NEC

PART NO. 599910829

SERVICE MANUAL

COLOR MONITOR

LCD190V

MODELS LCD190V-BK (B)
LCD190V-BK-1(B)

This model has three type of LCD panel.

- The panel type manufactured by AUO: (M190EN04 V5C)
- The panel type manufactured by AUO: (M190EN04 V5D)
- The panel type manufactured by AUO: (M190EG02 V4)

Prior to servicing the unit, confirm the serial number of the unit.

The classification code of the serial number is [5]: M190EN04 V5C

The classification code of the serial number is [B]: M190EN04 V5D)

The classification code of the serial number is [H]: M190EG02 V4)

VERY IMPORTANT! Prior to servicing, confirm the classification code in the serial number of the unit. For more details of the serial number, refer to “Serial Number Information”.
Since the equipment is compatible with RoHS Directive, use components in which the use of specific chemically noxious substances is restricted; use only designated spare parts when it is necessary to replace such parts with new parts.

Use lead-free solder for the equipment compatible with ones with substrates on which lead-free components are mounted. For the details, refer to “Caution for Leaf-Free Soldering Work” given in the next page.

3rd Edition

NEC DISPLAY SOLUTIONS, LTD.

SEPTEMBER 2006

200705
08GY1UBN 08GY9UBN
08GYCUBN

1. Safety guideline in servicing

1) Never touch the portions with the marking (⚠).
Serious injury or even death may result.

2) Do not expose the set to rain or water.
A risk of fire or electric shock can result.

3) Use an adequate power cord.
A risk of fire or electric shock can result.

4) Do not attempt to service or modify the set without prior permission of the manufacturer.
A risk of fire or electric shock can result.

5) Leave the maintenance service to a service engineer having qualification, knowledge and experience.
A risk of electric shock, injury or fire can result.

6) Always employ genuine parts indicated in the service manual for replacement.
A risk of fire or electric shock can result.

7) Confirm the connection of the power supply connector earth cable in reassembling.(Soldering or Screw fixation)
A risk of fire or electric shock can result.

8) Use the specified binding bands, clampers, tubes and barriers--all of which are necessary for insulation/protection--in their original positions in reassembling.
A risk of fire or electric shock can result.

2. Other cautions necessary

1) When removing the cables from their connectors, take care not to damage the wire portions so as to prevent the occurrence of poor contact.
2) When attaching/detaching screws, use a screwdriver that is well-fit to the screw size.

3. Caution for LEAD-FREE soldering work

For this equipment, parts compatible with lead-free materials are used.
Please observe the following precautions, when performing any soldering work.

1) Use lead-free solder for substrates mounted with lead-free parts.
If you use eutectic solder by mistake, solder will not fuse well because of the difference in fusion point.

2) Fusion Point
Lead-free solder: 220°C
Eutectic solder: 183°C

3) Solder composition of Lead-free solder: Sn-3.0Ag-0.5Cu
[Maker] [Type]
Nihon Genma DHB-RMA NP303-###
Senju metal ESC F3 M705E-###
(#: This mark shows the diameter of the solder wire.)

4) When working with lead-free solder always use a temperature adjustable soldering iron. Moreover, the power consumption of the soldering iron must use from 25W to 75W.

[Solder Iron tip temperature and contact time]

Category of Parts		Lead-free solder	Eutectic solder
*SMD Chip	The Parts of Chip type	300-320°C(1-3sec)	260-280°C(1-3sec)
*SMD QFP	The Parts (IC) of Quad Flat Pack Package type	320-350°C(1-3sec)	280-300°C(1-3sec)
Heat sink	Heat sink	360-380°C(1-3sec)	320-420°C(1-3sec)
Ax,RD	The Parts of Axial or Radial type (The Electric Parts other than the above-mentioned. Ex.: IC, Transistor, Resistor, Capacitor)	340-370°C(1-3sec)	350-390°C(1-3sec)

*SMD: Surface Mounting Device

Product Specifications

Item			Specification
LCD Module	Panel		AUO M190EN04 V5C/V5D/V4
	Size		19" (48.2cm)
	Active Display Area		376.32 (H) x 301.056 (V) mm
	Resolution		1280x1024 dots (SXGA)
	Pixel Pitch		0.294mm
	Color Depth		16,2 million or more
	Luminance *1)		270cd/m2 (Typ.)
	Viewing Angle(Typ.)	CR>10	Up 65 / Down 60 / Left 70 / Right 70
		CR>5	Up 75 / Down 70 / Left 80 / Right 80
	Contrast Ratio		550:1 (typ)
	Back Light		CCFL x 4pcs.
Input Signals	Horizontal frequency		31.5kHz – 81.1kHz
	Vertical frequency		55.0Hz - 76.0 Hz
	Video Signal		Analog RGB
	Sync. Signal		Separate Sync. (TTL)
	Pixel Clock		25.0MHz – 135.0MHz
	Input connector		Mini D-sub 15Pin
Preset Timings			Factory preset: 19 / User preset: 21
Functions	Front Control		SELECT, -, +, AUTO/RESET, Power
	OSM		Brightness, Contrast, Auto Contrast, Auto Adjust, H.Posi, V.posi, H.Size, Fine, Color Control, Language, OSD Turn Off, OSD Lock Out, Resolution Nortifier, Monitor Info., Factory Reset, DDC/CI (Vista Model)
	Remote Control		VESA DDC 2Bi/CI
Regulations	Safety		UL / cUL, CE, TuV GS, CB Certificate, GOST
	EMC		FCC ClassB, Canadian DOC ClassB, CE
	VLF / ELF		MPR-II, TCO’03
	Power Management		VESA DPMS, EPA(Tier 2), TCO’03
	Ergonomics		TuV GS, TuV Ergonomie, TCO’03, ISO13406-2
	Plug and Play		VESA DDC2B&2Bi
	Others		Windows XP / Vista (Vista Model) Logo, RoHS, WEEE
Environment Condition	Temperature		5°C to 35°C / 41°F to 95°F
	Humidity		10-80% (without condensation)

Power Supply	Input Voltage		AC100-240V, 50 / 60Hz
	Power consumption	Typ	37 W (0.75 – 0.4 A @ 100 - 240V)
		Power saving	<2W
		Power off	<1W
	Input Connector		3P IEC Type
Weight	with Stand		Approx. 5.3 kg
	without Stand		Approx. 4.9 kg
Dimension	Net		405.5(W) x 405.5(H) x 205.0(D) mm
	Gross		468 (W) x 495 (H) x 156 (D) mm
VESA compatible arm mounting interface			100mmx100mm
Tilt / Swivel / Rotation			Up & Down 20deg to -5deg / NA / NA
Accessories	AC Power cord		1.8m
	Signal Cable		1.8m : miniD-sub15pin (Captive type)
	Others		User's manual, Utility Disk, Set-up sheet, Sales Office List, Caution Sheet, Navi Set flyer.

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AccuSync LCD73V
AccuSync LCD93V
LCD170V
LCD190V

User's Manual

NEC

WARNING

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

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

CAUTION

RISK OF ELECTRIC SHOCK • DO NOT OPEN

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

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

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

Caution:

When operating the AccuSync LCD73V/AccuSync LCD93V/LCD170V/LCD190V with a 220-240V AC power source in Europe, use the power cord provided with the monitor.

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

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

Declaration

Declaration of the Manufacturer

We hereby certify that the colour monitors AccuSync LCD73V (L175GZ)/AccuSync LCD93V (L195GY)/ LCD170V (L175GZ)/LCD190V (L195GY) 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 Display Solutions, Ltd.
4-13-23, Shibaura,
Minato-Ku
Tokyo 108-0023, Japan

As an ENERGY STAR Partner, NEC Display Solutions of America, Inc. has determined that this product meets the ENERGY STAR guidelines for energy efficiency. ENERGY STAR is a U.S. registered mark. The ENERGY STAR emblem does not represent EPA endorsement of any product or service.

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Apple and Macintosh are registered trademarks of Apple Computer Inc.
Microsoft and Windows are registered trademarks of the Microsoft Corporation.
NEC is a registered trademark of NEC Corporation.
All other trademarks or registered trademarks are property of their respective owners.

