65°C 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 Panel

LCD	Active matrix thin-film-transistor (TFT)
Effective display size	376.32(H) x 301.056(V) mm
Pixel number	1280 x 1024 pixels
Color filter arrangement	RGB vertical stripes
Display method	IPS, Normally black
Drive method	Active matrix thin-film-transistor (TFT)
Pixel pitch	0.294(H) x 0.294(V) mm
Dot number	1280 x 1024 dots
Back-light	CCFL x 4pcs.
Luminance	250 cd/m^2
Contrast ratio	500:1 (typical)
Display color	16.7 million colors (8 bit)
Viewing angle	88/88(L/R), 88/88(U/D) (CR>10: Typical)
Response time	Rising: 12msec (Typical) Falling: 13msec (Typical)
Back-light Life Time	40,000 hours (Min.)
Brightness adjustment range	50% to 100%

2.3 85Hz Refresh Rate Support

Monitor should display 85Hz refresh rate mode as emergency mode.

Monitor should display “Out of Range” warning menu at this mode.

2.4 White Color Temperature

White color temperature is 6 presets as 9300, 8200, 7500, sRGB (6500), 5000 and Native.

Default value of user color should be Native that is maximum setting for panel.

Target of color setting

Color Temp.	True value		Product check Tolerance	Auto-alignment adjust Tolerance
	x	y		
9300K	0.283	0.297	± 0.011	± 0.005
8200K	0.292	0.307	± 0.011	± 0.005
7500K	0.299	0.315	± 0.011	± 0.005
6500K (sRGB)	0.313	0.329	± 0.011	(1) ± 0.005 (2) Δ E94 < 15
5000K	0.346	0.359	± 0.011	± 0.005
Native	Native color of LCD panel.			

2.5 Check Power Manage Function

This function conform DPMS of VESA, and International Energy Star Office Equipment program.

Power Management condition and status for ANALOG Input mode.

Mode	Horizontal	Vertical	Power Supply	Input Timing	Power Consumption
On	On	On	240Vac	VESA 1280x1024 (75Hz)	38W +20%
Stand-by	Off	On	240Vac	VESA 1280x1024 (75Hz)	2W
Suspend	On	Off	240Vac	VESA 1280x1024 (75Hz)	2W
Off	Off	Off	240Vac	VESA 1280x1024 (75Hz)	2W

Recovery Time from power saving mode: less than 3sec.,

Power Management condition and status for DIGITAL Input mode.

Mode	DE	Horizontal	Vertical	Power Supply	Input Timing	Power Consumption
On	Pulses	On	ON	240Vac	VESA 1280x1024 (75Hz)	38W +20%
Active off	No Pulses	N/A	N/A	240Vac	VESA 1280x1024 (75Hz)	2W

Recovery Time from power saving mode: less than 3sec.,

3. External Inspection on The LCD Module

3.1 Inspection Conditions

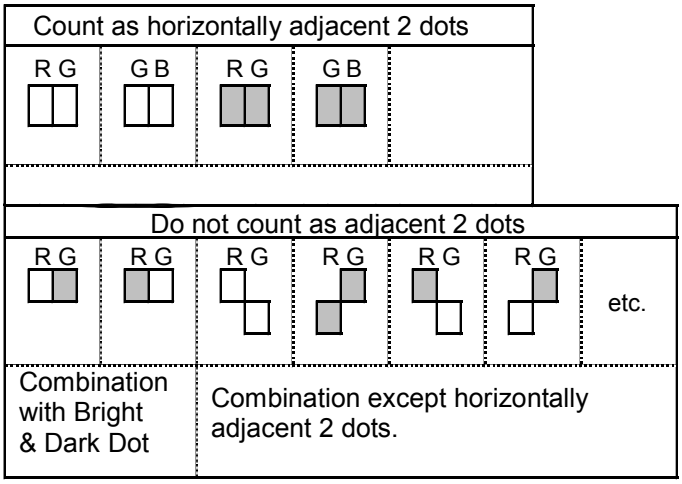
1. Room temperature: 20-25°C
2. Humidity: 65 ±5%RH
3. Illumination: Single 20W fluorescent lamp non-directive (Appearance 300 ~ 700 Lux, Display 180 ~ 200Lux)
4. To be a distance about 35 cm in front of LCD unit, viewing line should be perpendicular to the surface of the module judge the visual appearance with human's eyes.
5. Take off the protector of polarizer while judging the display area.
6. If there is any question while judging, check the panel again while operating

3.2 Electrical Inspection Specification

<table>
<tr><th colspan="3">Item</th><th>Criteria</th><th></th><th>Remar</th></tr>
<tr><td rowspan="4">Adjacent Dots</td><td>(1)</td><td>Bright dots</td><td rowspan="2">Horizontally adjacent 2 dots (R+G, G+B)</td><td>Max. 3</td><td>Note 1</td></tr>
<tr><td>(2)</td><td>Dark dots</td><td>Max. 3</td><td>Note 2</td></tr>
<tr><td>(3)</td><td>Bright dots</td><td rowspan="2">Horizontally, vertically or combined adjacent 3 dots
(Separately bright dots and dark dots)</td><td>Not Allowed</td><td rowspan="2">Note 3</td></tr>
<tr><td>(4)</td><td>Dark dots</td><td>Not Allowed</td></tr>
<tr><td>Dot Defect</td><td>(5)</td><td>Dot defects except (1) and (2)</td><td>R or G or B (Bright Dot + Dark Dot)</td><td>Max. 7</td><td>Note 4</td></tr>
<tr><td rowspan="5">Min. Distance between bright dots</td><td>(6)</td><td>Distance between bright dots</td><td>Distance between bright dots (R - R): less than 5.9mm</td><td>Max. 2 for each color</td><td>Note 5</td></tr>
<tr><td>(7)</td><td>Distance between (6)'s</td><td>Distance between (6) s: less than 9mm</td><td>Not Allowed</td><td>Note 6</td></tr>
<tr><td rowspan="3">(8)</td><td rowspan="3">Fault cluster</td><td>Two or more pixels or sub-pixels with more than one fault of (5).</td><td>Max. 3</td><td>Note 7</td></tr>
<tr><td>Two or more pixels or sub-pixels with more than one fault of (1).</td><td rowspan="2">Not Allowed</td><td rowspan="2">Note 8</td></tr>
<tr><td>Two or more pixels or sub-pixels with more than one fault of (2).</td></tr>
<tr><td rowspan="2">Total amount of Dot Defects</td><td colspan="3">Total amount of Bright Dot (R, G, B) and Dark Dot (R, G, B)</td><td>Max. 13</td><td>-</td></tr>
<tr><td colspan="3">Total amount of Bright Dot (G)</td><td>Max. 4</td><td>-</td></tr>
<tr><td colspan="6">Note 9. Every dot herein means sub-pixel (each Red, Green or Blue color)</td></tr>
<tr><td colspan="6">Note 10. Bright & Dark Dots are larger than one third of sub-pixel. (Dots smaller than one third of sub-pixel are not counted as a defect dots.)</td></tr>
<tr><td colspan="6">Note 11. Do not use the [ND] filter in counting a bright dot.</td></tr>
</table>

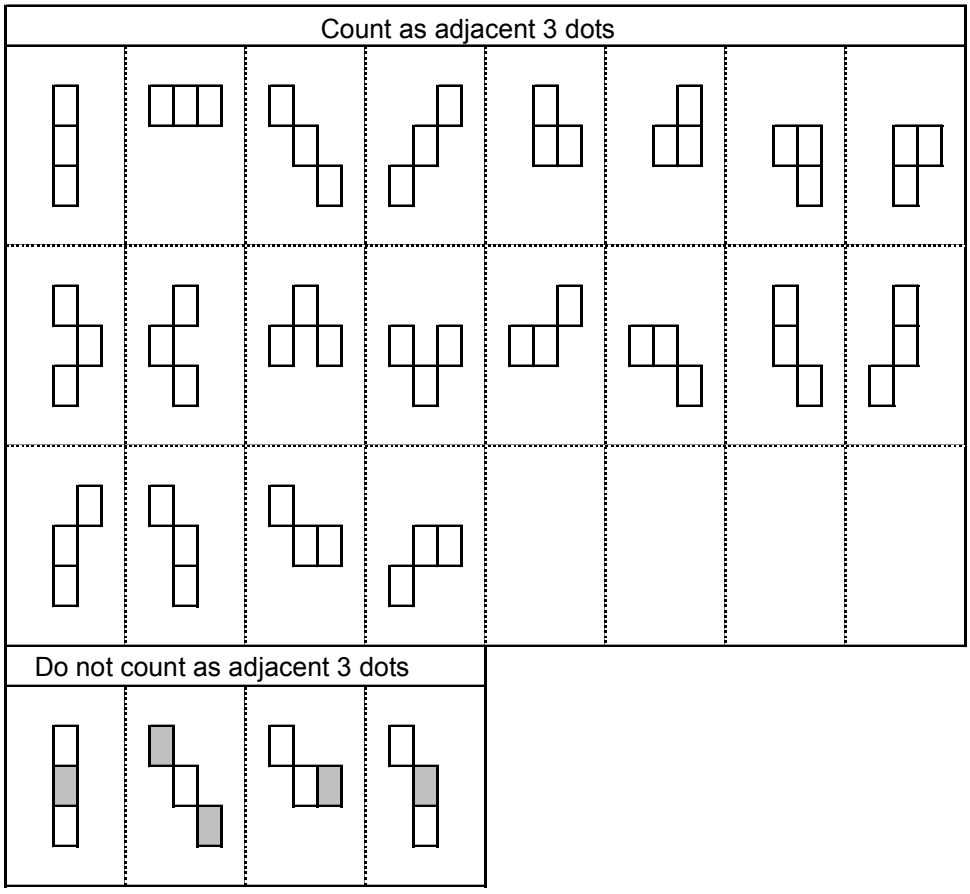
:Bright Dot :Dark Dot

Note 1. Horizontally adjacent 2 dots (R+G, G+B)



Note 2. 1) + 2) : Max. 3

Note 3. Horizontally, vertically or combined adjacent 3 dots (separately bright dots and dark dots)

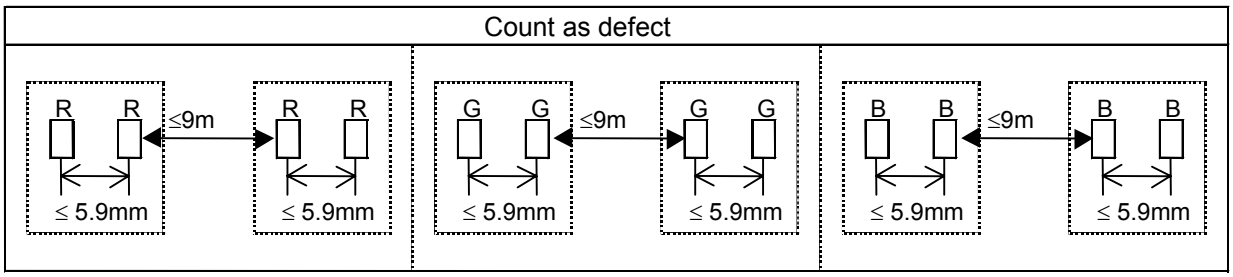


Note 4. Do not count the horizontally adjacent 2 dots (R-G, G-B)

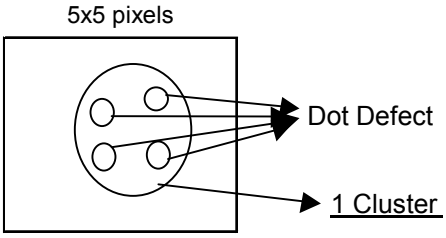
Note 5. Distance between bright dots

Count as defect			Do not count as defect					
R R ≤ 5.9mm	G G ≤ 5.9mm	B B ≤ 5.9mm	R R ≤ 5.9mm	G G ≤ 5.9mm	B B ≤ 5.9mm	R G ≤ 5.9mm	G B ≤ 5.9mm	B R ≤ 5.9mm
Distance between the same colors			Combination with Bright Dot & Dark Dot			Combination with the different color		

Note 6. Distance between the group of (6)'s.

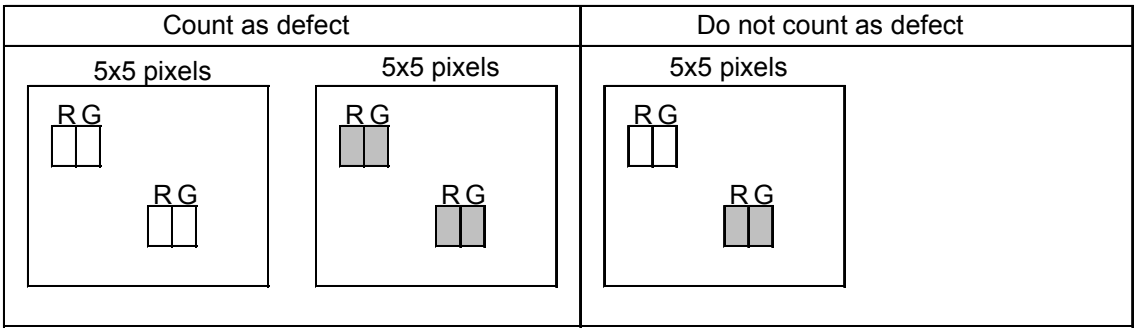


Note 7. Two or more pixels or sub-pixels with more than one fault of 5) within 5x5 pixels



The number of cluster within all screen : Max. 3

Note 8. Two or more pixels or sub-pixels with more than one fault of 1) or 2) within 5x5 pixels



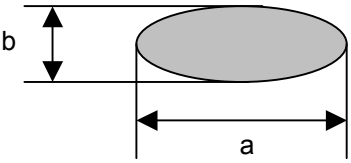
3.3 Polarizer Defects

Items		Criteria
Scratch	Linear	$0.01 \le W \le 0.05$, $1.0 \le L \le 10.0$, $N \le 4$
Dent	Circular	$0.2 \le D \le 0.8$, $N \le 4$

NOTE: D: Average Diameter D=(a+b)/2

W: Width, L: Length, N: Quantity

Linear: a>2b, Circular: a≤2b



a. Extraneous substances, which can be wiped out, like Finger Print, Particles are not considered as a defect.

b. Defects which are on the Black Matrix (outside of Active Area) are not considered as a defect.

3.4 Foreign Material

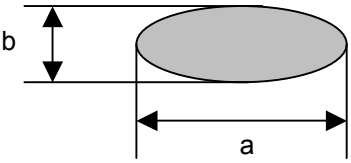
Items		Criteria
Foreign Material	Linear	$0.03 \le W \le 0.10$, $0.3 \le L \le 3.0$, $N \le 4$
	Circular	$0.25 \le L \le 0.8$, $N \le 5$

NOTE: D: Average Diameter D=(a+b)/2

W: Width, L: Length, N: Quantity

Linear: a>2b, Circular: a<2b

Length: The line of apsides (Long distance)



3.5 Line Defect

All kinds of line defects such as vertical, horizontal, or cross marks are not allowed.

3.6 Bezel Appearance

Scratches, minor dents, stains, dust particles on the Bezel frame are not considered a defect.

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 1.5A/0.8A

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 “19” 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 0.8A +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 means 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 without connecting a signal generator. The toggle 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. PLUG & PLAY Communication Inspection

5.1 System Connection

This system should be connected as shown below.