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

Canadian Department of Communications Compliance Statement

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

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

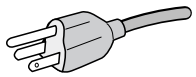
C-UL: Bears the C-UL Mark and is in compliance with Canadian Safety Regulations according to CSA C22.2 No. 60950-1.

Ce produit porte la marque 'C-UL' et se conforme aux règlements de sûrele Canadiens selon CAN/CSA C22.2 No. 60950-1.

FCC Information

1. Use the attached specified cables with the AccuSync LCD73V/AccuSync LCD93V/LCD170V/LCD190V 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	1.8 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 Display Solutions 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:	AccuSync LCD73V/ LCD170V (L175GZ) AccuSync LCD93V/ LCD190V (L195GY)

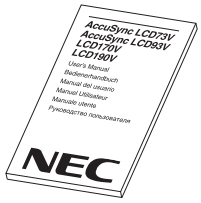
FC

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

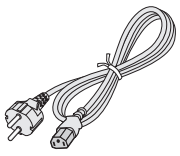
Contents

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

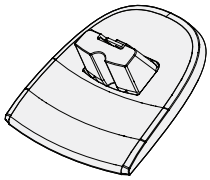
- LCD monitor with tilt base
- Power Cord
- User's Manual
- CD-ROM
- Base Stand
- Cable Holder



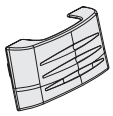
User's Manual



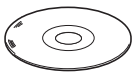
Power Cord



Base Stand



Cable Holder



CD-ROM

LCD monitor
Captive type (Video signal cable is connected)

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

Quick Start

To attach the Base to the LCD Stand:

1. Insert the front of the LCD stand into the holes in the front of the Base (**Figure S.1**).
2. Attach the Base to the Stand. The locking tab on the Base should fit into the hole on the back of the Stand (**Figure S.1**).

To attach the Cable Holder:

1. Attach the Cable Holder on to the Base. Insert the hooks on the Cable Holder into the holes at the back of the Stand and slide the Cable Holder downward into place (**Figure S.1**).

NOTE: Please confirm that the tabs are completely secure.

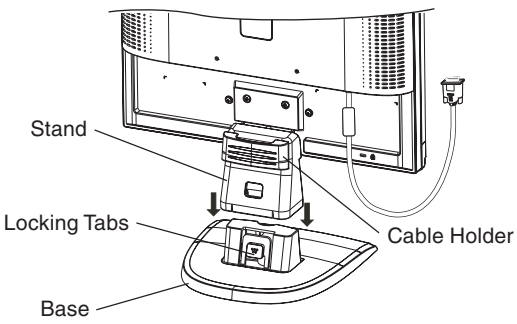


Figure S.1

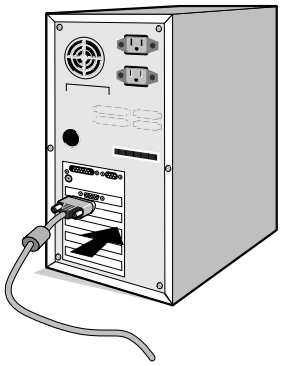


Figure A.1

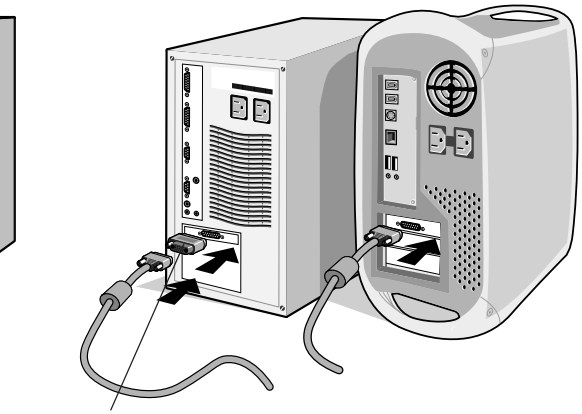


Figure A.2

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

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

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

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

3. Connect the power cord to the power outlet. Place the Video Signal Cable and power cord to the Cable holder (**Figure B.1**).

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

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

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

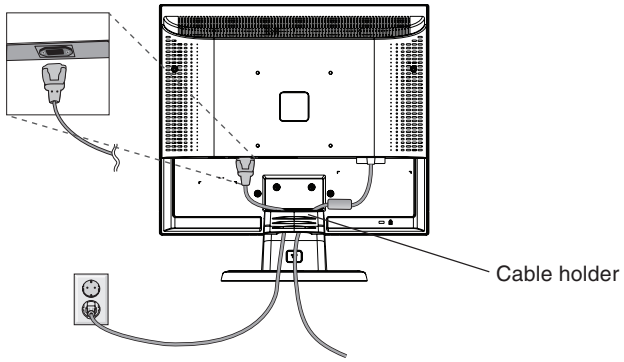


Figure B.1

Figure C.1

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

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

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

Tilt

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

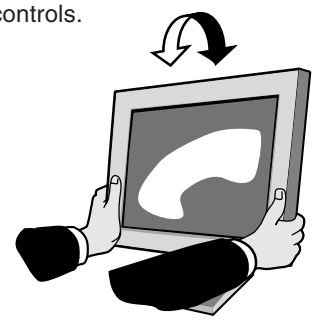


Figure TS.1

Remove Monitor Stand for Mounting

To prepare the monitor for alternative mounting purposes:

1. Disconnect all cables.
2. Place monitor face down on a non-abrasive surface (**Figure R.1**).
3. Remove the 3 screws connecting the monitor to the stand and remove the stand as indicated (**Figure R.2**). The monitor is now ready for mounting in an alternative manner.
4. Connect the AC cord to the back of the monitor (**Figure R.3**).
5. Reverse this process to re-attach stand.

NOTE: Use only VESA-compatible alternative mounting method.

NOTE: Handle with care when removing monitor stand.

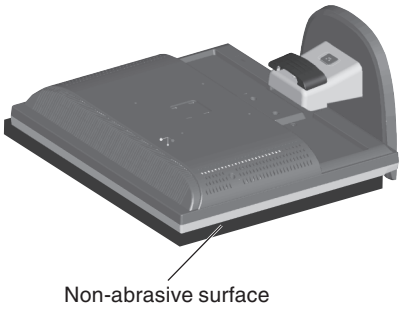


Figure R.1

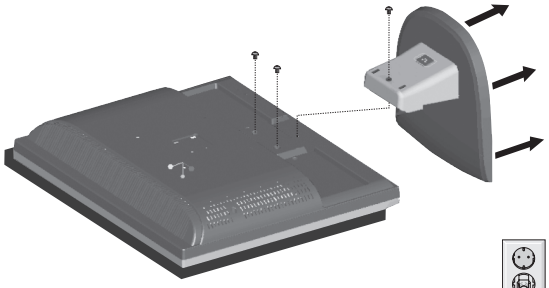


Figure R.2

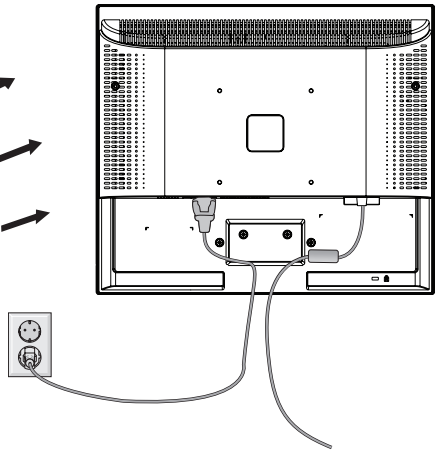
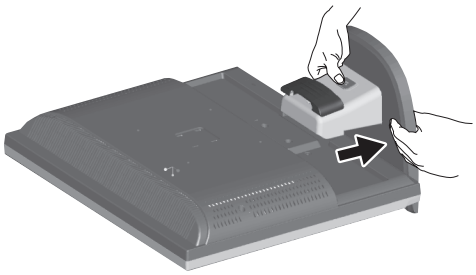


Figure R.3

Removing the Base

NOTE: Always remove the Base when shipping the LCD.