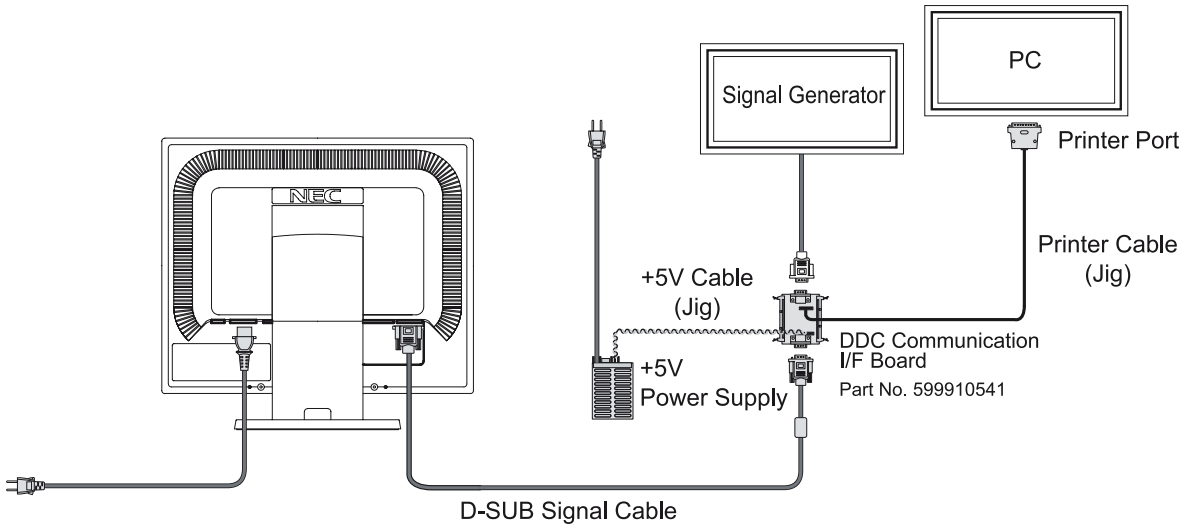


Fig.5.1.1 D-SUB connector connection

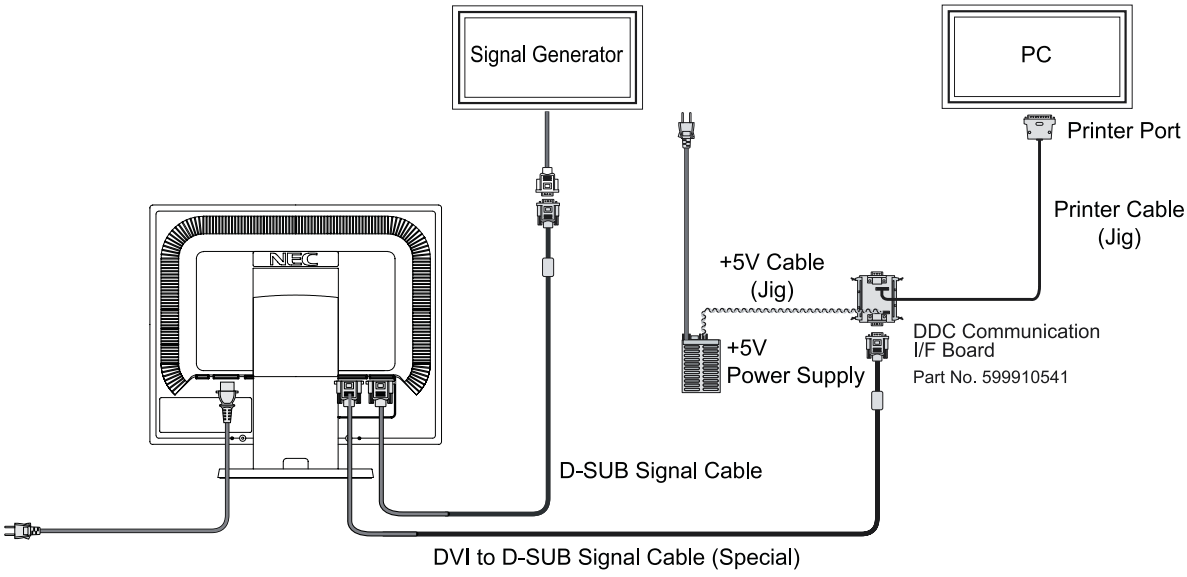


Fig 5.1.2 DVI-D connector connection

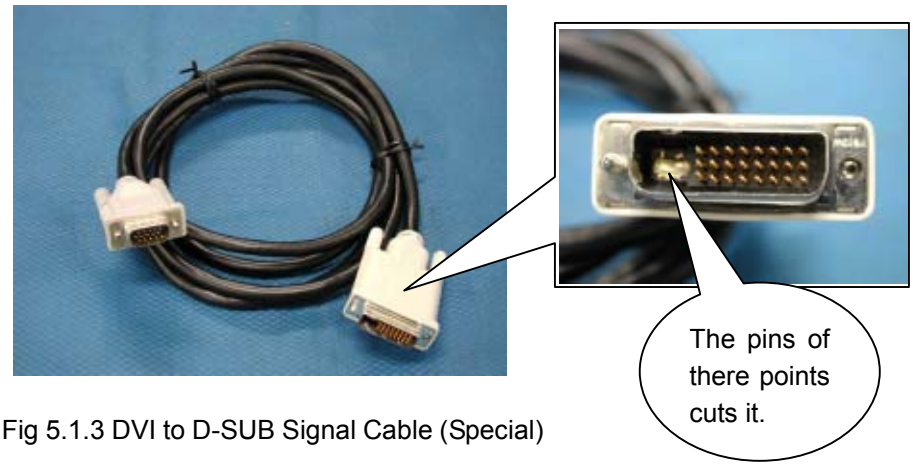


Fig 5.1.3 DVI to D-SUB Signal Cable (Special)

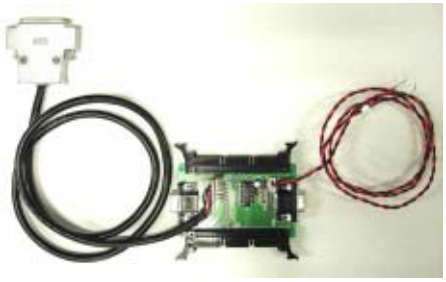


Fig 5.1.4 DDC Communication I/F BOARD

5.2 Input Signal

Horizontal synchronization frequency: Not specified.

Vertical synchronization frequency: Not specified.

5.3 Program

Service tool Ver. 3.27 (Part No. 599910735)

5.4 Operation

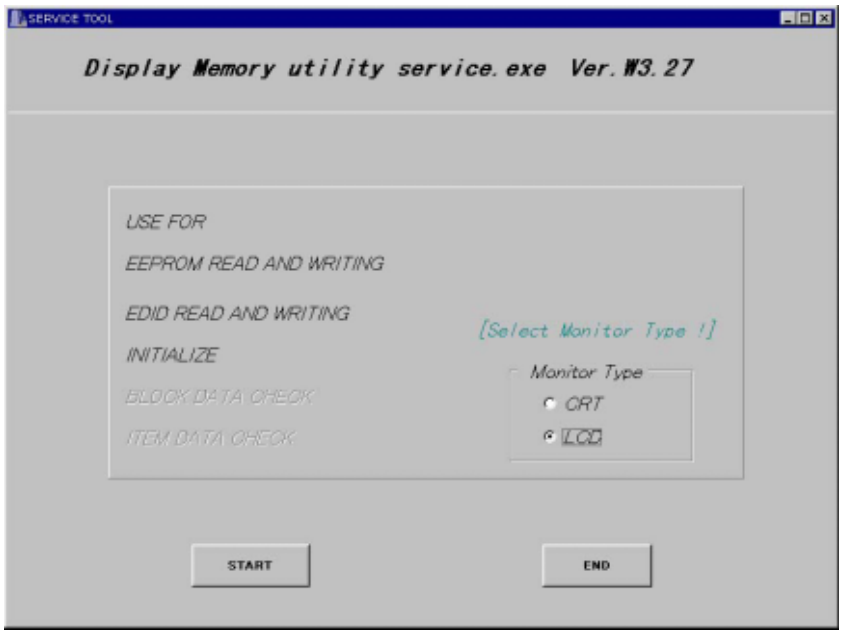
5.4.1 EDID Data Inspection and Writing to the D-SUB Connector (Analog)

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

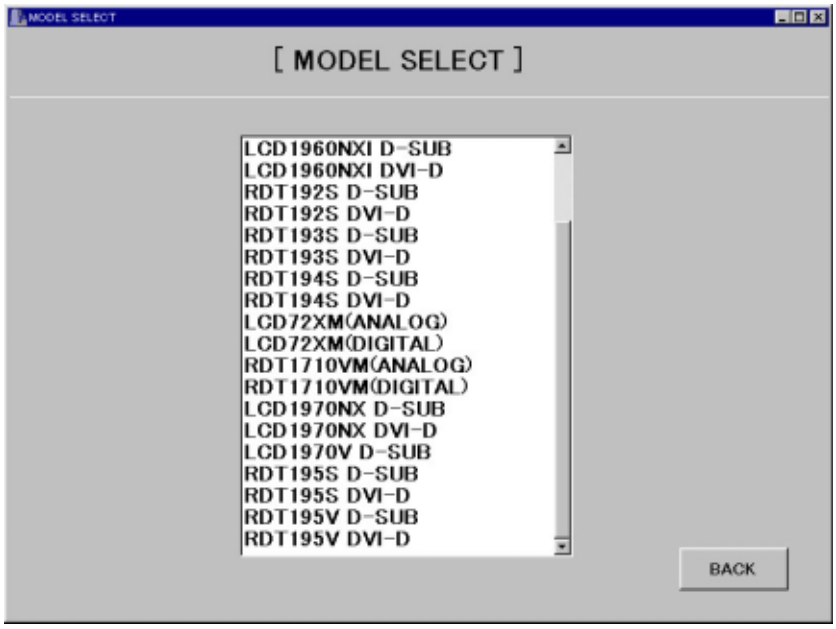
2) Copy all the files of the service tool Ver. 3.27 in a proper directory.

3) Start [Service2.EXE] of the service tool Ver. 3.27.

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



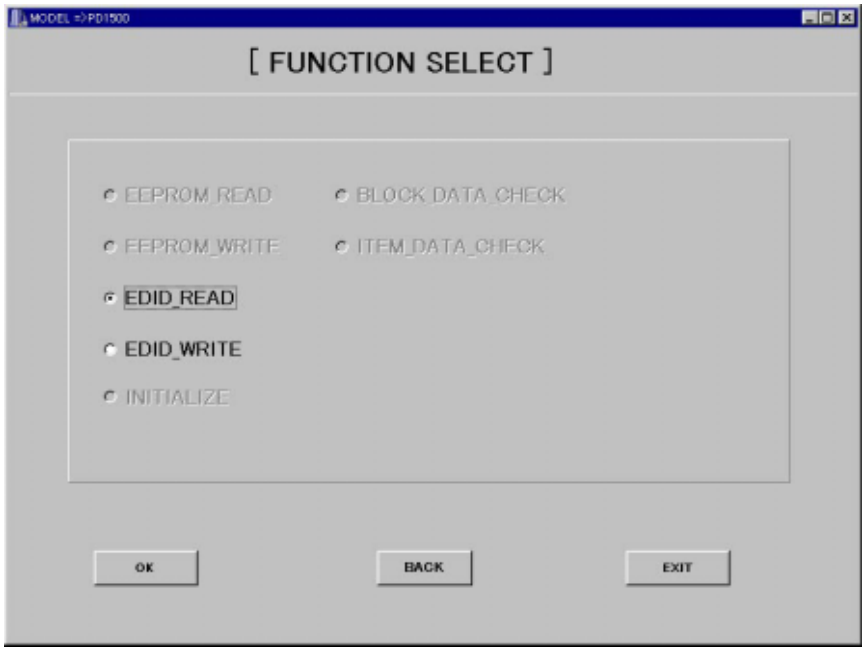
5) When the screen as shown below appears, adjust the cursor to [LCD1970NX D-SUB] and double click.



6) Enter Factory mode, a tag 4 is select by the "▼(DOWN)" or "▲(UP)" key move cursor to EDID WP (EDID write-protection).

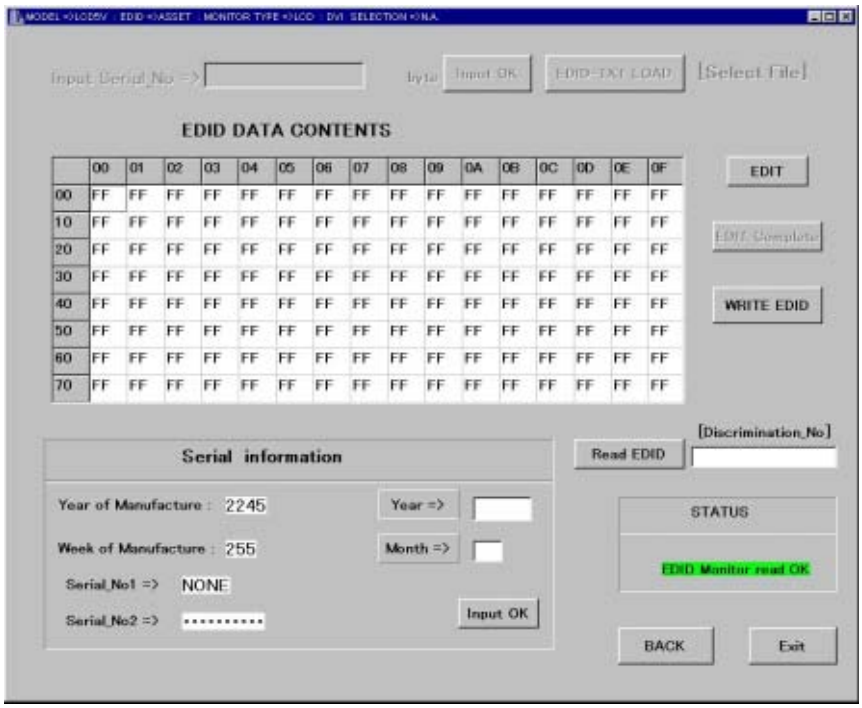
7) A numerical value is set to "0" (OFF) and EDID write-protection is canceled.

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



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

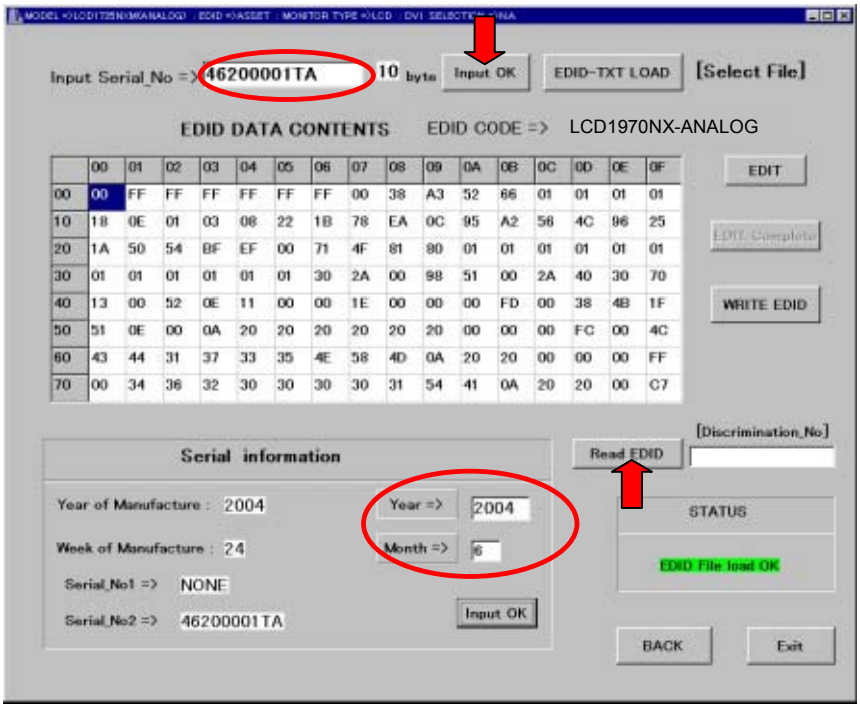
If all the displayed data are [FF] or the like, or if the serial number is different from that of the corresponding unit, then EDID data writing should be carried out.



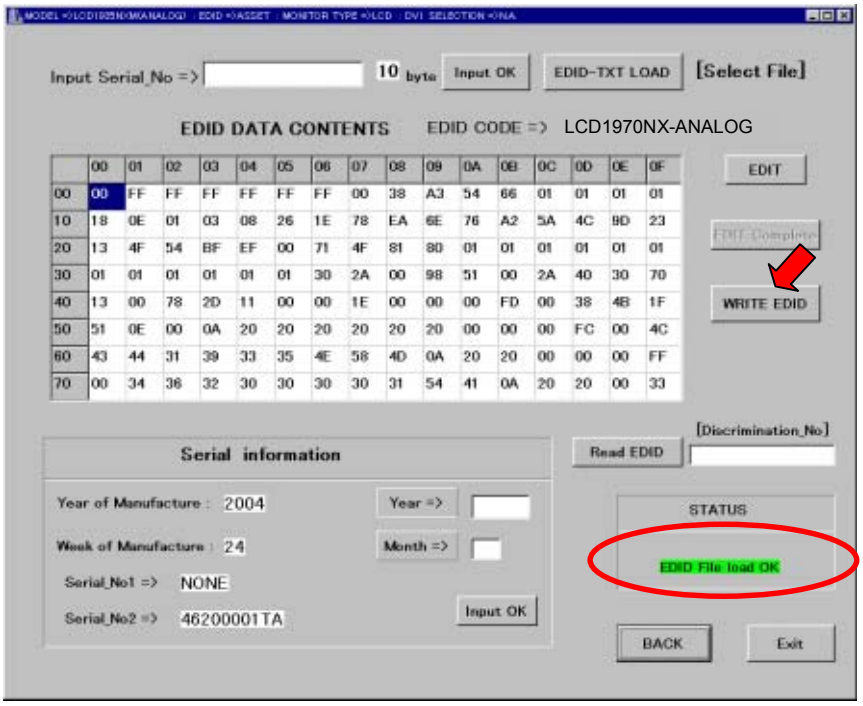
10) When a screen of Item 6 is displayed by pressing the [BACK] button, check to [EDID_WRITE] and press the [OK] button.

11) 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.

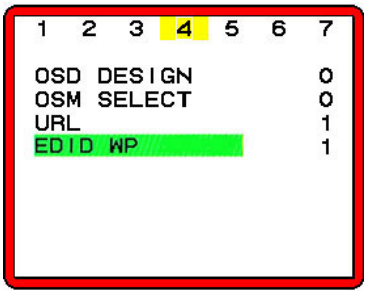
Enter an input in the column of [.Year=>] in manufactured year(A.D. four digits) and [Month=>] in manufactured month through the keyboard, and press the [Input OK] button.



12) 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].



13) If the writing of EDID data is completed normally, EDID WP will be returned to "1 (ON)" and Factory mode will be closed.



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

5.4.2 EDID Data Inspection and Writing to the DVI Connector (Digital)

1) Connect the EDID data writing unit with jigs, etc. (Refer to a Fig.5.1.2 DVI-D connector connection figure)
2) The "BACK" button is pushed twice and the [MODEL SELECT] screen is displayed. Cursor is united and double-clicked to [LCD1970NX (DVI-D)].
3) 6) to 14) is carried out in the procedure of the "5.4.1 EDID Data Inspection and Writing to the D-SUB Connector (Analog) ".