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

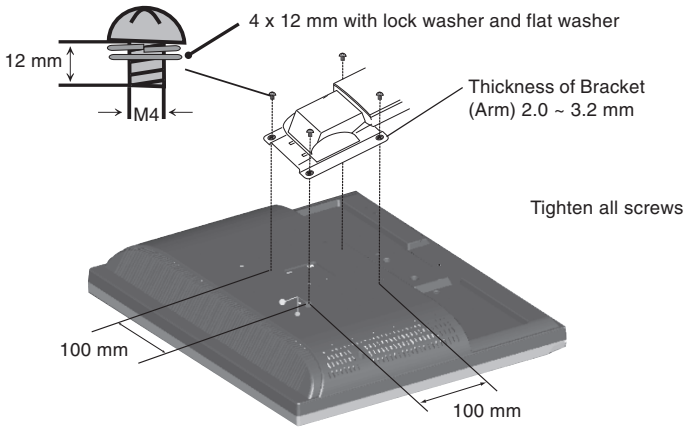


Connecting a Flexible Arm

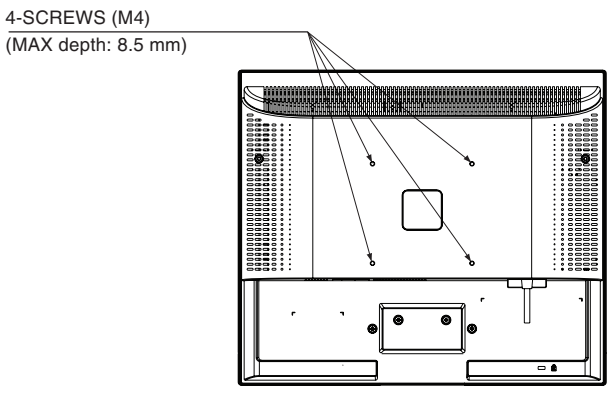
This LCD monitor is designed for use with a flexible arm.

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

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



Specifications



Weight of LCD assembly: 3.6 kg - AccuSync LCD73V/LCD170V (MAX)
4.9 kg - AccuSync LCD93V/LCD190V (MAX)

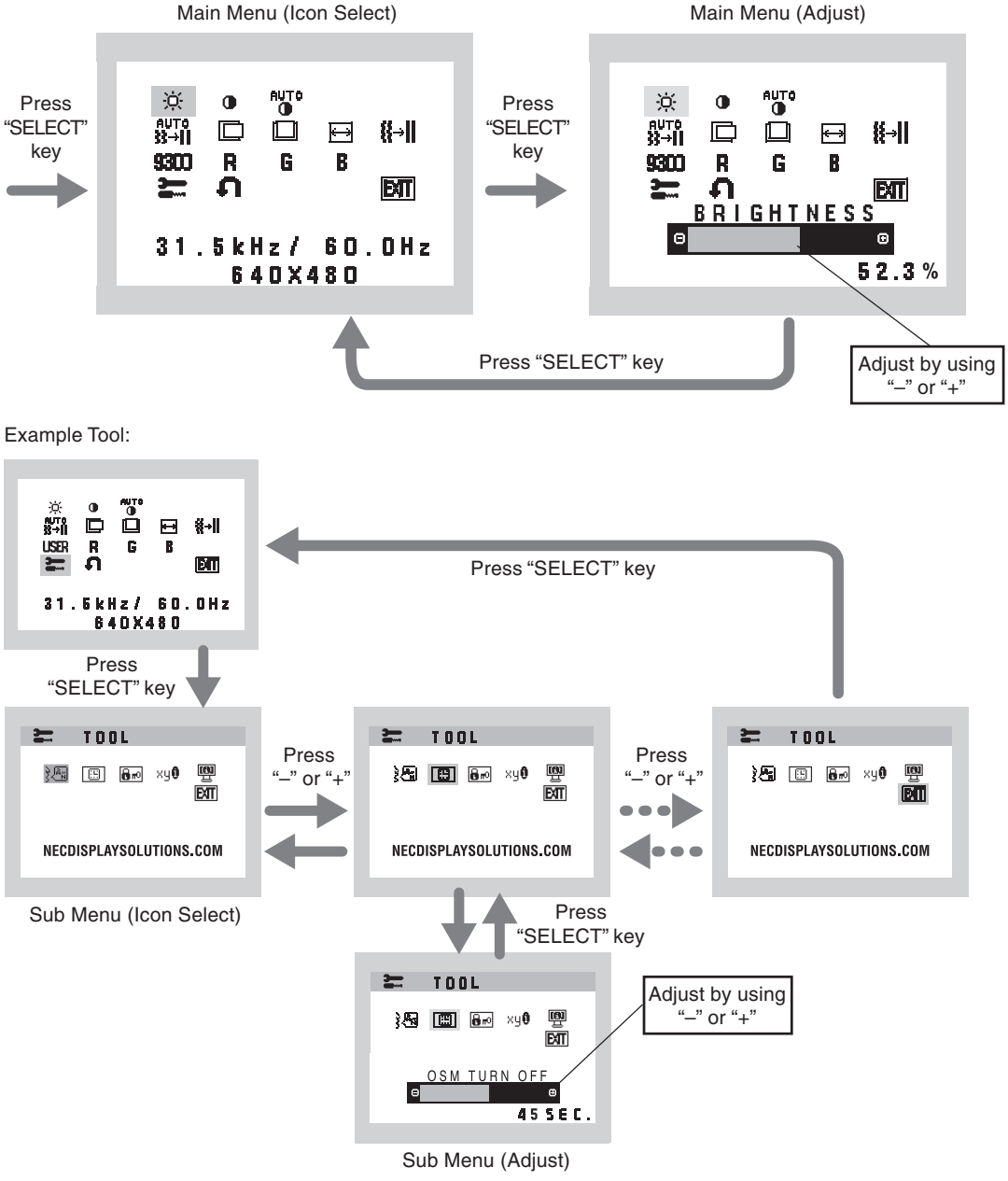
Controls

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

1. Basic function at pressing each key

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

2. OSM structure



BRIGHTNESS
Adjusts the overall image and background screen brightness.

CONTRAST
Adjusts the image brightness in relation to the background.

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

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

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

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

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

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

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

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

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

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

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

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

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

LANGUAGE
OSM control menus are available in eight languages.

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

OSM LOCK OUT

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

RESOLUTION NOTIFIER

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

MONITOR INFO

Indicates the model and serial numbers of your monitor.

OSM Warning

OSM Warning menus disappear with SELECT button.

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

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

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

Recommended use

Safety Precautions and Maintenance

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

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

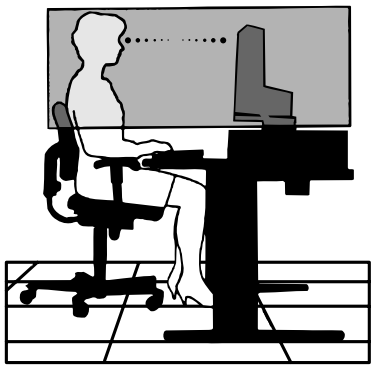
CAUTION

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

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

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

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



- For optimum performance, allow 20 minutes for warm-up.
- Adjust the monitor height so that the top of the screen is at or slightly below eye level. Your eyes should look slightly downward when viewing the middle of the screen.
- Position your monitor no closer than 40 cm and no further away than 70 cm from your eyes. The optimal distance is 50 cm.
- Rest your eyes periodically by focusing on an object at least 6 m away. Blink often.
- Position the monitor at a 90° angle to windows and other light sources to minimize glare and reflections. Adjust the monitor tilt so that ceiling lights do not reflect on your screen.
- If reflected light makes it hard for you to see your screen, use an antiglare filter.
- Clean the LCD monitor surface with a lint-free, non-abrasive cloth. Avoid using any cleaning solution or glass cleaner!
- Adjust the monitor's brightness and contrast controls to enhance readability.
- Use a document holder placed close to the screen.
- Position whatever you are looking at most of the time (the screen or reference material) directly in front of you to minimize turning your head while you are typing.
- Avoid displaying fixed patterns on the monitor for long periods of time to avoid image persistence (after-image effects).
- Get regular eye checkups.

Ergonomics

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

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

Cleaning the LCD Panel

- When the liquid crystal panel becomes dusty or dirty, wipe gently with a soft cloth.
- Do not rub the LCD panel with coarse or hard material.
- Do not apply pressure to the LCD surface.
- Do not use OA cleaner as it will cause deterioration or discoloration to the LCD surface.