5.5 EDID Data File

EDID date: LCD1970NX_A.edi (ANALOG)

	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	62	66	01	01	01	01
10	Note1	Note2	01	03	0E	26	1E	78	EA	CB	05	A3	58	4C	9B	25
20	13	50	54	BF	EF	80	71	4F	81	40	81	80	01	01	01	01
30	01	01	01	01	01	01	30	2A	00	98	51	00	2A	40	30	70
40	13	00	78	2D	11	00	00	1E	00	00	00	FD	00	38	4B	1F
50	51	0E	00	0A	20	20	20	20	20	20	00	00	00	FC	00	4C
60	43	44	31	39	37	30	4E	58	0A	20	20	20	00	00	00	FF
70	00	Note3	Note3	Note3	Note3	Note3	Note3	Note3	Note3	Note3	Note3	Note3	Note3	Note3	00	Note4

EDID date: LCD1970NX_D.edi (DIGITAL)

	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	62	66	01	01	01	01
10	Note1	Note2	01	03	80	26	1E	78	EA	CB	05	A3	58	4C	9B	25
20	13	50	54	BF	EF	80	71	4F	81	40	81	80	01	01	01	01
30	01	01	01	01	01	01	30	2A	00	98	51	00	2A	40	30	70
40	13	00	78	2D	11	00	00	1E	00	00	00	FD	00	38	4B	1F
50	51	0E	00	0A	20	20	20	20	20	20	00	00	00	FC	00	4C
60	43	44	31	39	37	30	4E	58	0A	20	20	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

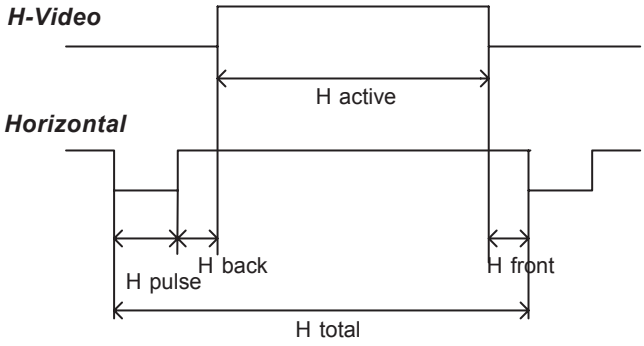
Note 3: address 71h ~ 7Dh — Serial Number (ASCII coded)

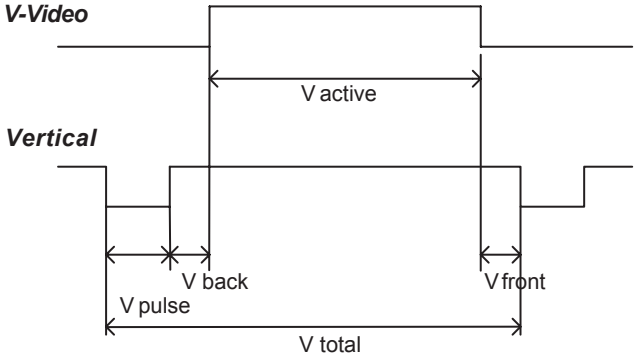
If less than 13 char, terminate with 0Ah and fill the rests with 20h.

Note 4: address 7Fh — Checksum

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

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	

	No.	15		16	
Item	Abbreviation	MAC 1152x870 75Hz		VESA 1280x960 60Hz	
Pixel frequency	fc	100.00MHz		108.00MHz	
Horizontal frequency	fh	68.82kHz		60.00kHz	
Line Time total	Th	14.56us	1456CLK	16.67us	1800CLK
Horizontal active display	Thd	11.52us	1152CLK	11.85us	1280CLK
Horizontal sync pulse	Thp	1.28us	128CK	1.04us	112CLK
Horizontal back porch	Thb	1.44us	144CLK	2.89us	312CLK
Horizontal front porch	Thf	0.32us	32CLk	0.89us	96CLK
Horizontal sync polarity		NEG		POS	
Vertical Frequency	fv	75.06Hz		60.00Hz	
Frame time total	Tv	13.32ms	915H	16.67ms	1000H
Vertical active display	Tvd	12.67ms	870H	16.0ms	960H
Vertical sync pulse	Tvp	0.04ms	3H	0.05ms	3H
Vertical back porch	Tvb	0.57ms	39H	0.60ms	36H
Vertical front porch	Tvf	0.04ms	3H	0.017ms	1H
Vertical sync polarity		NEG		POS	

	No.	17		18	
Item	Abbreviation	VESA 1280x960 75Hz		VESA 1280x1024 60Hz	
Pixel frequency	fc	129.60MHz		108.00MHz	
Horizontal frequency	fh	75.000kHz		63.981kHz	
Line Time total	Th	13.333us	1728CLK	15.63us	1688CLK
Horizontal active display	Thd	9.877us	1280CLK	11.85us	1280CLK
Horizontal sync pulse	Thp	0.988us	128CLK	1.04us	112CLK
Horizontal back porch	Thb	1.975us	256CLK	2.30us	248CLK
Horizontal front porch	Thf	0.494us	64CLK	0.44us	48CLK
Horizontal sync polarity		POS		POS	
Vertical Frequency	fv	75.000Hz		60.02Hz	
Frame time total	Tv	13.333ms	1000H	16.67ms	1066H
Vertical active display	Tvd	12.800ms	960H	16.00ms	1024H
Vertical sync pulse	Tvp	0.040ms	3H	0.05ms	3H
Vertical back porch	Tvb	0.480ms	36H	0.59ms	38H
Vertical front porch	Tvf	0.013ms	1H	0.02ms	1H
Vertical sync polarity		POS		POS	

		MODE			
	No.	19			
Item	Abbreviation	VESA 1280x1024 75Hz			
Pixel frequency	fc	135.00MHz			
Horizontal frequency	fh	79.98kHz			
Line Time total	Th	12.50us	1688CLK		
Horizontal active display	Thd	9.48us	1280CLK		
Horizontal sync pulse	Thp	1.07us	144CLK		
Horizontal back porch	Thb	1.84us	248CLK		
Horizontal front porch	Thf	0.12us	16CLK		
Horizontal sync polarity		POS			
Vertical Frequency	fv	75.03Hz			
Frame time total	Tv	13.33ms	1066H		
Vertical active display	Tvd	12.80ms	1024H		
Vertical sync pulse	Tvp	0.04ms	3H		
Vertical back porch	Tvb	0.48us	38H		
Vertical front porch	Tvf	0.01ms	1H		
Vertical sync polarity		POS			

CIRCUIT DESCRIPTION

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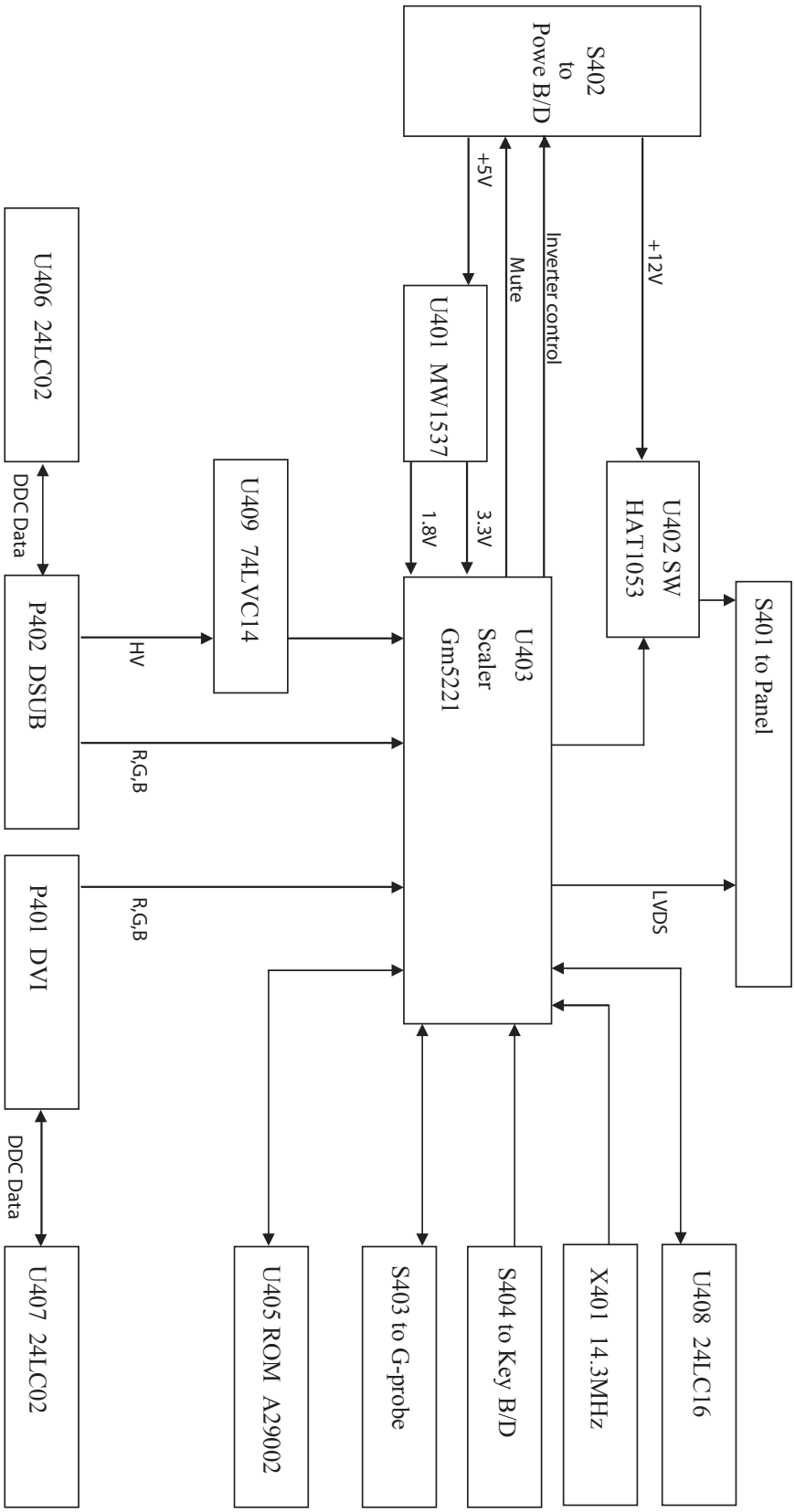
1. Block Diagram



2. Power Circuit

2.1 Power Input

15V & 5V DC input from Power Board through S402 to interface.

The 12V is provide Panel Vcc.

The 5V is provide Flash Memory, and EEPROM.

2.2 DC to DC Circuit

U401 is used generate the system power. It provides low-dropout voltage output 3.3V and 1.8V to provide Scalar.
U601 is used USB the system power. It provides low-dropout voltage output 3.3V to provide USB.

2.3 Panel Vcc Control

Panel power control used Q401 and U402 from U403 (pin 67) PPWR.

While the PPWR stay at High level; the panel voltage is 3.3V.

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

3. Microprocessor Control Circuit

3.1 Clock Circuit

The X401 is crystal; it generates a 14.318MHz output for Scalar IC.

3.2 I^2C Buses

There are 3 set I^2C in the circuit:

The first I^2C is used for Analog EDID in U406 (Pin6: SCL, Pin5: SDA)

And Analog DDC/CI in U403 (Pin77: SCL, Pin78: SDA)

The second I2C is used for Digital EDID in U407 (Pin6: SCL, Pin5 SDA)

The third I2C is used for OSD parameter stored in U403 (Pin92: SCL, Pin93: SDA).

3.3 General-purpose Port

3.3.1 Key Scan Status

U403 pin 81 is for “POWER”

U403 pin 69 is for OSD “MENU/EXIT” adjust

U403 pin 85 is for OSD “SELECT/1 ◄► 2” adjust

U403 pin 88 is for OSD “RESET” adjust

	Pin 101	Pin 100	Pin 89	Pin 84	
UP			v	v	
DOWN	v	v			
RIGHT		v	v		
LEFT	v			v	

3.3.2 Scalar Control

U403 Pin178 input scalar reset signal.

3.3.3 LED Control

U403 pin 83 controls Q404 for Green LED.

U403 pin 82 controls Q403 for Amber LED.

3.3.4 Data Memory

Flash Memory IC (U405) store F/W parameters.

4. Scalar

The scalar IC (U403) is analog and digital interface input.

It embedded ADC, MCU, and LVDS circuit.

X401 output 14.318M Hz fed to U403.

U409 schmitt trigger for sync. Waveform processor. And fed to U403 for mode detect.

REPLACEMENT PARTS LIST

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REPLACEMENT PARTS LIST(For Europe)

The components specified for Model LCD1970NX(B)

SYMBOL	For Europe (NPG Part Number)	DESCRIPTION
*** ICS ***		
U401	E1A12251	IC SMD MW1537BCM5
U402	EQ500117	CHIP FET P HAT1053M
U403	E1A12271	IC SMD GM5221-LF-BC
U405	EHA12331	IC SMD A290021TL-70
U406	EHA50051	IC SMD 24LC02B
U407	EHA50051	IC SMD 24LC02B
U408	EHA10081	IC SMD 24LC16B SO8
U409	EHA50011	IC MOS 74LVC14
U410	EHA10471	IC SMD MIC1815 RESET
*** TRANSISTORS ***		
Q401	EN000211	CHIP TR NPN DTC114EUA
Q402	EN000211	CHIP TR NPN DTC114EUA
Q403	EN000211	CHIP TR NPN DTC114EUA
Q404	EN000211	CHIP TR NPN DTC114EUA
Q405	E2A00341	TR SMD MMBT3906-LF PNP SO
*** DIODES ***		
D401	E4K00341	DI SMD SCS495D-LF
D402	E4K00351	DI SMD SCS217K-LF
D403	E4K00351	DI SMD SCS217K-LF
D404	E4K00351	DI SMD SCS217K-LF
D405	E4K00341	DI SMD SCS495D-LF
D406	E4K00351	DI SMD SCS217K-LF
D407	E4K00351	DI SMD SCS217K-LF
D408	E4K00351	DI SMD SCS217K-LF
D409	E4K00351	DI SMD SCS217K-LF
D410	E4K00351	DI SMD SCS217K-LF
D411	E4K00351	DI SMD SCS217K-LF
D412	E4K00351	DI SMD SCS217K-LF
D413	E4K00351	DI SMD SCS217K-LF
D414	EJ100231	DIODE 1N4001
D415	EJ100231	DIODE 1N4001
D801	EL500611	LED SMD JEC-3227UOGE
ZD401	EYD40562	CHIP DIODE ZENER UDZS5.6B
ZD402	EYD40562	CHIP DIODE ZENER UDZS5.6B
ZD403	EYD40562	CHIP DIODE ZENER UDZS5.6B
ZD404	EYD40562	CHIP DIODE ZENER UDZS5.6B
ZD405	EYD40562	CHIP DIODE ZENER UDZS5.6B
ZD406	EYD40562	CHIP DIODE ZENER UDZS5.6B
ZD407	EYD40562	CHIP DIODE ZENER UDZS5.6B

SYMBOL	For Europe (NPG Part Number)	DESCRIPTION
ZD408	EYD40562	CHIP DIODE ZENER UDZS5.6B

*** RELAYS & SWITCHES ***

SW801	J3A00041	SW SMD TACT TSXH-2G
SW802	J3A00041	SW SMD TACT TSXH-2G
SW803	JCA00031	SW SMD TACT TMFV-1502
SW804	J3A00041	SW SMD TACT TSXH-2G
SW805	J3A00041	SW SMD TACT TSXH-2G
XD1012	R3900251	WIRE SW 1015#18L60 GRAY

*** PWB ASSYS ***

INVPWR	JM100401	U INVERT-POWER L194RJ LG
MAIN	AM0RJ1ML	MAIN INSERT ASSY
SW	AS0RH1ML	SW INSERT ASSY

*** COILS & FILTERS ***

B402	HM017031	L BEAD SMD MHC1608S121P
B403	HM017031	L BEAD SMD MHC1608S121P
B404	HM017031	L BEAD SMD MHC1608S121P
B405	HM017021	L BEAD SMD MCB1608S121G
B406	HM017031	L BEAD SMD MHC1608S121P
B407	HM017031	L BEAD SMD MHC1608S121P
B408	HM017031	L BEAD SMD MHC1608S121P
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	HM017061	L BEAD SMD MCB1608H750G
B418	HM017061	L BEAD SMD MCB1608H750G
B419	HM017061	L BEAD SMD MCB1608H750G
B420	HM011532	CHIP FERRITE BK2125HS431
B421	HM011532	CHIP FERRITE BK2125HS431
B422	HM017021	L BEAD SMD MCB1608S121G
B423	HM017021	L BEAD SMD MCB1608S121G
B424	HM017021	L BEAD SMD MCB1608S121G
B425	HM017021	L BEAD SMD MCB1608S121G
B426	HM017021	L BEAD SMD MCB1608S121G
B427	HM017021	L BEAD SMD MCB1608S121G
B428	HM017021	L BEAD SMD MCB1608S121G
B429	HM017021	L BEAD SMD MCB1608S121G
B430	HM017021	L BEAD SMD MCB1608S121G
B431	HM017021	L BEAD SMD MCB1608S121G
B432	HM017021	L BEAD SMD MCB1608S121G
B433	80000991	BEAD WBR6H-3T-R7K-B5

SYMBOL	For Europe (NPG Part Number)	DESCRIPTION
B434	80000991	BEAD WBR6H-3T-R7K-B5
B435	80000991	BEAD WBR6H-3T-R7K-B5
B436	HM017021	L BEAD SMD MCB1608S121G
B437	HM017021	L BEAD SMD MCB1608S121G
B439	HM017021	L BEAD SMD MCB1608S121G
B442	HM017021	L BEAD SMD MCB1608S121G

*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***

LCD	3A684091 (NMV Part Number)	TFT LM190E02-A4K5
P402	RA805152	CN MINI-D-SUB 15P SIDE
X401	E8100131	OSC X'TAL 49US 14.318MHZ
XD1002	RE010081	CABLE VIDEO GR DSUB-DSUB
XD1007	RG030031	PW CORD EU 2M R-PLUG GR
XD1010	R3201481	WIRE CC12P 1571#30L180
XD1011	R3201471	WIRE CC30P 1589#30L220

*** APPEARANCE PARTS ***

LABEL	15004101	LABEL RATING LCD1970NXH W
M-CONN	17002721	PAD,L194,LPL
XD1000	10107361	BACK L194RJ (N) WH
XD1001	10107611	BEZEL WH(N) BC L194RJ
XD1003	12001211	CHASSIS BASE 1970NXH,(LPL
XD1004	11700771	COVER UNIT WH L194RJ
XD1008	12302271	SHIELD 1970VH/NXH
XD1009	14900211	STAND UNIT L194R WH

*** PRINTED & PACKING MATERIALS ***

BAG-1	13700483	BAG LCD1960NX EPE
CARTON	13204921	CARTON BOX LCD1970NX B
MANUAL	15503533	MANUAL ASSY LCD1970NX B
WRNTY1	15802261	SHEET CAUTION PISA19 B
WRNTY2	15802161	SHEET SETUP LCD1970NX/V B
XD1005	13401781	FILLER B L194R,(A,B,C,)
XD1006	13401771	FILLER T L194R,(A,B,C,)

*** RESISTORS ***

F401	FM100000	CHIP 1/8W(T) 5% 0 H
F402	FM100000	CHIP 1/8W(T) 5% 0 H
R401	FM010103	CHIP RES 1/10W(T) 5% 10KO
R403	FM010103	CHIP RES 1/10W(T) 5% 10KO
R404	FM010103	CHIP RES 1/10W(T) 5% 10KO
R405	FM010103	CHIP RES 1/10W(T) 5% 10KO
R406	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R407	FM010103	CHIP RES 1/10W(T) 5% 10KO
R408	FM010103	CHIP RES 1/10W(T) 5% 10KO
R409	F8012490	R SMD METAL 1/10W 249 F 0
R410	FM010103	CHIP RES 1/10W(T) 5% 10KO
R411	FM010103	CHIP RES 1/10W(T) 5% 10KO

SYMBOL	For Europe (NPG Part Number)	DESCRIPTION
R412	FM010103	CHIP RES 1/10W(T) 5% 10KO
R416	FM010103	CHIP RES 1/10W(T) 5% 10KO
R420	FM010103	CHIP RES 1/10W(T) 5% 10KO
R421	FM010103	CHIP RES 1/10W(T) 5% 10KO
R422	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
R431	FM010103	CHIP RES 1/10W(T) 5% 10KO
R434	FM010103	CHIP RES 1/10W(T) 5% 10KO
R437	F8014709	R SMD METAL 1/10W 47 F 06
R438	FN517509	R SMD METAL 1/3W 75 F T 1
R439	F8018459	R SMD METAL 1/10W 84.5 F
R440	FM010103	CHIP RES 1/10W(T) 5% 10KO
R441	FM010473	CHIP 1/10W(T) 5% 47K
R442	FM010101	CHIP RES 1/10W(T) 5% 100O
R443	F8014709	R SMD METAL 1/10W 47 F 06
R444	FM010101	CHIP RES 1/10W(T) 5% 100O
R445	FN517509	R SMD METAL 1/3W 75 F T 1
R446	F8018459	R SMD METAL 1/10W 84.5 F
R447	F8014709	R SMD METAL 1/10W 47 F 06
R448	FM010101	CHIP RES 1/10W(T) 5% 100O
R449	FM010101	CHIP RES 1/10W(T) 5% 100O
R450	FN517509	R SMD METAL 1/3W 75 F T 1
R451	F8018459	R SMD METAL 1/10W 84.5 F
R452	FM010101	CHIP RES 1/10W(T) 5% 100O
R453	FM010101	CHIP RES 1/10W(T) 5% 100O
R454	FM010222	CHIP RES 1/10W(T) 5% 2.2K
R455	FM010222	CHIP RES 1/10W(T) 5% 2.2K
R456	FM010103	CHIP RES 1/10W(T) 5% 10KO
R459	FM010103	CHIP RES 1/10W(T) 5% 10KO
R460	FM010473	CHIP 1/10W(T) 5% 47K
R461	FM010101	CHIP RES 1/10W(T) 5% 100O
R462	FM010101	CHIP RES 1/10W(T) 5% 100O
R463	FM010101	CHIP RES 1/10W(T) 5% 100O
R464	FM010101	CHIP RES 1/10W(T) 5% 100O
R465	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R466	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R467	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R468	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R469	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R470	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R471	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R472	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R473	FM010103	CHIP RES 1/10W(T) 5% 10KO
R474	FM010472	CHIP RES 1/10W(T) 5% 4.7K
R475	FM010472	CHIP RES 1/10W(T) 5% 4.7K
R476	FM010101	CHIP RES 1/10W(T) 5% 100O
R477	FM010101	CHIP RES 1/10W(T) 5% 100O

SYMBOL	For Europe (NPG Part Number)	DESCRIPTION
R478	FM100222	CHIP RES 1/8W(T) 5% 2.2KO
R479	FM010103	CHIP RES 1/10W(T) 5% 10KO
R480	FM010103	CHIP RES 1/10W(T) 5% 10KO
R481	FM010103	CHIP RES 1/10W(T) 5% 10KO
R482	FM010103	CHIP RES 1/10W(T) 5% 10KO
R483	FM100332	R SMD METAL 1/8W 3.3K J T
R484	FM010103	CHIP RES 1/10W(T) 5% 10KO
R485	FM010103	CHIP RES 1/10W(T) 5% 10KO
R486	FM010103	CHIP RES 1/10W(T) 5% 10KO
R487	FM010103	CHIP RES 1/10W(T) 5% 10KO
R488	FN012009	R SMD 1/10W 20H F 0603
R489	FN012009	R SMD 1/10W 20H F 0603
R490	FM010103	CHIP RES 1/10W(T) 5% 10KO
R492	FM010103	CHIP RES 1/10W(T) 5% 10KO
R493	FM010472	CHIP RES 1/10W(T) 5% 4.7K
R494	FM010103	CHIP RES 1/10W(T) 5% 10KO
R495	FM010103	CHIP RES 1/10W(T) 5% 10KO

*** CAPACITORS ***

C401	GGM10620	C ELE105 10U 16V M (T) LO
C402	GX433052	C SMD C0G 33P 50V J 0603
C403	GX433052	C SMD C0G 33P 50V J 0603
C404	GX410423	C SMD X7R 0.1U 16V K 0603
C409	GX410423	C SMD X7R 0.1U 16V K 0603
C410	GX410423	C SMD X7R 0.1U 16V K 0603
C411	GGR22714	VC ELE105 220U 10V M (T)L
C412	GX410423	C SMD X7R 0.1U 16V K 0603
C413	GGR22714	VC ELE105 220U 10V M (T)L
C414	GX410423	C SMD X7R 0.1U 16V K 0603
C415	GGR10714	C ELE105 100U 10V M (T) L
C416	GX410423	C SMD X7R 0.1U 16V K 0603
C417	GX410423	C SMD X7R 0.1U 16V K 0603
C418	GGR22714	VC ELE105 220U 10V M (T)L
C419	GX410423	C SMD X7R 0.1U 16V K 0603
C420	GGR22714	VC ELE105 220U 10V M (T)L
C421	GGM22610	C ELE105 22U 10V M(T) LOW
C422	GX410423	C SMD X7R 0.1U 16V K 0603
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	GGM22610	C ELE105 22U 10V M(T) LOW
C427	GX410423	C SMD X7R 0.1U 16V K 0603
C428	GX410423	C SMD X7R 0.1U 16V K 0603
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	G2M10550	C ELE105 1U 50V M T PW
C433	GX410353	C SMD X7R 0.01U 50V K 060

SYMBOL	For Europe (NPG Part Number)	DESCRIPTION
C434	GX410423	C SMD X7R 0.1U 16V K 0603
C435	GGM22610	C ELE105 22U 10V M(T) LOW
C436	GX410423	C SMD X7R 0.1U 16V K 0603
C437	GGM22610	C ELE105 22U 10V M(T) LOW
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	G2M10550	C ELE105 1U 50V M T PW
C443	GX410353	C SMD X7R 0.01U 50V K 060
C444	GGM22610	C ELE105 22U 10V M(T) LOW
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	GX410423	C SMD X7R 0.1U 16V K 0603
C450	GX410423	C SMD X7R 0.1U 16V K 0603
C451	GX410423	C SMD X7R 0.1U 16V K 0603
C452	M745R65D	C SMD C0G 5.6P 50V D 0603
C453	M745R65D	C SMD C0G 5.6P 50V D 0603
C454	GGM22610	C ELE105 22U 10V M(T) LOW
C455	GX410423	C SMD X7R 0.1U 16V K 0603
C456	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	GGM22610	C ELE105 22U 10V M(T) LOW
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
C464	GX410423	C SMD X7R 0.1U 16V K 0603
C465	GX410423	C SMD X7R 0.1U 16V K 0603
C467	GX410423	C SMD X7R 0.1U 16V K 0603
C468	GX410353	C SMD X7R 0.01U 50V K 060
C470	GX410353	C SMD X7R 0.01U 50V K 060
C471	GX410423	C SMD X7R 0.1U 16V K 0603
C472	GX410423	C SMD X7R 0.1U 16V K 0603
C473	GX410353	C SMD X7R 0.01U 50V K 060
C475	GX410423	C SMD X7R 0.1U 16V K 0603
C476	GX410423	C SMD X7R 0.1U 16V K 0603
C477	GX410353	C SMD X7R 0.01U 50V K 060
C478	GX410353	C SMD X7R 0.01U 50V K 060
C480	GX410423	C SMD X7R 0.1U 16V K 0603
C481	GX410353	C SMD X7R 0.01U 50V K 060
C484	GX447052	C SMD C0G 47P 50V J 0603
C485	GX447052	C SMD C0G 47P 50V J 0603
C486	GX410423	C SMD X7R 0.1U 16V K 0603
C487	GX410423	C SMD X7R 0.1U 16V K 0603

SYMBOL	For Europe (NPG Part Number)	DESCRIPTION
C488	GX410423	C SMD X7R 0.1U 16V K 0603
C489	GX410423	C SMD X7R 0.1U 16V K 0603
C490	GX410423	C SMD X7R 0.1U 16V K 0603
C491	GX410423	C SMD X7R 0.1U 16V K 0603
C492	GX410423	C SMD X7R 0.1U 16V K 0603
C493	GX410423	C SMD X7R 0.1U 16V K 0603
C494	GX410423	C SMD X7R 0.1U 16V K 0603
C495	GX410423	C SMD X7R 0.1U 16V K 0603
C496	GX410423	C SMD X7R 0.1U 16V K 0603
C497	GX410423	C SMD X7R 0.1U 16V K 0603
C498	GX410423	C SMD X7R 0.1U 16V K 0603
C499	GX410423	C SMD X7R 0.1U 16V K 0603
C500	GX410423	C SMD X7R 0.1U 16V K 0603
C501	GX410423	C SMD X7R 0.1U 16V K 0603
C502	GX410423	C SMD X7R 0.1U 16V K 0603
C503	GX410423	C SMD X7R 0.1U 16V K 0603
C504	GX410423	C SMD X7R 0.1U 16V K 0603
C505	GX410423	C SMD X7R 0.1U 16V K 0603
C506	GX410353	C SMD X7R 0.01U 50V K 060
C507	GX410423	C SMD X7R 0.1U 16V K 0603
C510	GX410423	C SMD X7R 0.1U 16V K 0603
C511	GX410423	C SMD X7R 0.1U 16V K 0603

REPLACEMENT PARTS LIST(For Europe)

The components specified for Model LCD1970NX-BK(B)

SYMBOL	For Europe (NPG Part Number)	DESCRIPTION
*** ICS ***		
U401	E1A12251	IC SMD MW1537BCM5
U402	EQ500117	CHIP FET P HAT1053M
U403	E1A12271	IC SMD GM5221-LF-BC
U405	EHA12331	IC SMD A290021TL-70
U406	EHA50051	IC SMD 24LC02B
U407	EHA50051	IC SMD 24LC02B
U408	EHA10081	IC SMD 24LC16B SO8
U409	EHA50011	IC MOS 74LVC14
U410	EHA10471	IC SMD MIC1815 RESET
*** TRANSISTORS ***		
Q401	EN000211	CHIP TR NPN DTC114EUA
Q402	EN000211	CHIP TR NPN DTC114EUA
Q403	EN000211	CHIP TR NPN DTC114EUA
Q404	EN000211	CHIP TR NPN DTC114EUA
Q405	E2A00341	TR SMD MMBT3906-LF PNP SO
*** DIODES ***		
D401	E4K00341	DI SMD SCS495D-LF
D402	E4K00351	DI SMD SCS217K-LF
D403	E4K00351	DI SMD SCS217K-LF
D404	E4K00351	DI SMD SCS217K-LF
D405	E4K00341	DI SMD SCS495D-LF
D406	E4K00351	DI SMD SCS217K-LF
D407	E4K00351	DI SMD SCS217K-LF
D408	E4K00351	DI SMD SCS217K-LF
D409	E4K00351	DI SMD SCS217K-LF
D410	E4K00351	DI SMD SCS217K-LF
D411	E4K00351	DI SMD SCS217K-LF
D412	E4K00351	DI SMD SCS217K-LF
D413	E4K00351	DI SMD SCS217K-LF
D414	EJ100231	DIODE 1N4001
D415	EJ100231	DIODE 1N4001
D801	EL500611	LED SMD JEC-3227UOGE
ZD401	EYD40562	CHIP DIODE ZENER UDZS5.6B
ZD402	EYD40562	CHIP DIODE ZENER UDZS5.6B
ZD403	EYD40562	CHIP DIODE ZENER UDZS5.6B
ZD404	EYD40562	CHIP DIODE ZENER UDZS5.6B
ZD405	EYD40562	CHIP DIODE ZENER UDZS5.6B
ZD406	EYD40562	CHIP DIODE ZENER UDZS5.6B
ZD407	EYD40562	CHIP DIODE ZENER UDZS5.6B

SYMBOL	For Europe (NPG Part Number)	DESCRIPTION
ZD408	EYD40562	CHIP DIODE ZENER UDZS5.6B

*** RELAYS & SWITCHES ***

SW801	J3A00041	SW SMD TACT TSXH-2G
SW802	J3A00041	SW SMD TACT TSXH-2G
SW803	JCA00031	SW SMD TACT TMFV-1502
SW804	J3A00041	SW SMD TACT TSXH-2G
SW805	J3A00041	SW SMD TACT TSXH-2G
XD1012	R3900241	WIRE SW 1015#18L60 BLK

*** PWB ASSYS ***

INVPWR	JM100401	U INVERT-POWER L194RJ LG
MAIN	AM0RJ1ML	MAIN INSERT ASSY
SW	AS0RH1ML	SW INSERT ASSY

*** COILS & FILTERS ***

B402	HM017031	L BEAD SMD MHC1608S121P
B403	HM017031	L BEAD SMD MHC1608S121P
B404	HM017031	L BEAD SMD MHC1608S121P
B405	HM017021	L BEAD SMD MCB1608S121G
B406	HM017031	L BEAD SMD MHC1608S121P
B407	HM017031	L BEAD SMD MHC1608S121P
B408	HM017031	L BEAD SMD MHC1608S121P
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	HM017061	L BEAD SMD MCB1608H750G
B418	HM017061	L BEAD SMD MCB1608H750G
B419	HM017061	L BEAD SMD MCB1608H750G
B420	HM011532	CHIP FERRITE BK2125HS431
B421	HM011532	CHIP FERRITE BK2125HS431
B422	HM017021	L BEAD SMD MCB1608S121G
B423	HM017021	L BEAD SMD MCB1608S121G
B424	HM017021	L BEAD SMD MCB1608S121G
B425	HM017021	L BEAD SMD MCB1608S121G
B426	HM017021	L BEAD SMD MCB1608S121G
B427	HM017021	L BEAD SMD MCB1608S121G
B428	HM017021	L BEAD SMD MCB1608S121G
B429	HM017021	L BEAD SMD MCB1608S121G
B430	HM017021	L BEAD SMD MCB1608S121G
B431	HM017021	L BEAD SMD MCB1608S121G
B432	HM017021	L BEAD SMD MCB1608S121G
B433	80000991	BEAD WBR6H-3T-R7K-B5

SYMBOL	For Europe (NPG Part Number)	DESCRIPTION
B434	80000991	BEAD WBR6H-3T-R7K-B5
B435	80000991	BEAD WBR6H-3T-R7K-B5
B436	HM017021	L BEAD SMD MCB1608S121G
B437	HM017021	L BEAD SMD MCB1608S121G
B439	HM017021	L BEAD SMD MCB1608S121G
B442	HM017021	L BEAD SMD MCB1608S121G

*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***

LCD	3A684091 (NMV Part Number)	TFT LM190E02-A4K5
P402	RA805152	CN MINI-D-SUB 15P SIDE
X401	E8100131	OSC X'TAL 49US 14.318MHZ
XD1002	RE010091	CABLE VIDEO BLK DSUB-DSUB
XD1007	RG030051	PW CORD EU 2M BLK WANSHIN
XD1010	R3201481	WIRE CC12P 1571#30L180
XD1011	R3201471	WIRE CC30P 1589#30L220

*** APPEARANCE PARTS ***

LABEL	15004111	LABEL RATING LCD1970NXH B
M-CONN	17002721	PAD,L194,LPL
XD1000	10107371	BACK L194RJ (N) BK
XD1001	10107611	BEZEL WH(N) BC L194RJ
XD1003	12001211	CHASSIS BASE 1970NXH,(LPL
XD1004	11700781	COVER UNIT BK L194RJ
XD1008	12302271	SHIELD 1970VH/NXH
XD1009	14900221	STAND UNIT L194R BK

*** PRINTED & PACKING MATERIALS ***

BAG-1	13700483	BAG LCD1960NX EPE
CARTON	13204921	CARTON BOX LCD1970NX B
MANUAL	15503533	MANUAL ASSY LCD1970NX B
WRNTY1	15802261	SHEET CAUTION PISA19 B
WRNTY2	15802161	SHEET SETUP LCD1970NX/V B
XD1005	13401781	FILLER B L194R,(A,B,C,)
XD1006	13401771	FILLER T L194R,(A,B,C,)

*** RESISTORS ***

F401	FM100000	CHIP 1/8W(T) 5% 0 H
F402	FM100000	CHIP 1/8W(T) 5% 0 H
R401	FM010103	CHIP RES 1/10W(T) 5% 10KO
R403	FM010103	CHIP RES 1/10W(T) 5% 10KO
R404	FM010103	CHIP RES 1/10W(T) 5% 10KO
R405	FM010103	CHIP RES 1/10W(T) 5% 10KO
R406	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R407	FM010103	CHIP RES 1/10W(T) 5% 10KO
R408	FM010103	CHIP RES 1/10W(T) 5% 10KO
R409	F8012490	R SMD METAL 1/10W 249 F 0
R410	FM010103	CHIP RES 1/10W(T) 5% 10KO
R411	FM010103	CHIP RES 1/10W(T) 5% 10KO