Cleaning the Cabinet

- Unplug the power supply.
- Dampen a soft cloth with water and a neutral detergent. Gently wipe the cabinet then dry gently with a soft 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 period of time. These types of fluids and fabrics can cause the paint to deteriorate, crack or peel.

Specifications AccuSync LCD73V Monitor

Monitor Specifications		AccuSync LCD73V Monitor	Notes
LCD Module	Diagonal:	43 cm/17 inches	Active matrix; thin film transistor (TFT)
	Viewable Image Size:	43 cm/17 inches	liquid crystal display (LCD); 0.264 mm dot
	Native Resolution (Pixel Count):	1280 x 1024	pitch; 270 cd/m^2 white luminance, 500:1 contrast ratio, typical, response time: 8 ms.
Input Signal	Video:	ANALOG 0.7 Vp-p/75 Ohms	
	Sync:	Separate sync.TTL Level (Positive/Negative)	
		Horizontal sync. Positive/Negative	
		Vertical sync. Positive/Negative	
Display Colours	Analog input:	16,2 M	Depends on display card used.
Synchronization Range	Horizontal:	31.5 kHz to 81.1 kHz	Automatically
	Vertical:	56 Hz to 76 Hz	Automatically
Viewing Angle	Left/Right:	-80°/+80°(CR>5)	
	Up/Down:	-60°/+70°(CR>5)	
Resolutions Supported	Landscape:	720 x 400*1 : VGA	Some systems may not
		640 x 480*1 @ 60 Hz to 75 Hz	support all modes listed.
		800 x 600*1 @ 56 Hz to 75 Hz	
		832 x 624*1 @ 75 Hz	
		1024 x 768*1 @ 60 Hz to 75 Hz	
		1152 x 864*1 @ 70 Hz to 75 Hz	
		1152 x 870*1 @ 75 Hz	
		1280 x 960*1 @ 60 Hz to 75 Hz	Recommended resolution is 60 Hz for
		1280 x 1024 @ 60 Hz to 75 Hz.....	optimal display performance.
Active Display Area	Horizontal:	337.9 mm	
	Vertical:	270.3 mm	
Power Supply		100 - 240 V ~ 50/60 Hz	
Dimensions	Landscape:	368.0 mm (W) x 381.5 mm (H) x 205.0 mm (D) (with stand)	
		368.0 mm (W) x 316.5 mm (H) x 60.6 mm (D) (without stand)	
Weight		4.0 kg	
Environmental Considerations			
	Operating Temperature:	5 °C to 35 °C	
	Humidity:	30% to 80%	
	Altitude:	0 to 3,048 m	
	Storage Temperature:	-10 °C to +60 °C	
	Humidity:	10% to 85%	
	Altitude:	0 to 12,192 m	

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

NOTE: Technical specifications are subject to change without notice.

Specifications AccuSync LCD93V Monitor

Monitor Specifications		AccuSync LCD93V Monitor	Notes
LCD Module	Diagonal:	48.3 cm/19 inches	Active matrix; thin film transistor (TFT)
	Viewable Image Size:	48.3 cm/19 inches	liquid crystal display (LCD); 0.294 mm dot
	Native Resolution (Pixel Count):	1280 x 1024	pitch; 270 cd/m^2 white luminance, 550:1 contrast ratio, typical, response time: 8 ms.
Input Signal	Video:	ANALOG 0.7 Vp-p/75 Ohms	
	Sync:	Separate sync.TTL Level (Positive/Negative) Horizontal sync. Positive/Negative Vertical sync. Positive/Negative	
Display Colours	Analog input:	16,2 M	Depends on display card used.
Synchronization Range	Horizontal:	31.5 kHz to 81.1 kHz	Automatically
	Vertical:	56 Hz to 76 Hz	Automatically
Viewing Angle	Left/Right:	-80°/+80°(CR>5)	
	Up/Down:	-75°/+70°(CR>5)	
Resolutions Supported	Landscape:	720 x 400*1 : VGA	Some systems may not
		640 x 480*1 @ 60 Hz to 75 Hz	support all modes listed.
		800 x 600*1 @ 56 Hz to 75 Hz	
		832 x 624*1 @ 75 Hz	
		1024 x 768*1 @ 60 Hz to 75 Hz	
		1152 x 864*1 @ 70 Hz to 75 Hz	
		1152 x 870*1 @ 75 Hz	
		1280 x 960*1 @ 60 Hz to 75 Hz	Recommended resolution is 60 Hz for
		1280 x 1024 @ 60 Hz to 75 Hz.....	optimal display performance.
Active Display Area	Horizontal:	376.3 mm	
	Vertical:	301.1 mm	
Power Supply		100 - 240 V ~ 50/60 Hz	
Dimensions	Landscape:	405.5 mm (W) x 405.5 mm (H) x 205.0 mm (D) (with stand) 405.5 mm (W) x 346.0 mm (H) x 61.5 mm (D) (without stand)	
Weight		5.3 kg	
Environmental Considerations			
	Operating Temperature:	5 °C to 35 °C	
	Humidity:	30% to 80%	
	Altitude:	0 to 3,048 m	
	Storage Temperature:	-10 °C to +60 °C	
	Humidity:	10% to 85%	
	Altitude:	0 to 12,192 m	

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

NOTE: Technical specifications are subject to change without notice.

Specifications LCD170V Monitor

Monitor Specifications		LCD170V Monitor	Notes
LCD Module	Diagonal:	43 cm/17 inches	Active matrix; thin film transistor (TFT)
	Viewable Image Size:	43 cm/17 inches	liquid crystal display (LCD); 0.264 mm dot
	Native Resolution (Pixel Count):	1280 x 1024	pitch; 270 cd/m^2 white luminance, 500:1 contrast ratio, typical, response time: 8 ms.
Input Signal	Video:	ANALOG 0.7 Vp-p/75 Ohms	
	Sync:	Separate sync.TTL Level (Positive/Negative)	
		Horizontal sync. Positive/Negative	
		Vertical sync. Positive/Negative	
Display Colours	Analog input:	16,2 M	Depends on display card used.
Synchronization Range	Horizontal:	31.5 kHz to 81.1 kHz	Automatically
	Vertical:	56 Hz to 76 Hz	Automatically
Viewing Angle	Left/Right:	-80°/+80°(CR>5)	
	Up/Down:	-60°/+70°(CR>5)	
Resolutions Supported	Landscape:	720 x 400*1 : VGA	Some systems may not
		640 x 480*1 @ 60 Hz to 75 Hz	support all modes listed.
		800 x 600*1 @ 56 Hz to 75 Hz	
		832 x 624*1 @ 75 Hz	
		1024 x 768*1 @ 60 Hz to 75 Hz	
		1152 x 864*1 @ 70 Hz to 75 Hz	
		1152 x 870*1 @ 75 Hz	
		1280 x 960*1 @ 60 Hz to 75 Hz	Recommended resolution is 60 Hz for
		1280 x 1024 @ 60 Hz to 75 Hz.....	optimal display performance.
Active Display Area	Horizontal:	337.9 mm	
	Vertical:	270.3 mm	
Power Supply		100 - 240 V ~ 50/60 Hz	
Dimensions	Landscape:	368.0 mm (W) x 381.5 mm (H) x 209.6 mm (D) (with stand)	
		368.0 mm (W) x 316.5 mm (H) x 60.6 mm (D) (without stand)	
Weight		4.0 kg	
Environmental Considerations			
	Operating Temperature:	5 °C to 35 °C	
	Humidity:	30% to 80%	
	Altitude:	0 to 3,048 m	
	Storage Temperature:	-10 °C to +60 °C	
	Humidity:	10% to 85%	
	Altitude:	0 to 12,192 m	

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

NOTE: Technical specifications are subject to change without notice.