SYMBOL	For Europe (NPG Part Number)	DESCRIPTION
R412	FM010103	CHIP RES 1/10W(T) 5% 10KO
R416	FM010103	CHIP RES 1/10W(T) 5% 10KO
R420	FM010103	CHIP RES 1/10W(T) 5% 10KO
R421	FM010103	CHIP RES 1/10W(T) 5% 10KO
R422	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
R431	FM010103	CHIP RES 1/10W(T) 5% 10KO
R434	FM010103	CHIP RES 1/10W(T) 5% 10KO
R437	F8014709	R SMD METAL 1/10W 47 F 06
R438	FN517509	R SMD METAL 1/3W 75 F T 1
R439	F8018459	R SMD METAL 1/10W 84.5 F
R440	FM010103	CHIP RES 1/10W(T) 5% 10KO
R441	FM010473	CHIP 1/10W(T) 5% 47K
R442	FM010101	CHIP RES 1/10W(T) 5% 100O
R443	F8014709	R SMD METAL 1/10W 47 F 06
R444	FM010101	CHIP RES 1/10W(T) 5% 100O
R445	FN517509	R SMD METAL 1/3W 75 F T 1
R446	F8018459	R SMD METAL 1/10W 84.5 F
R447	F8014709	R SMD METAL 1/10W 47 F 06
R448	FM010101	CHIP RES 1/10W(T) 5% 100O
R449	FM010101	CHIP RES 1/10W(T) 5% 100O
R450	FN517509	R SMD METAL 1/3W 75 F T 1
R451	F8018459	R SMD METAL 1/10W 84.5 F
R452	FM010101	CHIP RES 1/10W(T) 5% 100O
R453	FM010101	CHIP RES 1/10W(T) 5% 100O
R454	FM010222	CHIP RES 1/10W(T) 5% 2.2K
R455	FM010222	CHIP RES 1/10W(T) 5% 2.2K
R456	FM010103	CHIP RES 1/10W(T) 5% 10KO
R459	FM010103	CHIP RES 1/10W(T) 5% 10KO
R460	FM010473	CHIP 1/10W(T) 5% 47K
R461	FM010101	CHIP RES 1/10W(T) 5% 100O
R462	FM010101	CHIP RES 1/10W(T) 5% 100O
R463	FM010101	CHIP RES 1/10W(T) 5% 100O
R464	FM010101	CHIP RES 1/10W(T) 5% 100O
R465	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R466	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R467	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R468	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R469	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R470	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R471	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R472	FM010000	CHIP RES 1/10W(T) 5% 0OHM
R473	FM010103	CHIP RES 1/10W(T) 5% 10KO
R474	FM010472	CHIP RES 1/10W(T) 5% 4.7K
R475	FM010472	CHIP RES 1/10W(T) 5% 4.7K
R476	FM010101	CHIP RES 1/10W(T) 5% 100O
R477	FM010101	CHIP RES 1/10W(T) 5% 100O

SYMBOL	For Europe (NPG Part Number)	DESCRIPTION
R478	FM100222	CHIP RES 1/8W(T) 5% 2.2KO
R479	FM010103	CHIP RES 1/10W(T) 5% 10KO
R480	FM010103	CHIP RES 1/10W(T) 5% 10KO
R481	FM010103	CHIP RES 1/10W(T) 5% 10KO
R482	FM010103	CHIP RES 1/10W(T) 5% 10KO
R483	FM100332	R SMD METAL 1/8W 3.3K J T
R484	FM010103	CHIP RES 1/10W(T) 5% 10KO
R485	FM010103	CHIP RES 1/10W(T) 5% 10KO
R486	FM010103	CHIP RES 1/10W(T) 5% 10KO
R487	FM010103	CHIP RES 1/10W(T) 5% 10KO
R488	FN012009	R SMD 1/10W 20H F 0603
R489	FN012009	R SMD 1/10W 20H F 0603
R490	FM010103	CHIP RES 1/10W(T) 5% 10KO
R492	FM010103	CHIP RES 1/10W(T) 5% 10KO
R493	FM010472	CHIP RES 1/10W(T) 5% 4.7K
R494	FM010103	CHIP RES 1/10W(T) 5% 10KO
R495	FM010103	CHIP RES 1/10W(T) 5% 10KO

*** CAPACITORS ***

C401	GGM10620	C ELE105 10U 16V M (T) LO
C402	GX433052	C SMD C0G 33P 50V J 0603
C403	GX433052	C SMD C0G 33P 50V J 0603
C404	GX410423	C SMD X7R 0.1U 16V K 0603
C409	GX410423	C SMD X7R 0.1U 16V K 0603
C410	GX410423	C SMD X7R 0.1U 16V K 0603
C411	GGR22714	VC ELE105 220U 10V M (T)L
C412	GX410423	C SMD X7R 0.1U 16V K 0603
C413	GGR22714	VC ELE105 220U 10V M (T)L
C414	GX410423	C SMD X7R 0.1U 16V K 0603
C415	GGR10714	C ELE105 100U 10V M (T) L
C416	GX410423	C SMD X7R 0.1U 16V K 0603
C417	GX410423	C SMD X7R 0.1U 16V K 0603
C418	GGR22714	VC ELE105 220U 10V M (T)L
C419	GX410423	C SMD X7R 0.1U 16V K 0603
C420	GGR22714	VC ELE105 220U 10V M (T)L
C421	GGM22610	C ELE105 22U 10V M(T) LOW
C422	GX410423	C SMD X7R 0.1U 16V K 0603
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	GGM22610	C ELE105 22U 10V M(T) LOW
C427	GX410423	C SMD X7R 0.1U 16V K 0603
C428	GX410423	C SMD X7R 0.1U 16V K 0603
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	G2M10550	C ELE105 1U 50V M T PW
C433	GX410353	C SMD X7R 0.01U 50V K 060

SYMBOL	For Europe (NPG Part Number)	DESCRIPTION
C434	GX410423	C SMD X7R 0.1U 16V K 0603
C435	GGM22610	C ELE105 22U 10V M(T) LOW
C436	GX410423	C SMD X7R 0.1U 16V K 0603
C437	GGM22610	C ELE105 22U 10V M(T) LOW
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	G2M10550	C ELE105 1U 50V M T PW
C443	GX410353	C SMD X7R 0.01U 50V K 060
C444	GGM22610	C ELE105 22U 10V M(T) LOW
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	GX410423	C SMD X7R 0.1U 16V K 0603
C450	GX410423	C SMD X7R 0.1U 16V K 0603
C451	GX410423	C SMD X7R 0.1U 16V K 0603
C452	M745R65D	C SMD C0G 5.6P 50V D 0603
C453	M745R65D	C SMD C0G 5.6P 50V D 0603
C454	GGM22610	C ELE105 22U 10V M(T) LOW
C455	GX410423	C SMD X7R 0.1U 16V K 0603
C456	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	GGM22610	C ELE105 22U 10V M(T) LOW
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
C464	GX410423	C SMD X7R 0.1U 16V K 0603
C465	GX410423	C SMD X7R 0.1U 16V K 0603
C467	GX410423	C SMD X7R 0.1U 16V K 0603
C468	GX410353	C SMD X7R 0.01U 50V K 060
C470	GX410353	C SMD X7R 0.01U 50V K 060
C471	GX410423	C SMD X7R 0.1U 16V K 0603
C472	GX410423	C SMD X7R 0.1U 16V K 0603
C473	GX410353	C SMD X7R 0.01U 50V K 060
C475	GX410423	C SMD X7R 0.1U 16V K 0603
C476	GX410423	C SMD X7R 0.1U 16V K 0603
C477	GX410353	C SMD X7R 0.01U 50V K 060
C478	GX410353	C SMD X7R 0.01U 50V K 060
C480	GX410423	C SMD X7R 0.1U 16V K 0603
C481	GX410353	C SMD X7R 0.01U 50V K 060
C484	GX447052	C SMD C0G 47P 50V J 0603
C485	GX447052	C SMD C0G 47P 50V J 0603
C486	GX410423	C SMD X7R 0.1U 16V K 0603
C487	GX410423	C SMD X7R 0.1U 16V K 0603

SYMBOL	For Europe (NPG Part Number)	DESCRIPTION
C488	GX410423	C SMD X7R 0.1U 16V K 0603
C489	GX410423	C SMD X7R 0.1U 16V K 0603
C490	GX410423	C SMD X7R 0.1U 16V K 0603
C491	GX410423	C SMD X7R 0.1U 16V K 0603
C492	GX410423	C SMD X7R 0.1U 16V K 0603
C493	GX410423	C SMD X7R 0.1U 16V K 0603
C494	GX410423	C SMD X7R 0.1U 16V K 0603
C495	GX410423	C SMD X7R 0.1U 16V K 0603
C496	GX410423	C SMD X7R 0.1U 16V K 0603
C497	GX410423	C SMD X7R 0.1U 16V K 0603
C498	GX410423	C SMD X7R 0.1U 16V K 0603
C499	GX410423	C SMD X7R 0.1U 16V K 0603
C500	GX410423	C SMD X7R 0.1U 16V K 0603
C501	GX410423	C SMD X7R 0.1U 16V K 0603
C502	GX410423	C SMD X7R 0.1U 16V K 0603
C503	GX410423	C SMD X7R 0.1U 16V K 0603
C504	GX410423	C SMD X7R 0.1U 16V K 0603
C505	GX410423	C SMD X7R 0.1U 16V K 0603
C506	GX410353	C SMD X7R 0.01U 50V K 060
C507	GX410423	C SMD X7R 0.1U 16V K 0603
C510	GX410423	C SMD X7R 0.1U 16V K 0603
C511	GX410423	C SMD X7R 0.1U 16V K 0603

REPLACEMENT PARTS LIST(For China)

The components specified for Model LCD1970NX(C)

SYMBOL	For China (NMV Part Number)	DESCRIPTION
*** ICS ***		
U401	79PQ7789	IC SMD MW1537BCM5
U402	79PQ5258	CHIP FET P HAT1053M
U403	79PQ7791	IC SMD GM5221-LF-BC
U405	79PQ7796	IC SMD A290021TL-70
U406	79PQ5880	IC SMD 24LC02B
U407	79PQ5880	IC SMD 24LC02B
U408	79PQ5015	IC SMD 24LC16B SO8
U409	79PQ5257	IC MOS 74LVC14
U410	79PQ5884	IC SMD MIC1815 RESET
*** TRANSISTORS ***		
Q401	79PQ5304	CHIP TR NPN DTC114EUA
Q402	79PQ5304	CHIP TR NPN DTC114EUA
Q403	79PQ5304	CHIP TR NPN DTC114EUA
Q404	79PQ5304	CHIP TR NPN DTC114EUA
Q405	79PQ7797	TR SMD MMBT3906-LF PNP SO
*** DIODES ***		
D401	79PQ7798	DI SMD SCS495D-LF
D402	79PQ7799	DI SMD SCS217K-LF
D403	79PQ7799	DI SMD SCS217K-LF
D404	79PQ7799	DI SMD SCS217K-LF
D405	79PQ7798	DI SMD SCS495D-LF
D406	79PQ7799	DI SMD SCS217K-LF
D407	79PQ7799	DI SMD SCS217K-LF
D408	79PQ7799	DI SMD SCS217K-LF
D409	79PQ7799	DI SMD SCS217K-LF
D410	79PQ7799	DI SMD SCS217K-LF
D411	79PQ7799	DI SMD SCS217K-LF
D412	79PQ7799	DI SMD SCS217K-LF
D413	79PQ7799	DI SMD SCS217K-LF
D414	79PQ5847	DIODE 1N4001
D415	79PQ5847	DIODE 1N4001
D801	79PQ7800	LED SMD JEC-3227UOGE
ZD401	79PQ5250	CHIP DIODE ZENER UDZS5.6B
ZD402	79PQ5250	CHIP DIODE ZENER UDZS5.6B
ZD403	79PQ5250	CHIP DIODE ZENER UDZS5.6B
ZD404	79PQ5250	CHIP DIODE ZENER UDZS5.6B
ZD405	79PQ5250	CHIP DIODE ZENER UDZS5.6B
ZD406	79PQ5250	CHIP DIODE ZENER UDZS5.6B
ZD407	79PQ5250	CHIP DIODE ZENER UDZS5.6B

SYMBOL	For China (NMV Part Number)	DESCRIPTION
ZD408	79PQ5250	CHIP DIODE ZENER UDZS5.6B

*** RELAYS & SWITCHES ***

SW801	79PQ7801	SW SMD TACT TSXH-2G
SW802	79PQ7801	SW SMD TACT TSXH-2G
SW803	79PQ7802	SW SMD TACT TMFV-1502
SW804	79PQ7801	SW SMD TACT TSXH-2G
SW805	79PQ7801	SW SMD TACT TSXH-2G
XD1012	79PQ7804	WIRE SW 1015#18L60 GRAY

*** PWB ASSYS ***

INVPWR	79PQ7815	U INVERT-POWER L194RJ LG
MAIN	79PQ7808	MAIN INSERT ASSY
SW	79PQ7812	SW INSERT ASSY

*** COILS & FILTERS ***

B402	79PQ5848	L BEAD SMD MHC1608S121P
B403	79PQ5848	L BEAD SMD MHC1608S121P
B404	79PQ5848	L BEAD SMD MHC1608S121P
B405	79PQ5850	L BEAD SMD MCB1608S121G
B406	79PQ5848	L BEAD SMD MHC1608S121P
B407	79PQ5848	L BEAD SMD MHC1608S121P
B408	79PQ5848	L BEAD SMD MHC1608S121P
B409	79PQ5850	L BEAD SMD MCB1608S121G
B410	79PQ5850	L BEAD SMD MCB1608S121G
B411	79PQ5850	L BEAD SMD MCB1608S121G
B412	79PQ5850	L BEAD SMD MCB1608S121G
B413	79PQ5850	L BEAD SMD MCB1608S121G
B414	79PQ5850	L BEAD SMD MCB1608S121G
B415	79PQ5850	L BEAD SMD MCB1608S121G
B416	79PQ5850	L BEAD SMD MCB1608S121G
B417	79PQ5865	L BEAD SMD MCB1608H750G
B418	79PQ5865	L BEAD SMD MCB1608H750G
B419	79PQ5865	L BEAD SMD MCB1608H750G
B420	79PQ5265	CHIP FERRITE BK2125HS431
B421	79PQ5265	CHIP FERRITE BK2125HS431
B422	79PQ5850	L BEAD SMD MCB1608S121G
B423	79PQ5850	L BEAD SMD MCB1608S121G
B424	79PQ5850	L BEAD SMD MCB1608S121G
B425	79PQ5850	L BEAD SMD MCB1608S121G
B426	79PQ5850	L BEAD SMD MCB1608S121G
B427	79PQ5850	L BEAD SMD MCB1608S121G
B428	79PQ5850	L BEAD SMD MCB1608S121G
B429	79PQ5850	L BEAD SMD MCB1608S121G
B430	79PQ5850	L BEAD SMD MCB1608S121G
B431	79PQ5850	L BEAD SMD MCB1608S121G
B432	79PQ5850	L BEAD SMD MCB1608S121G
B433	79PQ1233	BEAD WBR6H-3T-R7K-B5

SYMBOL	For China (NMV Part Number)	DESCRIPTION
B434	79PQ1233	BEAD WBR6H-3T-R7K-B5
B435	79PQ1233	BEAD WBR6H-3T-R7K-B5
B436	79PQ5850	L BEAD SMD MCB1608S121G
B437	79PQ5850	L BEAD SMD MCB1608S121G
B439	79PQ5850	L BEAD SMD MCB1608S121G
B442	79PQ5850	L BEAD SMD MCB1608S121G

*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***

LCD	3A684091	TFT LM190E02-A4K5
P402	79PQ7176	CN MINI-D-SUB 15P SIDE
X401	79PQ7820	OSC X'TAL 49US 14.318MHZ
XD1002	79PQ5083	CABLE VIDEO GR DSUB-DSUB
XD1007	79PQ7909	PW CORD CHN CCC 2M GRY WA
XD1010	79PQ7825	WIRE CC12P 1571#30L180
XD1011	79PQ7824	WIRE CC30P 1589#30L220

*** APPEARANCE PARTS ***

LABEL	79PQ7881	LABEL RATING LCD1970NXH W
M-CONN	79PQ7904	PAD,L194,LPL
XD1000	79PQ7832	BACK L194RJ (N) WH
XD1001	79PQ7840	BEZEL WH(N) BC L194RJ
XD1003	79PQ7855	CHASSIS BASE 1970NXH,(LPL
XD1004	79PQ7849	COVER UNIT WH L194RJ
XD1008	79PQ7857	SHIELD 1970VH/NXH
XD1009	79PQ7860	STAND UNIT L194R WH

*** PRINTED & PACKING MATERIALS ***

BAG-1	79PQ7382	BAG LCD1960NX EPE
BAG-3	79PQ5129	PE BAG (340*225)
CRTON1	79PQ7865	CARTON BOX LCD1970NX C
CRTON2	79PQ5613	CARTON SHEET FOR 15 IN LC
MANU1	79PQ7894	MANUAL ASSY LCD1970NX C
MANU2	79PQ7891	MANUAL LCD1970NX C
WRNTY1	79PQ7900	SHEET SETUP LCD1970NX C
WRNTY2	79PQ7226	NAVISET CARTON BOX FLYER
WRNTY3	79PQ7112	SALES OFFICE LIST(B)
XD1005	79PQ7875	FILLER B L194R,(A,B,C,)
XD1006	79PQ7874	FILLER T L194R,(A,B,C,)

*** RESISTORS ***

F401	79PQ1890	CHIP 1/8W(T) 5% 0 H
F402	79PQ1890	CHIP 1/8W(T) 5% 0 H
R401	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R403	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R404	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R405	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R406	79PQ5320	CHIP RES 1/10W(T) 5% 0OHM
R407	79PQ5675	CHIP RES 1/10W(T) 5% 10KO