Specifications LCD190V Monitor

Monitor Specifications		LCD190V Monitor	Notes
LCD Module	Diagonal:	48.3 cm/19 inches	Active matrix; thin film transistor (TFT)
	Viewable Image Size:	48.3 cm/19 inches	liquid crystal display (LCD); 0.294 mm dot
	Native Resolution (Pixel Count):	1280 x 1024	pitch; 270 cd/m^2 white luminance, 550:1 contrast ratio, typical, response time: 8 ms.
Input Signal	Video:	ANALOG 0.7 Vp-p/75 Ohms	
	Sync:	Separate sync.TTL Level (Positive/Negative)	
		Horizontal sync. Positive/Negative	
		Vertical sync. Positive/Negative	
Display Colours	Analog input:	16,2 M	Depends on display card used.
Synchronization Range	Horizontal:	31.5 kHz to 81.1 kHz	Automatically
	Vertical:	56 Hz to 76 Hz	Automatically
Viewing Angle	Left/Right:	-80°/+80°(CR>5)	
	Up/Down:	-75°/+70°(CR>5)	
Resolutions Supported	Landscape:	720 x 400*1 : VGA	Some systems may not
		640 x 480*1 @ 60 Hz to 75 Hz	support all modes listed.
		800 x 600*1 @ 56 Hz to 75 Hz	
		832 x 624*1 @ 75 Hz	
		1024 x 768*1 @ 60 Hz to 75 Hz	
		1152 x 864*1 @ 70 Hz to 75 Hz	
		1152 x 870*1 @ 75 Hz	
		1280 x 960*1 @ 60 Hz to 75 Hz	Recommended resolution is 60 Hz for
		1280 x 1024 @ 60 Hz to 75 Hz.....	optimal display performance.
Active Display Area	Horizontal:	376.3 mm	
	Vertical:	301.1 mm	
Power Supply		100 - 240 V ~ 50/60 Hz	
Dimensions	Landscape:	405.5 mm (W) x 405.5 mm (H) x 222.0 mm (D) (with stand)	
		405.5 mm (W) x 346.0 mm (H) x 61.5 mm (D) (without stand)	
Weight		5.3 kg	
Environmental Considerations			
	Operating Temperature:	5 °C to 35 °C	
	Humidity:	30% to 80%	
	Altitude:	0 to 3,048 m	
	Storage Temperature:	-10 °C to +60 °C	
	Humidity:	10% to 85%	
	Altitude:	0 to 12,192 m	

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

NOTE: Technical specifications are subject to change without notice.

Features

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

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

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

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

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

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

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

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

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

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

Troubleshooting

No picture

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

Power Button does not respond

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

Image persistence

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

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

Image is unstable, unfocused or swimming is apparent

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

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

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

Display image is not sized properly

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

No Video

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

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

Manufacturer's Recycling and Energy Information

NEC DISPLAY SOLUTIONS 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 monitors, please visit our website at

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

http://www.nec-display.com (in Japan) or

http://www.necdisplay.com (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.

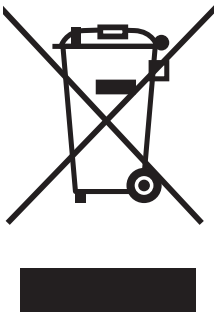
AccuSync LCD73V/LCD170V

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

AccuSync LCD93V/LCD190V

Mode	Power consumption	LED colour
Normal Operation	Approx. 37W	Green
Energy Saving Mode	Less than 2W	Amber
Off Mode	Less than 2W	Unlit

Disposing of your old NEC product



Within the European Union

EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords. When you need to dispose of your NEC display products, please follow the guidance of your local authority, or ask the shop where you purchased the product, or if applicable, follow any agreements made between yourself and NEC.

The mark on electrical and electronic products only applies to the current European Union Member States.

Outside the European Union

If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority so as to comply with the correct disposal method.

AccuSync LCD73V
AccuSync LCD93V
LCD170V
LCD190V

User's Manual

NEC

WARNING

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

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

CAUTION

RISK OF ELECTRIC SHOCK • DO NOT OPEN

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

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

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

Caution:

When operating the AccuSync LCD73V/AccuSync LCD93V/LCD170V/LCD190V with a 220-240V AC power source in Europe, use the power cord provided with the monitor.

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

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

Declaration

Declaration of the Manufacturer

We hereby certify that the colour monitors AccuSync LCD73V (L175GZ)/AccuSync LCD93V (L195GY)/ LCD170V (L175GZ)/LCD190V (L195GY) 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 Display Solutions, Ltd.
4-13-23, Shibaura,
Minato-Ku
Tokyo 108-0023, Japan

As an ENERGY STAR Partner, NEC Display Solutions of America, Inc. has determined that this product meets the ENERGY STAR guidelines for energy efficiency. ENERGY STAR is a U.S. registered mark. The ENERGY STAR emblem does not represent EPA endorsement of any product or service.

ErgoDesign is a registered trademark of NEC Display Solutions, Ltd. in Austria, Benelux, Denmark, France, Germany, Italy, Norway, Spain, Sweden, U.K..
IBM PC/XT/AT, PS/2, MCGA, VGA, 8514/A and XGA are registered trademarks of International Business Machines Corporation.
Apple and Macintosh are registered trademarks of Apple Computer Inc.
Microsoft and Windows are registered trademarks of the Microsoft Corporation.
NEC is a registered trademark of NEC Corporation.
All other trademarks or registered trademarks are property of their respective owners.

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

Canadian Department of Communications Compliance Statement

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

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

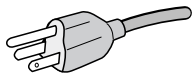
C-UL: Bears the C-UL Mark and is in compliance with Canadian Safety Regulations according to CSA C22.2 No. 60950-1.

Ce produit porte la marque 'C-UL' et se conforme aux règlements de sûrele Canadiens selon CAN/CSA C22.2 No. 60950-1.

FCC Information

1. Use the attached specified cables with the AccuSync LCD73V/AccuSync LCD93V/LCD170V/LCD190V 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	1.8 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 Display Solutions 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:	AccuSync LCD73V/ LCD170V (L175GZ) AccuSync LCD93V/ LCD190V (L195GY)

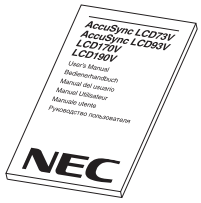
FC

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

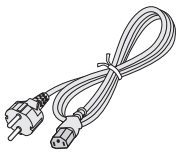
Contents

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

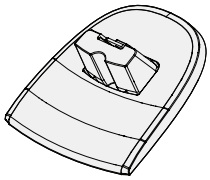
- LCD monitor with tilt base
- Power Cord
- User's Manual
- CD-ROM
- Base Stand
- Cable Holder



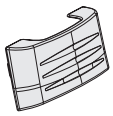
User's Manual



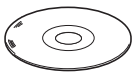
Power Cord



Base Stand



Cable Holder



CD-ROM

LCD monitor
Captive type (Video signal cable is connected)

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

Quick Start

To attach the Base to the LCD Stand:

1. Insert the front of the LCD stand into the holes in the front of the Base (**Figure S.1**).
2. Attach the Base to the Stand. The locking tab on the Base should fit into the hole on the back of the Stand (**Figure S.1**).

To attach the Cable Holder:

1. Attach the Cable Holder on to the Base. Insert the hooks on the Cable Holder into the holes at the back of the Stand and slide the Cable Holder downward into place (**Figure S.1**).

NOTE: Please confirm that the tabs are completely secure.

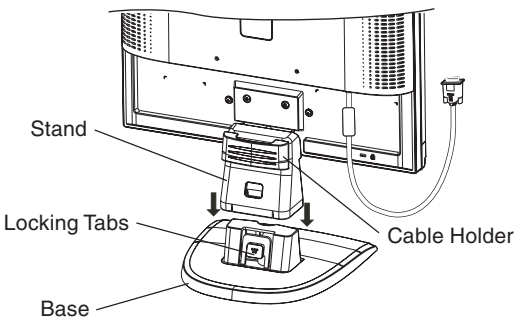


Figure S.1

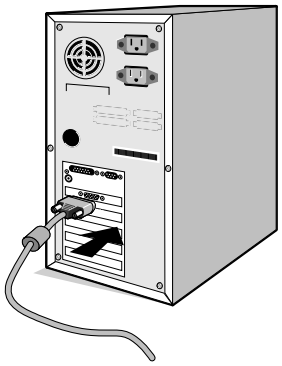


Figure A.1

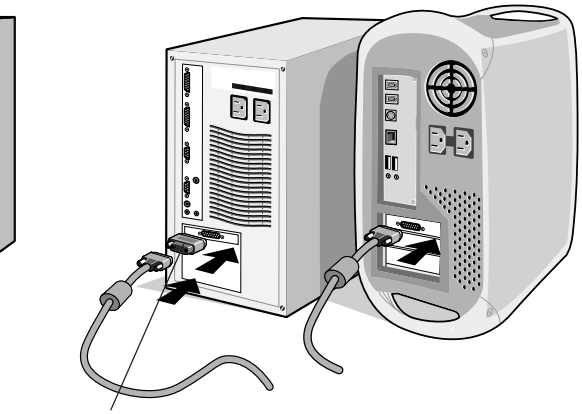


Figure A.2

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

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

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

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

3. Connect the power cord to the power outlet. Place the Video Signal Cable and power cord to the Cable holder (**Figure B.1**).

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

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

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

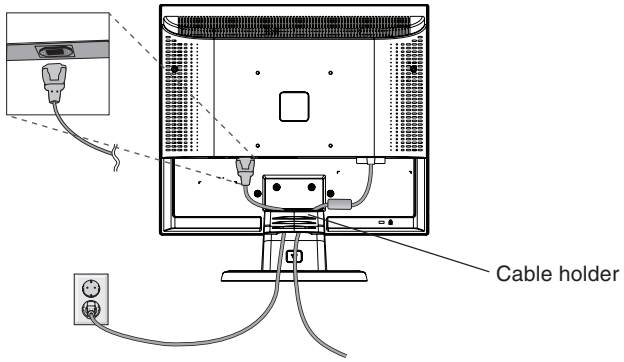


Figure B.1

Figure C.1

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

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

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

Tilt

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

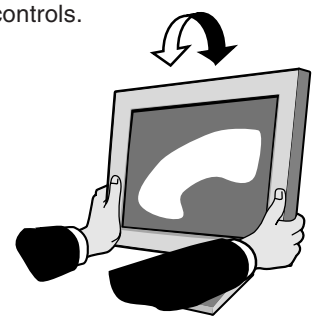


Figure TS.1

Remove Monitor Stand for Mounting

To prepare the monitor for alternative mounting purposes:

1. Disconnect all cables.
2. Place monitor face down on a non-abrasive surface (**Figure R.1**).
3. Remove the 3 screws connecting the monitor to the stand and remove the stand as indicated (**Figure R.2**). The monitor is now ready for mounting in an alternative manner.
4. Connect the AC cord to the back of the monitor (**Figure R.3**).
5. Reverse this process to re-attach stand.

NOTE: Use only VESA-compatible alternative mounting method.

NOTE: Handle with care when removing monitor stand.

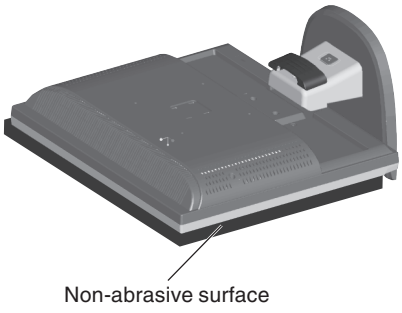


Figure R.1

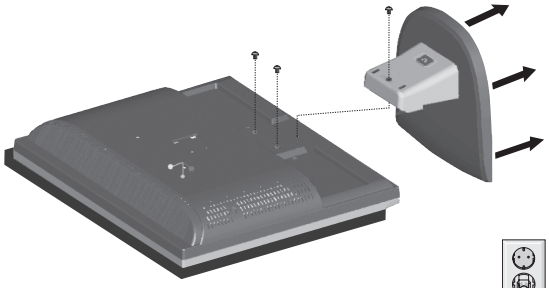


Figure R.2

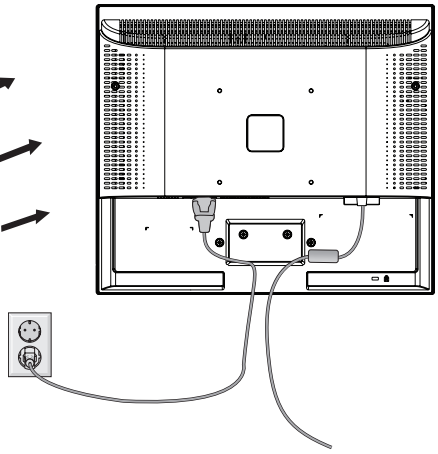
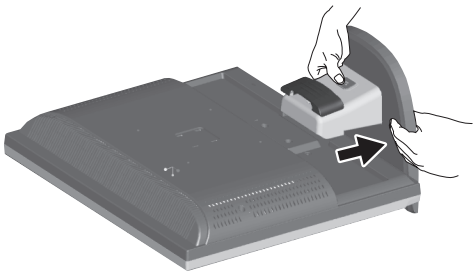


Figure R.3

Removing the Base

NOTE: Always remove the Base when shipping the LCD.

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

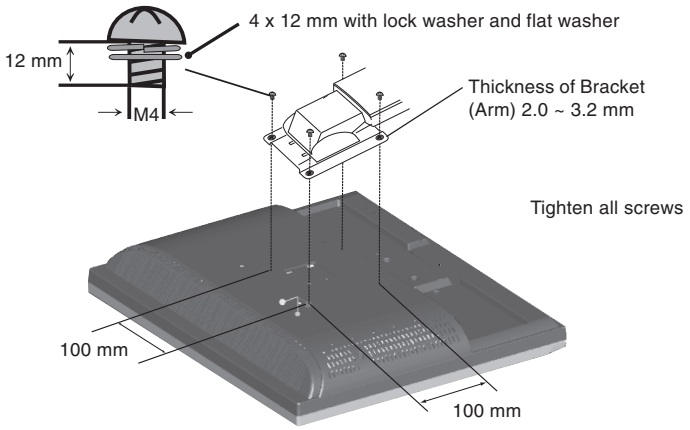


Connecting a Flexible Arm

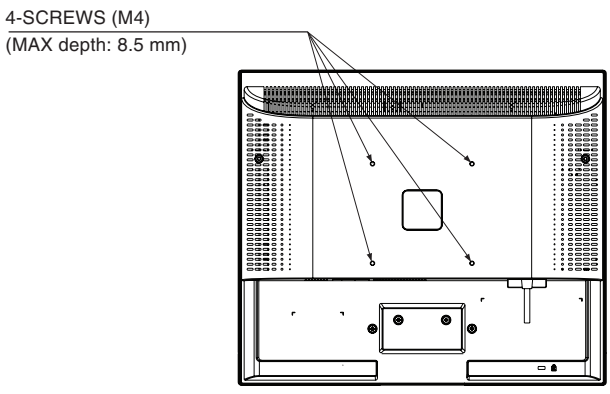
This LCD monitor is designed for use with a flexible arm.

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

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



Specifications



Weight of LCD assembly: 3.6 kg - AccuSync LCD73V/LCD170V (MAX)
4.9 kg - AccuSync LCD93V/LCD190V (MAX)