SYMBOL	For China (NMV Part Number)	DESCRIPTION
R408	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R409	79PQ7910	R SMD METAL 1/10W 249 F 0
R410	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R411	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R412	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R416	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R420	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R421	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R422	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R428	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R429	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R431	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R434	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R437	79PQ7911	R SMD METAL 1/10W 47 F 06
R438	79PQ6053	R SMD METAL 1/3W 75 F T 1
R439	79PQ7912	R SMD METAL 1/10W 84.5 F
R440	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R441	79PQ5039	CHIP 1/10W(T) 5% 47K
R442	79PQ5272	CHIP RES 1/10W(T) 5% 100O
R443	79PQ7911	R SMD METAL 1/10W 47 F 06
R444	79PQ5272	CHIP RES 1/10W(T) 5% 100O
R445	79PQ6053	R SMD METAL 1/3W 75 F T 1
R446	79PQ7912	R SMD METAL 1/10W 84.5 F
R447	79PQ7911	R SMD METAL 1/10W 47 F 06
R448	79PQ5272	CHIP RES 1/10W(T) 5% 100O
R449	79PQ5272	CHIP RES 1/10W(T) 5% 100O
R450	79PQ6053	R SMD METAL 1/3W 75 F T 1
R451	79PQ7912	R SMD METAL 1/10W 84.5 F
R452	79PQ5272	CHIP RES 1/10W(T) 5% 100O
R453	79PQ5272	CHIP RES 1/10W(T) 5% 100O
R454	79PQ5315	CHIP RES 1/10W(T) 5% 2.2K
R455	79PQ5315	CHIP RES 1/10W(T) 5% 2.2K
R456	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R459	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R460	79PQ5039	CHIP 1/10W(T) 5% 47K
R461	79PQ5272	CHIP RES 1/10W(T) 5% 100O
R462	79PQ5272	CHIP RES 1/10W(T) 5% 100O
R463	79PQ5272	CHIP RES 1/10W(T) 5% 100O
R464	79PQ5272	CHIP RES 1/10W(T) 5% 100O
R465	79PQ5320	CHIP RES 1/10W(T) 5% 0OHM
R466	79PQ5320	CHIP RES 1/10W(T) 5% 0OHM
R467	79PQ5320	CHIP RES 1/10W(T) 5% 0OHM
R468	79PQ5320	CHIP RES 1/10W(T) 5% 0OHM
R469	79PQ5320	CHIP RES 1/10W(T) 5% 0OHM
R470	79PQ5320	CHIP RES 1/10W(T) 5% 0OHM
R471	79PQ5320	CHIP RES 1/10W(T) 5% 0OHM
R472	79PQ5320	CHIP RES 1/10W(T) 5% 0OHM
R473	79PQ5675	CHIP RES 1/10W(T) 5% 10KO

SYMBOL	For China (NMV Part Number)	DESCRIPTION
R474	79PQ5277	CHIP RES 1/10W(T) 5% 4.7K
R475	79PQ5277	CHIP RES 1/10W(T) 5% 4.7K
R476	79PQ5272	CHIP RES 1/10W(T) 5% 100O
R477	79PQ5272	CHIP RES 1/10W(T) 5% 100O
R478	79PQ5681	CHIP RES 1/8W(T) 5% 2.2KO
R479	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R480	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R481	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R482	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R483	79PQ6604	R SMD METAL 1/8W 3.3K J T
R484	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R485	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R486	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R487	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R488	79PQ5868	R SMD 1/10W 20H F 0603
R489	79PQ5868	R SMD 1/10W 20H F 0603
R490	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R492	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R493	79PQ5277	CHIP RES 1/10W(T) 5% 4.7K
R494	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R495	79PQ5675	CHIP RES 1/10W(T) 5% 10KO

*** CAPACITORS ***

C401	79PQ7916	C ELE105 10U 16V M (T) LO
C402	79PQ5489	C SMD C0G 33P 50V J 0603
C403	79PQ5489	C SMD C0G 33P 50V J 0603
C404	79PQ5240	C SMD X7R 0.1U 16V K 0603
C409	79PQ5240	C SMD X7R 0.1U 16V K 0603
C410	79PQ5240	C SMD X7R 0.1U 16V K 0603
C411	79PQ5838	VC ELE105 220U 10V M (T)L
C412	79PQ5240	C SMD X7R 0.1U 16V K 0603
C413	79PQ5838	VC ELE105 220U 10V M (T)L
C414	79PQ5240	C SMD X7R 0.1U 16V K 0603
C415	79PQ5889	C ELE105 100U 10V M (T) L
C416	79PQ5240	C SMD X7R 0.1U 16V K 0603
C417	79PQ5240	C SMD X7R 0.1U 16V K 0603
C418	79PQ5838	VC ELE105 220U 10V M (T)L
C419	79PQ5240	C SMD X7R 0.1U 16V K 0603
C420	79PQ5838	VC ELE105 220U 10V M (T)L
C421	79PQ6038	C ELE105 22U 10V M(T) LOW
C422	79PQ5240	C SMD X7R 0.1U 16V K 0603
C423	79PQ5240	C SMD X7R 0.1U 16V K 0603
C424	79PQ5240	C SMD X7R 0.1U 16V K 0603
C425	79PQ5240	C SMD X7R 0.1U 16V K 0603
C426	79PQ6038	C ELE105 22U 10V M(T) LOW
C427	79PQ5240	C SMD X7R 0.1U 16V K 0603
C428	79PQ5240	C SMD X7R 0.1U 16V K 0603
C429	79PQ5240	C SMD X7R 0.1U 16V K 0603

SYMBOL	For China (NMV Part Number)	DESCRIPTION
C430	79PQ5240	C SMD X7R 0.1U 16V K 0603
C431	79PQ5240	C SMD X7R 0.1U 16V K 0603
C432	79PQ7913	C ELE105 1U 50V M T PW
C433	79PQ5355	C SMD X7R 0.01U 50V K 060
C434	79PQ5240	C SMD X7R 0.1U 16V K 0603
C435	79PQ6038	C ELE105 22U 10V M(T) LOW
C436	79PQ5240	C SMD X7R 0.1U 16V K 0603
C437	79PQ6038	C ELE105 22U 10V M(T) LOW
C438	79PQ5240	C SMD X7R 0.1U 16V K 0603
C439	79PQ5240	C SMD X7R 0.1U 16V K 0603
C440	79PQ5240	C SMD X7R 0.1U 16V K 0603
C441	79PQ5240	C SMD X7R 0.1U 16V K 0603
C442	79PQ7913	C ELE105 1U 50V M T PW
C443	79PQ5355	C SMD X7R 0.01U 50V K 060
C444	79PQ6038	C ELE105 22U 10V M(T) LOW
C445	79PQ5240	C SMD X7R 0.1U 16V K 0603
C446	79PQ5240	C SMD X7R 0.1U 16V K 0603
C447	79PQ5240	C SMD X7R 0.1U 16V K 0603
C448	79PQ5240	C SMD X7R 0.1U 16V K 0603
C449	79PQ5240	C SMD X7R 0.1U 16V K 0603
C450	79PQ5240	C SMD X7R 0.1U 16V K 0603
C451	79PQ5240	C SMD X7R 0.1U 16V K 0603
C452	79PQ7918	C SMD C0G 5.6P 50V D 0603
C453	79PQ7918	C SMD C0G 5.6P 50V D 0603
C454	79PQ6038	C ELE105 22U 10V M(T) LOW
C455	79PQ5240	C SMD X7R 0.1U 16V K 0603
C456	79PQ5240	C SMD X7R 0.1U 16V K 0603
C457	79PQ5240	C SMD X7R 0.1U 16V K 0603
C458	79PQ5240	C SMD X7R 0.1U 16V K 0603
C459	79PQ5240	C SMD X7R 0.1U 16V K 0603
C460	79PQ6038	C ELE105 22U 10V M(T) LOW
C461	79PQ5240	C SMD X7R 0.1U 16V K 0603
C462	79PQ5240	C SMD X7R 0.1U 16V K 0603
C463	79PQ5240	C SMD X7R 0.1U 16V K 0603
C464	79PQ5240	C SMD X7R 0.1U 16V K 0603
C465	79PQ5240	C SMD X7R 0.1U 16V K 0603
C467	79PQ5240	C SMD X7R 0.1U 16V K 0603
C468	79PQ5355	C SMD X7R 0.01U 50V K 060
C470	79PQ5355	C SMD X7R 0.01U 50V K 060
C471	79PQ5240	C SMD X7R 0.1U 16V K 0603
C472	79PQ5240	C SMD X7R 0.1U 16V K 0603
C473	79PQ5355	C SMD X7R 0.01U 50V K 060
C475	79PQ5240	C SMD X7R 0.1U 16V K 0603
C476	79PQ5240	C SMD X7R 0.1U 16V K 0603
C477	79PQ5355	C SMD X7R 0.01U 50V K 060
C478	79PQ5355	C SMD X7R 0.01U 50V K 060
C480	79PQ5240	C SMD X7R 0.1U 16V K 0603
C481	79PQ5355	C SMD X7R 0.01U 50V K 060

SYMBOL	For China (NMV Part Number)	DESCRIPTION
C484	79PQ5244	C SMD C0G 47P 50V J 0603
C485	79PQ5244	C SMD C0G 47P 50V J 0603
C486	79PQ5240	C SMD X7R 0.1U 16V K 0603
C487	79PQ5240	C SMD X7R 0.1U 16V K 0603
C488	79PQ5240	C SMD X7R 0.1U 16V K 0603
C489	79PQ5240	C SMD X7R 0.1U 16V K 0603
C490	79PQ5240	C SMD X7R 0.1U 16V K 0603
C491	79PQ5240	C SMD X7R 0.1U 16V K 0603
C492	79PQ5240	C SMD X7R 0.1U 16V K 0603
C493	79PQ5240	C SMD X7R 0.1U 16V K 0603
C494	79PQ5240	C SMD X7R 0.1U 16V K 0603
C495	79PQ5240	C SMD X7R 0.1U 16V K 0603
C496	79PQ5240	C SMD X7R 0.1U 16V K 0603
C497	79PQ5240	C SMD X7R 0.1U 16V K 0603
C498	79PQ5240	C SMD X7R 0.1U 16V K 0603
C499	79PQ5240	C SMD X7R 0.1U 16V K 0603
C500	79PQ5240	C SMD X7R 0.1U 16V K 0603
C501	79PQ5240	C SMD X7R 0.1U 16V K 0603
C502	79PQ5240	C SMD X7R 0.1U 16V K 0603
C503	79PQ5240	C SMD X7R 0.1U 16V K 0603
C504	79PQ5240	C SMD X7R 0.1U 16V K 0603
C505	79PQ5240	C SMD X7R 0.1U 16V K 0603
C506	79PQ5355	C SMD X7R 0.01U 50V K 060
C507	79PQ5240	C SMD X7R 0.1U 16V K 0603
C510	79PQ5240	C SMD X7R 0.1U 16V K 0603
C511	79PQ5240	C SMD X7R 0.1U 16V K 0603

REPLACEMENT PARTS LIST(For China)

The components specified for Model LCD1970NX-BK(C)

SYMBOL	For China (NMV Part Number)	DESCRIPTION
*** ICS ***		
U401	79PQ7789	IC SMD MW1537BCM5
U402	79PQ5258	CHIP FET P HAT1053M
U403	79PQ7791	IC SMD GM5221-LF-BC
U405	79PQ7796	IC SMD A290021TL-70
U406	79PQ5880	IC SMD 24LC02B
U407	79PQ5880	IC SMD 24LC02B
U408	79PQ5015	IC SMD 24LC16B SO8
U409	79PQ5257	IC MOS 74LVC14
U410	79PQ5884	IC SMD MIC1815 RESET
*** TRANSISTORS ***		
Q401	79PQ5304	CHIP TR NPN DTC114EUA
Q402	79PQ5304	CHIP TR NPN DTC114EUA
Q403	79PQ5304	CHIP TR NPN DTC114EUA
Q404	79PQ5304	CHIP TR NPN DTC114EUA
Q405	79PQ7797	TR SMD MMBT3906-LF PNP SO
*** DIODES ***		
D401	79PQ7798	DI SMD SCS495D-LF
D402	79PQ7799	DI SMD SCS217K-LF
D403	79PQ7799	DI SMD SCS217K-LF
D404	79PQ7799	DI SMD SCS217K-LF
D405	79PQ7798	DI SMD SCS495D-LF
D406	79PQ7799	DI SMD SCS217K-LF
D407	79PQ7799	DI SMD SCS217K-LF
D408	79PQ7799	DI SMD SCS217K-LF
D409	79PQ7799	DI SMD SCS217K-LF
D410	79PQ7799	DI SMD SCS217K-LF
D411	79PQ7799	DI SMD SCS217K-LF
D412	79PQ7799	DI SMD SCS217K-LF
D413	79PQ7799	DI SMD SCS217K-LF
D414	79PQ5847	DIODE 1N4001
D415	79PQ5847	DIODE 1N4001
D801	79PQ7800	LED SMD JEC-3227UOGE
ZD401	79PQ5250	CHIP DIODE ZENER UDZS5.6B
ZD402	79PQ5250	CHIP DIODE ZENER UDZS5.6B
ZD403	79PQ5250	CHIP DIODE ZENER UDZS5.6B
ZD404	79PQ5250	CHIP DIODE ZENER UDZS5.6B
ZD405	79PQ5250	CHIP DIODE ZENER UDZS5.6B
ZD406	79PQ5250	CHIP DIODE ZENER UDZS5.6B
ZD407	79PQ5250	CHIP DIODE ZENER UDZS5.6B

SYMBOL	For China (NMV Part Number)	DESCRIPTION
ZD408	79PQ5250	CHIP DIODE ZENER UDZS5.6B

*** RELAYS & SWITCHES ***

SW801	79PQ7801	SW SMD TACT TSXH-2G
SW802	79PQ7801	SW SMD TACT TSXH-2G
SW803	79PQ7802	SW SMD TACT TMFV-1502
SW804	79PQ7801	SW SMD TACT TSXH-2G
SW805	79PQ7801	SW SMD TACT TSXH-2G
XD1012	79PQ7803	WIRE SW 1015#18L60 BLK

*** PWB ASSYS ***

INVPWR	79PQ7815	U INVERT-POWER L194RJ LG
MAIN	79PQ7808	MAIN INSERT ASSY
SW	79PQ7812	SW INSERT ASSY

*** COILS & FILTERS ***

B402	79PQ5848	L BEAD SMD MHC1608S121P
B403	79PQ5848	L BEAD SMD MHC1608S121P
B404	79PQ5848	L BEAD SMD MHC1608S121P
B405	79PQ5850	L BEAD SMD MCB1608S121G
B406	79PQ5848	L BEAD SMD MHC1608S121P
B407	79PQ5848	L BEAD SMD MHC1608S121P
B408	79PQ5848	L BEAD SMD MHC1608S121P
B409	79PQ5850	L BEAD SMD MCB1608S121G
B410	79PQ5850	L BEAD SMD MCB1608S121G
B411	79PQ5850	L BEAD SMD MCB1608S121G
B412	79PQ5850	L BEAD SMD MCB1608S121G
B413	79PQ5850	L BEAD SMD MCB1608S121G
B414	79PQ5850	L BEAD SMD MCB1608S121G
B415	79PQ5850	L BEAD SMD MCB1608S121G
B416	79PQ5850	L BEAD SMD MCB1608S121G
B417	79PQ5865	L BEAD SMD MCB1608H750G
B418	79PQ5865	L BEAD SMD MCB1608H750G
B419	79PQ5865	L BEAD SMD MCB1608H750G
B420	79PQ5265	CHIP FERRITE BK2125HS431
B421	79PQ5265	CHIP FERRITE BK2125HS431
B422	79PQ5850	L BEAD SMD MCB1608S121G
B423	79PQ5850	L BEAD SMD MCB1608S121G
B424	79PQ5850	L BEAD SMD MCB1608S121G
B425	79PQ5850	L BEAD SMD MCB1608S121G
B426	79PQ5850	L BEAD SMD MCB1608S121G
B427	79PQ5850	L BEAD SMD MCB1608S121G
B428	79PQ5850	L BEAD SMD MCB1608S121G
B429	79PQ5850	L BEAD SMD MCB1608S121G
B430	79PQ5850	L BEAD SMD MCB1608S121G
B431	79PQ5850	L BEAD SMD MCB1608S121G
B432	79PQ5850	L BEAD SMD MCB1608S121G
B433	79PQ1233	BEAD WBR6H-3T-R7K-B5

SYMBOL	For China (NMV Part Number)	DESCRIPTION
B434	79PQ1233	BEAD WBR6H-3T-R7K-B5
B435	79PQ1233	BEAD WBR6H-3T-R7K-B5
B436	79PQ5850	L BEAD SMD MCB1608S121G
B437	79PQ5850	L BEAD SMD MCB1608S121G
B439	79PQ5850	L BEAD SMD MCB1608S121G
B442	79PQ5850	L BEAD SMD MCB1608S121G

*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***

LCD	3A684091	TFT LM190E02-A4K5
P402	79PQ7176	CN MINI-D-SUB 15P SIDE
X401	79PQ7820	OSC X'TAL 49US 14.318MHZ
XD1002	79PQ5086	CABLE VIDEO BLK DSUB-DSUB
XD1007	79PQ7908	PW CORD CHN CCC 2M BLK WA
XD1010	79PQ7825	WIRE CC12P 1571#30L180
XD1011	79PQ7824	WIRE CC30P 1589#30L220

*** APPEARANCE PARTS ***

LABEL	79PQ7882	LABEL RATING LCD1970NXH B
M-CONN	79PQ7904	PAD,L194,LPL
XD1000	79PQ7833	BACK L194RJ (N) BK
XD1001	79PQ7842	BEZEL BK(N) C L194RJ
XD1003	79PQ7855	CHASSIS BASE 1970NXH,(LPL
XD1004	79PQ7850	COVER UNIT BK L194RJ
XD1008	79PQ7857	SHIELD 1970VH/NXH
XD1009	79PQ7861	STAND UNIT L194R BK

*** PRINTED & PACKING MATERIALS ***

BAG-1	79PQ7382	BAG LCD1960NX EPE
BAG-3	79PQ5129	PE BAG (340*225)
CRTON1	79PQ7865	CARTON BOX LCD1970NX C
CRTON2	79PQ5613	CARTON SHEET FOR 15 IN LC
MANU1	79PQ7894	MANUAL ASSY LCD1970NX C
MANU2	79PQ7891	MANUAL LCD1970NX C
WRNTY1	79PQ7900	SHEET SETUP LCD1970NX C
WRNTY2	79PQ7226	NAVISET CARTON BOX FLYER
WRNTY3	79PQ7112	SALES OFFICE LIST(B)
XD1005	79PQ7875	FILLER B L194R,(A,B,C,)
XD1006	79PQ7874	FILLER T L194R,(A,B,C,)