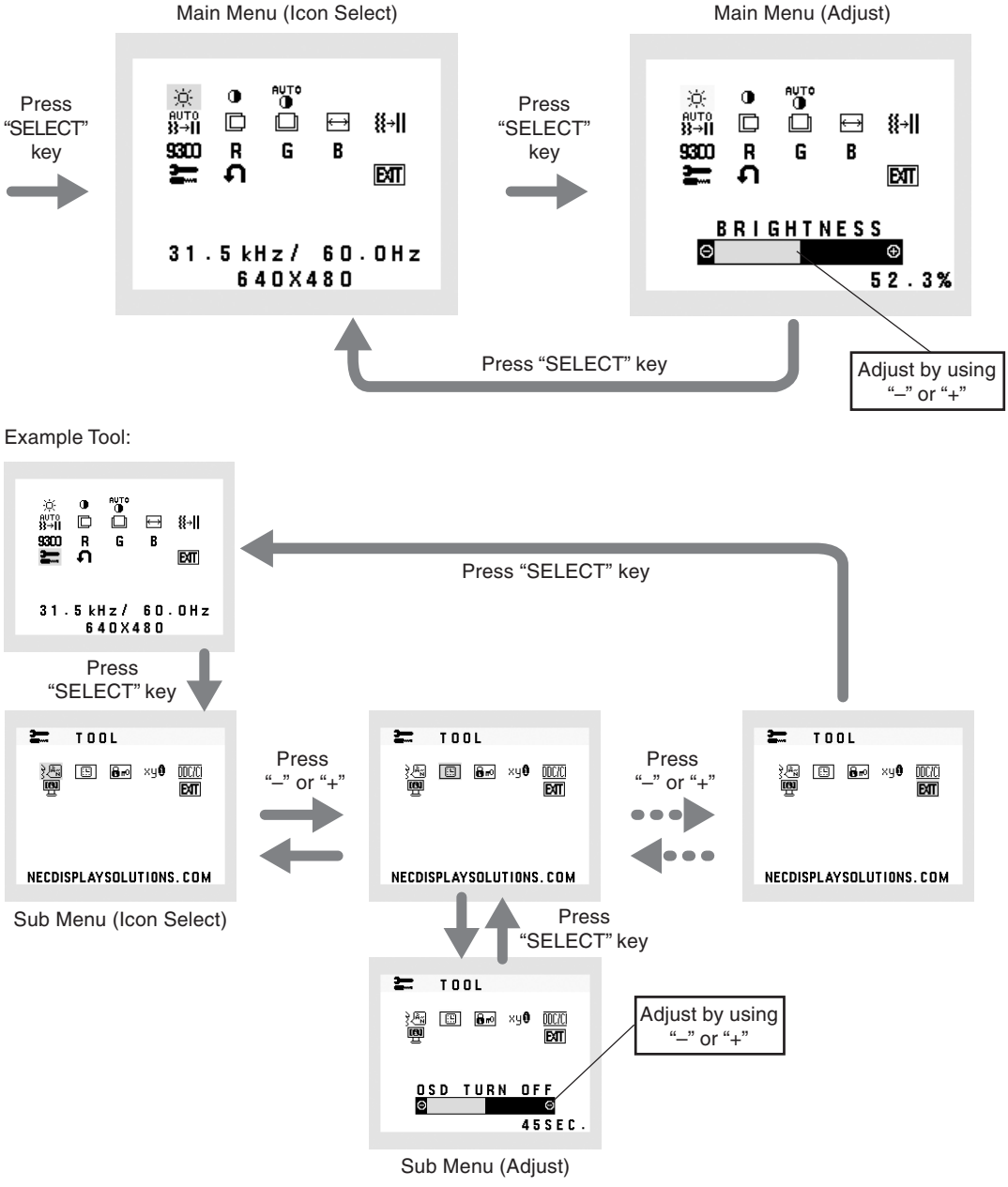
Controls

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

1. Basic function at pressing each key

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

2. OSM structure



BRIGHTNESS
Adjusts the overall image and background screen brightness.

CONTRAST
Adjusts the image brightness in relation to the background.

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

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

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

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

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

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

COLOUR CONTROL SYSTEMS
Five colour presets (9300/7500/sRGB/USER/NATIVE) select the desired colour setting.
The sRGB and NATIVE, colour presets are standard and cannot be changed.

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

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

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

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

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

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

LANGUAGE
OSM control menus are available in nine languages.

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

OSM LOCK OUT

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

RESOLUTION NOTIFIER

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

DDC/CI

Turns ON or OFF the two way communication and control of the monitor.

MONITOR INFO

Indicates the model and serial numbers of your monitor.

OSM Warning

OSM Warning menus disappear with SELECT button.

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

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

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

Recommended use

Safety Precautions and Maintenance

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

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

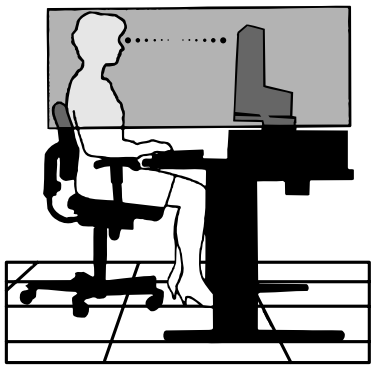
CAUTION

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

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

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

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



- For optimum performance, allow 20 minutes for warm-up.
- Adjust the monitor height so that the top of the screen is at or slightly below eye level. Your eyes should look slightly downward when viewing the middle of the screen.
- Position your monitor no closer than 40 cm and no further away than 70 cm from your eyes. The optimal distance is 50 cm.
- Rest your eyes periodically by focusing on an object at least 6 m away. Blink often.
- Position the monitor at a 90° angle to windows and other light sources to minimize glare and reflections. Adjust the monitor tilt so that ceiling lights do not reflect on your screen.
- If reflected light makes it hard for you to see your screen, use an antiglare filter.
- Clean the LCD monitor surface with a lint-free, non-abrasive cloth. Avoid using any cleaning solution or glass cleaner!
- Adjust the monitor's brightness and contrast controls to enhance readability.
- Use a document holder placed close to the screen.
- Position whatever you are looking at most of the time (the screen or reference material) directly in front of you to minimize turning your head while you are typing.
- Avoid displaying fixed patterns on the monitor for long periods of time to avoid image persistence (after-image effects).
- Get regular eye checkups.

Ergonomics

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

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

Cleaning the LCD Panel

- When the liquid crystal panel becomes dusty or dirty, wipe gently with a soft cloth.
- Do not rub the LCD panel with coarse or hard material.
- Do not apply pressure to the LCD surface.
- Do not use OA cleaner as it will cause deterioration or discoloration to the LCD surface.

Cleaning the Cabinet

- Unplug the power supply.
- Dampen a soft cloth with water and a neutral detergent. Gently wipe the cabinet then dry gently with a soft 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 period of time. These types of fluids and fabrics can cause the paint to deteriorate, crack or peel.

Specifications AccuSync LCD73V Monitor

Monitor Specifications		AccuSync LCD73V Monitor	Notes
LCD Module	Diagonal:	43 cm/17 inches	Active matrix; thin film transistor (TFT)
	Viewable Image Size:	43 cm/17 inches	liquid crystal display (LCD); 0.264 mm dot
	Native Resolution (Pixel Count):	1280 x 1024	pitch; 270 cd/m^2 white luminance, 500:1 contrast ratio, typical, response time: 8 ms.
Input Signal	Video:	ANALOG 0.7 Vp-p/75 Ohms	
	Sync:	Separate sync.TTL Level (Positive/Negative)	
		Horizontal sync. Positive/Negative	
		Vertical sync. Positive/Negative	
Display Colours	Analog input:	16,2 M	Depends on display card used.
Synchronization Range	Horizontal:	31.5 kHz to 81.1 kHz	Automatically
	Vertical:	56 Hz to 76 Hz	Automatically
Viewing Angle	Left/Right:	-80°/+80° (CR>5)	
	Up/Down:	-60°/+70° (CR>5)	
Resolutions Supported	Landscape:	720 x 400*1 : VGA	Some systems may not
		640 x 480*1 @ 60 Hz to 75 Hz	support all modes listed.
		800 x 600*1 @ 56 Hz to 75 Hz	
		832 x 624*1 @ 75 Hz	
		1024 x 768*1 @ 60 Hz to 75 Hz	
		1152 x 864*1 @ 70 Hz to 75 Hz	
		1152 x 870*1 @ 75 Hz	
		1280 x 960*1 @ 60 Hz to 75 Hz	Recommended resolution is 60 Hz for
		1280 x 1024 @ 60 Hz to 75 Hz.....	optimal display performance.
Active Display Area	Horizontal:	337.9 mm	
	Vertical:	270.3 mm	
Power Supply		100 - 240 V ~ 50/60 Hz	
Dimensions	Landscape:	368.0 mm (W) x 381.5 mm (H) x 205.0 mm (D) (with stand)	
		368.0 mm (W) x 316.5 mm (H) x 60.6 mm (D) (without stand)	
Weight		4.0 kg	
Environmental Considerations			
	Operating Temperature:	5 °C to 35 °C	
	Humidity:	30% to 80%	
	Altitude:	0 to 3,048 m	
	Storage Temperature:	-10 °C to +60 °C	
	Humidity:	10% to 85%	
	Altitude:	0 to 12,192 m	

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

NOTE: Technical specifications are subject to change without notice.