*** RESISTORS ***

F401	79PQ1890	CHIP 1/8W(T) 5% 0 H
F402	79PQ1890	CHIP 1/8W(T) 5% 0 H
R401	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R403	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R404	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R405	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R406	79PQ5320	CHIP RES 1/10W(T) 5% 0OHM
R407	79PQ5675	CHIP RES 1/10W(T) 5% 10KO

SYMBOL	For China (NMV Part Number)	DESCRIPTION
R408	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R409	79PQ7910	R SMD METAL 1/10W 249 F 0
R410	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R411	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R412	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R416	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R420	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R421	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R422	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R428	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R429	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R431	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R434	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R437	79PQ7911	R SMD METAL 1/10W 47 F 06
R438	79PQ6053	R SMD METAL 1/3W 75 F T 1
R439	79PQ7912	R SMD METAL 1/10W 84.5 F
R440	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R441	79PQ5039	CHIP 1/10W(T) 5% 47K
R442	79PQ5272	CHIP RES 1/10W(T) 5% 100O
R443	79PQ7911	R SMD METAL 1/10W 47 F 06
R444	79PQ5272	CHIP RES 1/10W(T) 5% 100O
R445	79PQ6053	R SMD METAL 1/3W 75 F T 1
R446	79PQ7912	R SMD METAL 1/10W 84.5 F
R447	79PQ7911	R SMD METAL 1/10W 47 F 06
R448	79PQ5272	CHIP RES 1/10W(T) 5% 100O
R449	79PQ5272	CHIP RES 1/10W(T) 5% 100O
R450	79PQ6053	R SMD METAL 1/3W 75 F T 1
R451	79PQ7912	R SMD METAL 1/10W 84.5 F
R452	79PQ5272	CHIP RES 1/10W(T) 5% 100O
R453	79PQ5272	CHIP RES 1/10W(T) 5% 100O
R454	79PQ5315	CHIP RES 1/10W(T) 5% 2.2K
R455	79PQ5315	CHIP RES 1/10W(T) 5% 2.2K
R456	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R459	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R460	79PQ5039	CHIP 1/10W(T) 5% 47K
R461	79PQ5272	CHIP RES 1/10W(T) 5% 100O
R462	79PQ5272	CHIP RES 1/10W(T) 5% 100O
R463	79PQ5272	CHIP RES 1/10W(T) 5% 100O
R464	79PQ5272	CHIP RES 1/10W(T) 5% 100O
R465	79PQ5320	CHIP RES 1/10W(T) 5% 0OHM
R466	79PQ5320	CHIP RES 1/10W(T) 5% 0OHM
R467	79PQ5320	CHIP RES 1/10W(T) 5% 0OHM
R468	79PQ5320	CHIP RES 1/10W(T) 5% 0OHM
R469	79PQ5320	CHIP RES 1/10W(T) 5% 0OHM
R470	79PQ5320	CHIP RES 1/10W(T) 5% 0OHM
R471	79PQ5320	CHIP RES 1/10W(T) 5% 0OHM
R472	79PQ5320	CHIP RES 1/10W(T) 5% 0OHM
R473	79PQ5675	CHIP RES 1/10W(T) 5% 10KO

SYMBOL	For China (NMV Part Number)	DESCRIPTION
R474	79PQ5277	CHIP RES 1/10W(T) 5% 4.7K
R475	79PQ5277	CHIP RES 1/10W(T) 5% 4.7K
R476	79PQ5272	CHIP RES 1/10W(T) 5% 100O
R477	79PQ5272	CHIP RES 1/10W(T) 5% 100O
R478	79PQ5681	CHIP RES 1/8W(T) 5% 2.2KO
R479	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R480	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R481	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R482	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R483	79PQ6604	R SMD METAL 1/8W 3.3K J T
R484	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R485	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R486	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R487	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R488	79PQ5868	R SMD 1/10W 20H F 0603
R489	79PQ5868	R SMD 1/10W 20H F 0603
R490	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R492	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R493	79PQ5277	CHIP RES 1/10W(T) 5% 4.7K
R494	79PQ5675	CHIP RES 1/10W(T) 5% 10KO
R495	79PQ5675	CHIP RES 1/10W(T) 5% 10KO

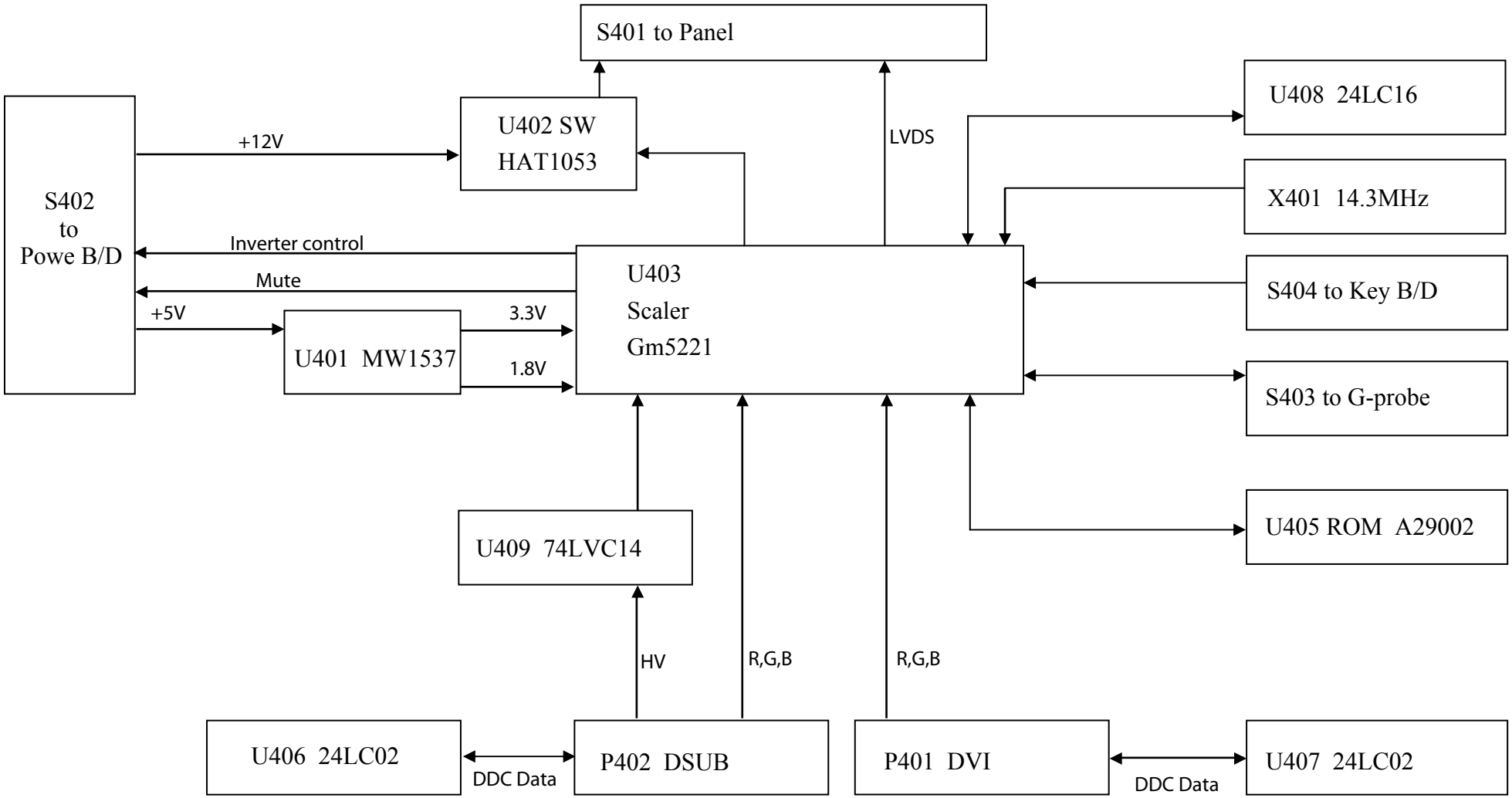
*** CAPACITORS ***

C401	79PQ7916	C ELE105 10U 16V M (T) LO
C402	79PQ5489	C SMD C0G 33P 50V J 0603
C403	79PQ5489	C SMD C0G 33P 50V J 0603
C404	79PQ5240	C SMD X7R 0.1U 16V K 0603
C409	79PQ5240	C SMD X7R 0.1U 16V K 0603
C410	79PQ5240	C SMD X7R 0.1U 16V K 0603
C411	79PQ5838	VC ELE105 220U 10V M (T)L
C412	79PQ5240	C SMD X7R 0.1U 16V K 0603
C413	79PQ5838	VC ELE105 220U 10V M (T)L
C414	79PQ5240	C SMD X7R 0.1U 16V K 0603
C415	79PQ5889	C ELE105 100U 10V M (T) L
C416	79PQ5240	C SMD X7R 0.1U 16V K 0603
C417	79PQ5240	C SMD X7R 0.1U 16V K 0603
C418	79PQ5838	VC ELE105 220U 10V M (T)L
C419	79PQ5240	C SMD X7R 0.1U 16V K 0603
C420	79PQ5838	VC ELE105 220U 10V M (T)L
C421	79PQ6038	C ELE105 22U 10V M(T) LOW
C422	79PQ5240	C SMD X7R 0.1U 16V K 0603
C423	79PQ5240	C SMD X7R 0.1U 16V K 0603
C424	79PQ5240	C SMD X7R 0.1U 16V K 0603
C425	79PQ5240	C SMD X7R 0.1U 16V K 0603
C426	79PQ6038	C ELE105 22U 10V M(T) LOW
C427	79PQ5240	C SMD X7R 0.1U 16V K 0603
C428	79PQ5240	C SMD X7R 0.1U 16V K 0603
C429	79PQ5240	C SMD X7R 0.1U 16V K 0603

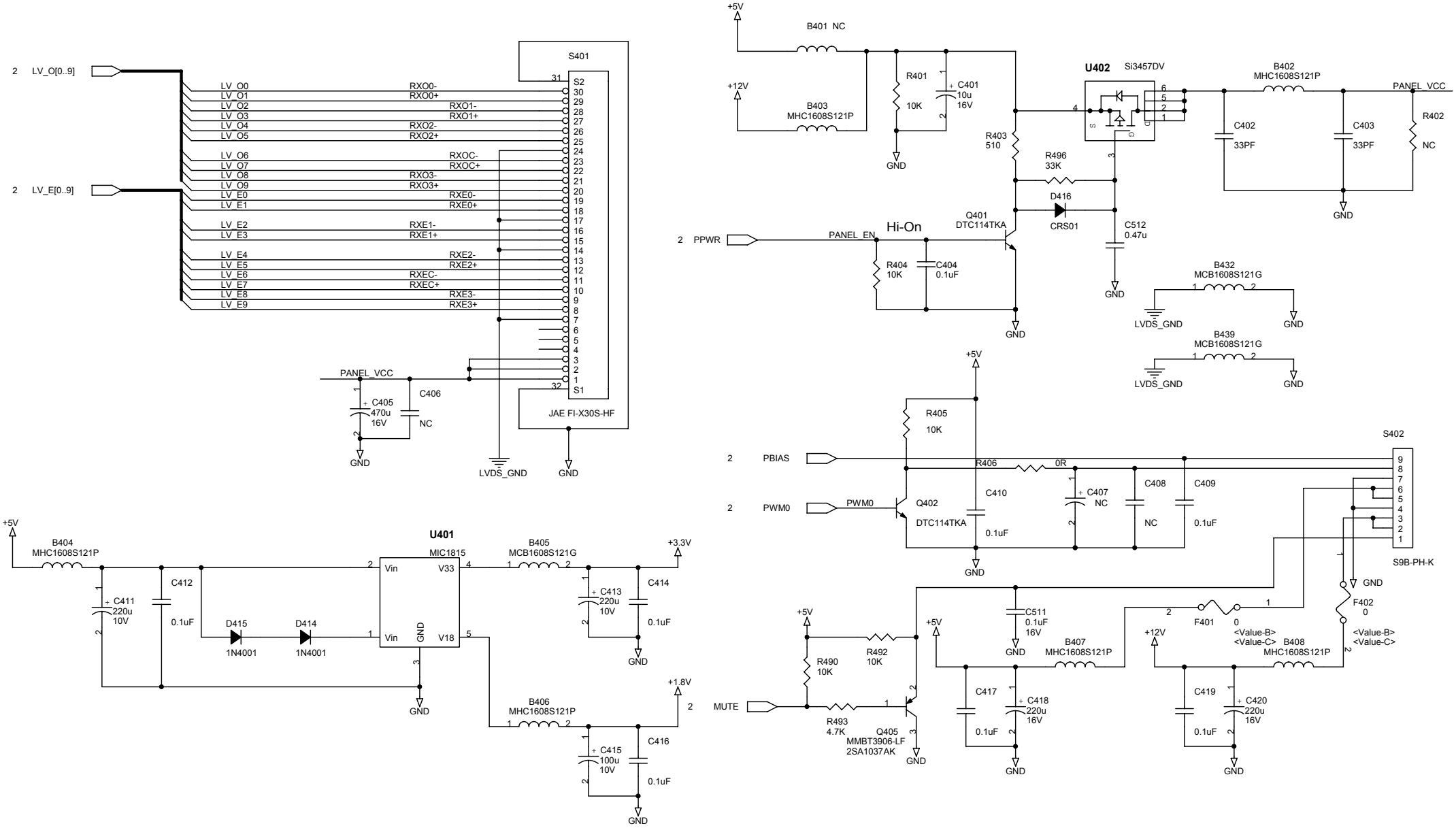
SYMBOL	For China (NMV Part Number)	DESCRIPTION
C430	79PQ5240	C SMD X7R 0.1U 16V K 0603
C431	79PQ5240	C SMD X7R 0.1U 16V K 0603
C432	79PQ7913	C ELE105 1U 50V M T PW
C433	79PQ5355	C SMD X7R 0.01U 50V K 060
C434	79PQ5240	C SMD X7R 0.1U 16V K 0603
C435	79PQ6038	C ELE105 22U 10V M(T) LOW
C436	79PQ5240	C SMD X7R 0.1U 16V K 0603
C437	79PQ6038	C ELE105 22U 10V M(T) LOW
C438	79PQ5240	C SMD X7R 0.1U 16V K 0603
C439	79PQ5240	C SMD X7R 0.1U 16V K 0603
C440	79PQ5240	C SMD X7R 0.1U 16V K 0603
C441	79PQ5240	C SMD X7R 0.1U 16V K 0603
C442	79PQ7913	C ELE105 1U 50V M T PW
C443	79PQ5355	C SMD X7R 0.01U 50V K 060
C444	79PQ6038	C ELE105 22U 10V M(T) LOW
C445	79PQ5240	C SMD X7R 0.1U 16V K 0603
C446	79PQ5240	C SMD X7R 0.1U 16V K 0603
C447	79PQ5240	C SMD X7R 0.1U 16V K 0603
C448	79PQ5240	C SMD X7R 0.1U 16V K 0603
C449	79PQ5240	C SMD X7R 0.1U 16V K 0603
C450	79PQ5240	C SMD X7R 0.1U 16V K 0603
C451	79PQ5240	C SMD X7R 0.1U 16V K 0603
C452	79PQ7918	C SMD C0G 5.6P 50V D 0603
C453	79PQ7918	C SMD C0G 5.6P 50V D 0603
C454	79PQ6038	C ELE105 22U 10V M(T) LOW
C455	79PQ5240	C SMD X7R 0.1U 16V K 0603
C456	79PQ5240	C SMD X7R 0.1U 16V K 0603
C457	79PQ5240	C SMD X7R 0.1U 16V K 0603
C458	79PQ5240	C SMD X7R 0.1U 16V K 0603
C459	79PQ5240	C SMD X7R 0.1U 16V K 0603
C460	79PQ6038	C ELE105 22U 10V M(T) LOW
C461	79PQ5240	C SMD X7R 0.1U 16V K 0603
C462	79PQ5240	C SMD X7R 0.1U 16V K 0603
C463	79PQ5240	C SMD X7R 0.1U 16V K 0603
C464	79PQ5240	C SMD X7R 0.1U 16V K 0603
C465	79PQ5240	C SMD X7R 0.1U 16V K 0603
C467	79PQ5240	C SMD X7R 0.1U 16V K 0603
C468	79PQ5355	C SMD X7R 0.01U 50V K 060
C470	79PQ5355	C SMD X7R 0.01U 50V K 060
C471	79PQ5240	C SMD X7R 0.1U 16V K 0603
C472	79PQ5240	C SMD X7R 0.1U 16V K 0603
C473	79PQ5355	C SMD X7R 0.01U 50V K 060
C475	79PQ5240	C SMD X7R 0.1U 16V K 0603
C476	79PQ5240	C SMD X7R 0.1U 16V K 0603
C477	79PQ5355	C SMD X7R 0.01U 50V K 060
C478	79PQ5355	C SMD X7R 0.01U 50V K 060
C480	79PQ5240	C SMD X7R 0.1U 16V K 0603
C481	79PQ5355	C SMD X7R 0.01U 50V K 060

SYMBOL	For China (NMV Part Number)	DESCRIPTION
C484	79PQ5244	C SMD C0G 47P 50V J 0603
C485	79PQ5244	C SMD C0G 47P 50V J 0603
C486	79PQ5240	C SMD X7R 0.1U 16V K 0603
C487	79PQ5240	C SMD X7R 0.1U 16V K 0603
C488	79PQ5240	C SMD X7R 0.1U 16V K 0603
C489	79PQ5240	C SMD X7R 0.1U 16V K 0603
C490	79PQ5240	C SMD X7R 0.1U 16V K 0603
C491	79PQ5240	C SMD X7R 0.1U 16V K 0603
C492	79PQ5240	C SMD X7R 0.1U 16V K 0603
C493	79PQ5240	C SMD X7R 0.1U 16V K 0603
C494	79PQ5240	C SMD X7R 0.1U 16V K 0603
C495	79PQ5240	C SMD X7R 0.1U 16V K 0603
C496	79PQ5240	C SMD X7R 0.1U 16V K 0603
C497	79PQ5240	C SMD X7R 0.1U 16V K 0603
C498	79PQ5240	C SMD X7R 0.1U 16V K 0603
C499	79PQ5240	C SMD X7R 0.1U 16V K 0603
C500	79PQ5240	C SMD X7R 0.1U 16V K 0603
C501	79PQ5240	C SMD X7R 0.1U 16V K 0603
C502	79PQ5240	C SMD X7R 0.1U 16V K 0603
C503	79PQ5240	C SMD X7R 0.1U 16V K 0603
C504	79PQ5240	C SMD X7R 0.1U 16V K 0603
C505	79PQ5240	C SMD X7R 0.1U 16V K 0603
C506	79PQ5355	C SMD X7R 0.01U 50V K 060
C507	79PQ5240	C SMD X7R 0.1U 16V K 0603
C510	79PQ5240	C SMD X7R 0.1U 16V K 0603
C511	79PQ5240	C SMD X7R 0.1U 16V K 0603

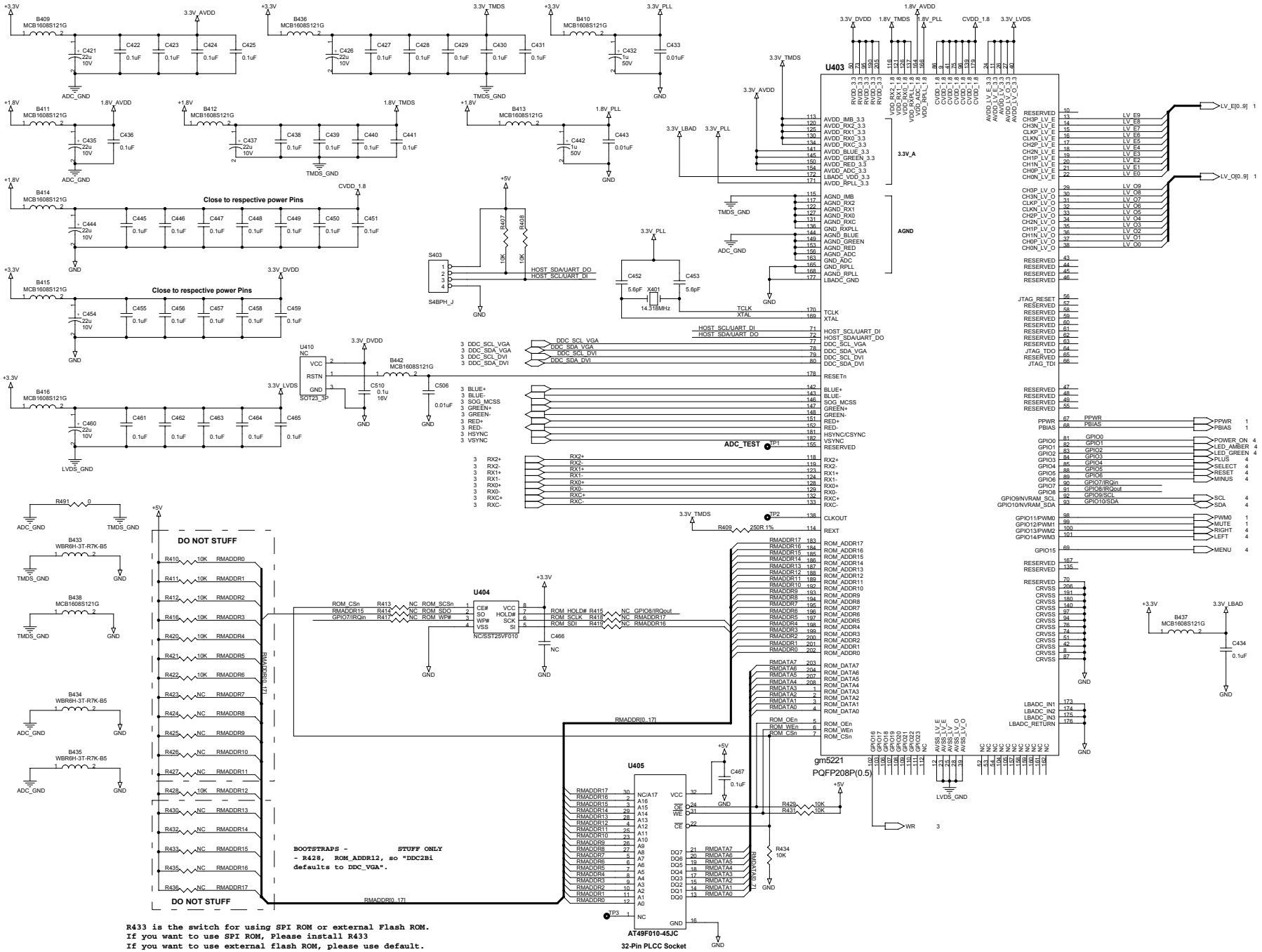
BLOCK DIAGRAM



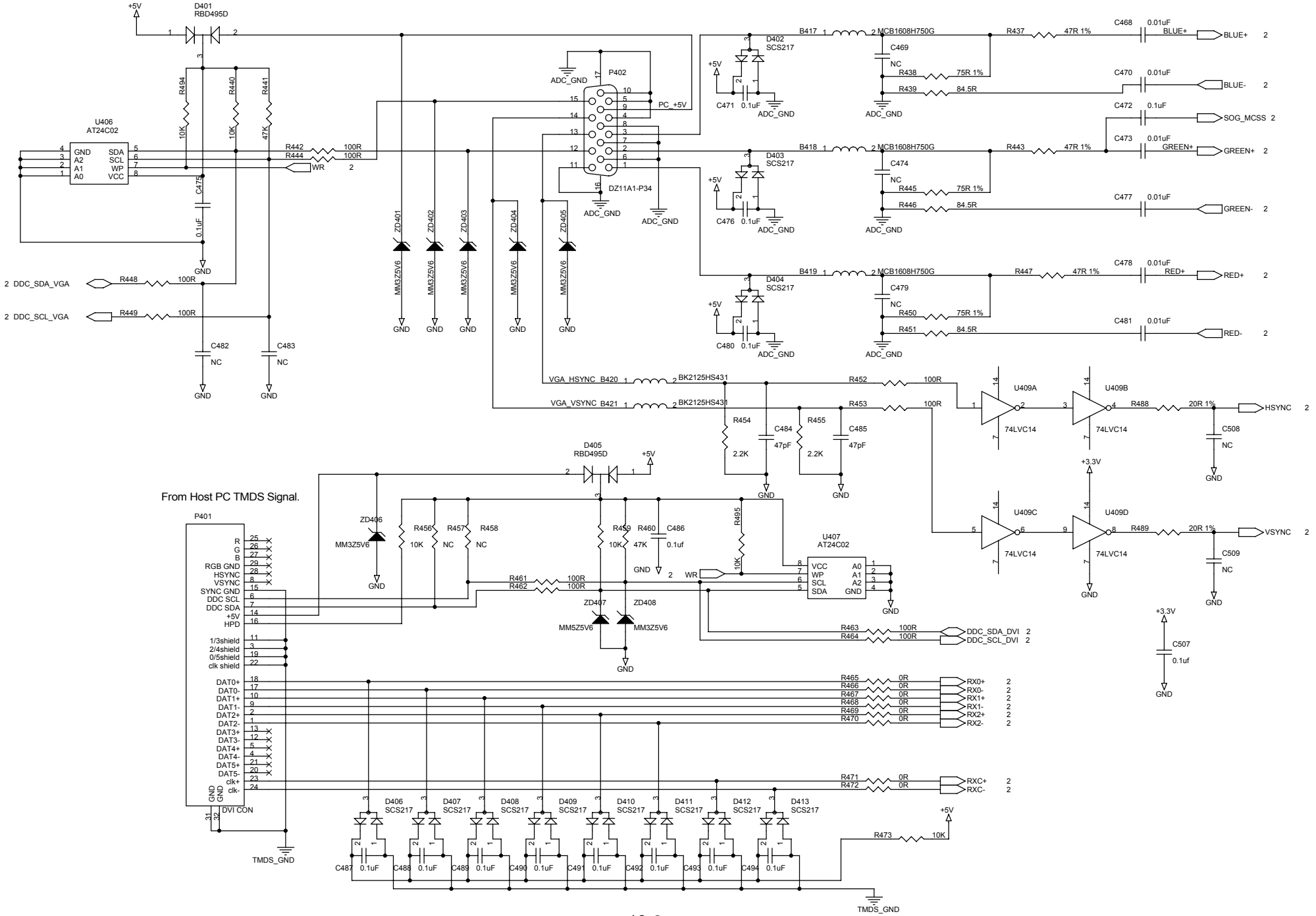
MODEL LCD1970NX(B)/(C) SCHEMATIC DIAGRAM MAIN BOARD (Display) (1/4)



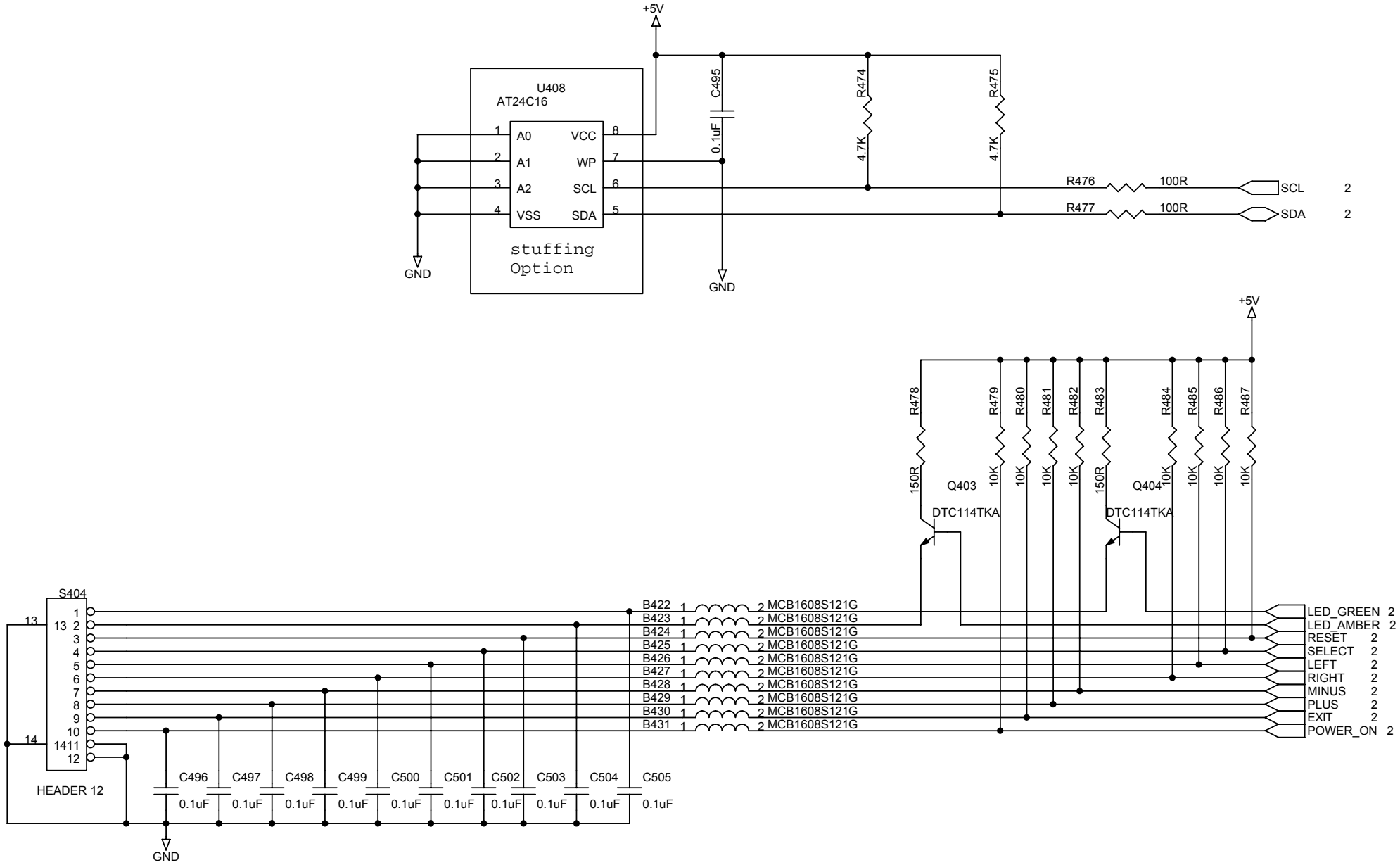
MODEL LCD1970NX(B)/(C) SCHEMATIC DIAGRAM MAIN BOARD (Scaler) (2/4)



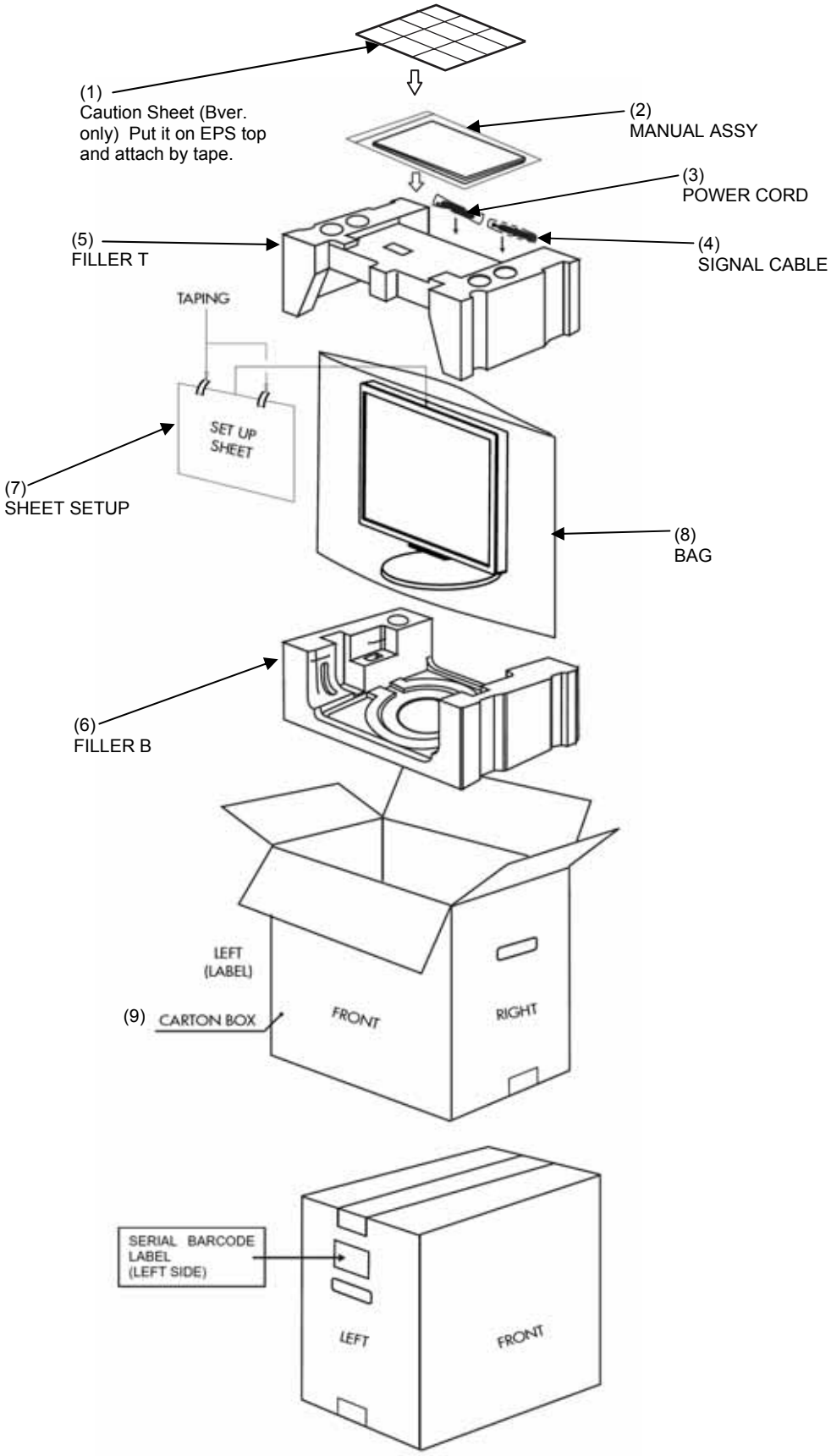
MODEL LCD1970NX(B)/(C) SCHEMATIC DIAGRAM MAIN BOARD (DVI/VGA Input) (3/4)



MODEL LCD1970NX(B)/(C) SCHEMATIC DIAGRAM MAIN BOARD (Key Pad EEPROM) (4/4)



Packing Specification



ITEM	DESCRIPTION	For Europe (NPG Part Number)	For China (NMV Part Number)	Cabinet color	Version
(1)	SHEET CAUTION PISA19 B	15802261	---	White/Black	B
(2)	MANUAL ASSY LCD1970NX B	15503533	---	White/Black	B
(2)	MANUAL ASSY LCD1970NX C	---	79PQ7894	White/Black	C
(3)	PW CORD EU 2M R-PLUG GR	RG030031	---	White	B
(3)	PW CORD EU 2M BLK WANSHIN	RG030051	---	Black	B
(3)	PW CORD CHN CCC 2M GRY WA	---	79PQ7909	White	C
(3)	PW CORD CHN CCC 2M BLK WA	---	79PQ7908	Black	C
(4)	CABLE VIDEO GR DSUB-DSUB	RE010081	79PQ5083	White	B/C
(4)	CABLE VIDEO BLK DSUB-DSUB	RE010091	79PQ5086	Black	B/C
(5)	FILLER T L194R,(A,B,C,)	13401771	79PQ7874	White/Black	B/C
(6)	FILLER B L194R,(A,B,C,)	13401781	79PQ7875	White/Black	B/C
(7)	SHEET SETUP LCD1970NX/V B	15802161	---	White/Black	B
(7)	SHEET SETUP LCD1970NX C	---	79PQ7900	White/Black	C
(8)	BAG LCD1960NX EPE	13700483	79PQ7382	White/Black	B/C
(9)	CARTON BOX LCD1970NX B	13204921	---	White/Black	B
(9)	CARTON BOX LCD1970NX C	---	79PQ7865	White/Black	C