Specifications AccuSync LCD93V Monitor

Monitor Specifications		AccuSync LCD93V Monitor	Notes
LCD Module	Diagonal:	48.3 cm/19 inches	Active matrix; thin film transistor (TFT)
	Viewable Image Size:	48.3 cm/19 inches	liquid crystal display (LCD); 0.294 mm dot
	Native Resolution (Pixel Count):	1280 x 1024	pitch; 300 cd/m^2 white luminance, 700:1 contrast ratio, typical, response time: 8 ms.
Input Signal	Video:	ANALOG 0.7 Vp-p/75 Ohms	
	Sync:	Separate sync.TTL Level (Positive/Negative) Horizontal sync. Positive/Negative Vertical sync. Positive/Negative	
Display Colours	Analog input:	16,2 M	Depends on display card used.
Synchronization Range	Horizontal:	31.5 kHz to 81.1 kHz	Automatically
	Vertical:	56 Hz to 76 Hz	Automatically
Viewing Angle	Left/Right:	-80°/+80° (CR>5)	
	Up/Down:	-80°/+80° (CR>5)	
Resolutions Supported	Landscape:	720 x 400*1 : VGA	Some systems may not
		640 x 480*1 @ 60 Hz to 75 Hz	support all modes listed.
		800 x 600*1 @ 56 Hz to 75 Hz	
		832 x 624*1 @ 75 Hz	
		1024 x 768*1 @ 60 Hz to 75 Hz	
		1152 x 864*1 @ 70 Hz to 75 Hz	
		1152 x 870*1 @ 75 Hz	
		1280 x 960*1 @ 60 Hz to 75 Hz	Recommended resolution is 60 Hz for
		1280 x 1024 @ 60 Hz to 75 Hz.....	optimal display performance.
Active Display Area	Horizontal:	376.3 mm	
	Vertical:	301.1 mm	
Power Supply		100 - 240 V ~ 50/60 Hz	
Dimensions	Landscape:	405.5 mm (W) x 405.5 mm (H) x 205.0 mm (D) (with stand) 405.5 mm (W) x 346.0 mm (H) x 61.5 mm (D) (without stand)	
Weight		5.3 kg	
Environmental Considerations			
	Operating Temperature:	5 °C to 35 °C	
	Humidity:	30% to 80%	
	Altitude:	0 to 3,048 m	
	Storage Temperature:	-10 °C to +60 °C	
	Humidity:	10% to 85%	
	Altitude:	0 to 12,192 m	

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

NOTE: Technical specifications are subject to change without notice.

Specifications LCD170V Monitor

Monitor Specifications		LCD170V Monitor	Notes
LCD Module	Diagonal:	43 cm/17 inches	Active matrix; thin film transistor (TFT)
	Viewable Image Size:	43 cm/17 inches	liquid crystal display (LCD); 0.264 mm dot
	Native Resolution (Pixel Count):	1280 x 1024	pitch; 300 cd/m^2 white luminance, 500:1
			contrast ratio, typical, response time: 8 ms.
Input Signal	Video:	ANALOG 0.7 Vp-p/75 Ohms	
	Sync:	Separate sync.TTL Level (Positive/Negative)	
		Horizontal sync. Positive/Negative	
		Vertical sync. Positive/Negative	
Display Colours	Analog input:	16,2 M	Depends on display card used.
Synchronization Range	Horizontal:	31.5 kHz to 81.1 kHz	Automatically
	Vertical:	56 Hz to 76 Hz	Automatically
Viewing Angle	Left/Right:	-80°/+80° (CR>5)	
	Up/Down:	-60°/+70° (CR>5)	
Resolutions Supported	Landscape:	720 x 400*1 : VGA	Some systems may not
		640 x 480*1 @ 60 Hz to 75 Hz	support all modes listed.
		800 x 600*1 @ 56 Hz to 75 Hz	
		832 x 624*1 @ 75 Hz	
		1024 x 768*1 @ 60 Hz to 75 Hz	
		1152 x 864*1 @ 70 Hz to 75 Hz	
		1152 x 870*1 @ 75 Hz	
		1280 x 960*1 @ 60 Hz to 75 Hz	Recommended resolution is 60 Hz for
		1280 x 1024 @ 60 Hz to 75 Hz.....	optimal display performance.
Active Display Area	Horizontal:	337.9 mm	
	Vertical:	270.3 mm	
Power Supply		100 - 240 V ~ 50/60 Hz	
Dimensions	Landscape:	368.0 mm (W) x 381.5 mm (H) x 209.6 mm (D) (with stand)	
		368.0 mm (W) x 316.5 mm (H) x 60.6 mm (D) (without stand)	
Weight		4.0 kg	
Environmental Considerations			
	Operating Temperature:	5 °C to 35 °C	
	Humidity:	30% to 80%	
	Altitude:	0 to 3,048 m	
	Storage Temperature:	-10 °C to +60 °C	
	Humidity:	10% to 85%	
	Altitude:	0 to 12,192 m	

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

NOTE: Technical specifications are subject to change without notice.

Specifications LCD190V Monitor

Monitor Specifications		LCD190V Monitor	Notes
LCD Module	Diagonal:	48.3 cm/19 inches	Active matrix; thin film transistor (TFT)
	Viewable Image Size:	48.3 cm/19 inches	liquid crystal display (LCD); 0.294 mm dot
	Native Resolution (Pixel Count):	1280 x 1024	pitch; 300 cd/m^2 white luminance, 700:1 contrast ratio, typical, response time: 8 ms.
Input Signal	Video:	ANALOG 0.7 Vp-p/75 Ohms	
	Sync:	Separate sync.TTL Level (Positive/Negative)	
		Horizontal sync. Positive/Negative	
		Vertical sync. Positive/Negative	
Display Colours	Analog input:	16,2 M	Depends on display card used.
Synchronization Range	Horizontal:	31.5 kHz to 81.1 kHz	Automatically
	Vertical:	56 Hz to 76 Hz	Automatically
Viewing Angle	Left/Right:	-80°/+80° (CR>5)	
	Up/Down:	-80°/+80° (CR>5)	
Resolutions Supported	Landscape:	720 x 400*1 : VGA	Some systems may not
		640 x 480*1 @ 60 Hz to 75 Hz	support all modes listed.
		800 x 600*1 @ 56 Hz to 75 Hz	
		832 x 624*1 @ 75 Hz	
		1024 x 768*1 @ 60 Hz to 75 Hz	
		1152 x 864*1 @ 70 Hz to 75 Hz	
		1152 x 870*1 @ 75 Hz	
		1280 x 960*1 @ 60 Hz to 75 Hz	Recommended resolution is 60 Hz for
		1280 x 1024 @ 60 Hz to 75 Hz.....	optimal display performance.
Active Display Area	Horizontal:	376.3 mm	
	Vertical:	301.1 mm	
Power Supply		100 - 240 V ~ 50/60 Hz	
Dimensions	Landscape:	405.5 mm (W) x 405.5 mm (H) x 222.0 mm (D) (with stand)	
		405.5 mm (W) x 346.0 mm (H) x 61.5 mm (D) (without stand)	
Weight		5.3 kg	
Environmental Considerations			
	Operating Temperature:	5 °C to 35 °C	
	Humidity:	30% to 80%	
	Altitude:	0 to 3,048 m	
	Storage Temperature:	-10 °C to +60 °C	
	Humidity:	10% to 85%	
	Altitude:	0 to 12,192 m	

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

NOTE: Technical specifications are subject to change without notice.

Features

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

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

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

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

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

Plug and Play: The Microsoft solution with the Windows 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 monitor to any VESA standard third party mounting arm or bracket. Allows for the monitor to be mounted on a wall or an arm using any third party compliant device.

Troubleshooting

No picture

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

Power Button does not respond

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

Image persistence

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

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

Image is unstable, unfocused or swimming is apparent

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

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

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

Display image is not sized properly

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

No Video

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

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

Manufacturer's Recycling and Energy Information

NEC DISPLAY SOLUTIONS 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).

Disposing of your old NEC product

The aim of recycling is to gain an environmental benefit by means of re-use, upgrading, reconditioning or reclamation of material. Dedicated recycling sites ensure that environmentally harmful components are properly handled and securely disposed. To ensure the best recycling of our products, **NEC DISPLAY SOLUTIONS offers a variety of recycling procedures** and gives advice on how to handle the product in an environmentally sensitive way, once it has reached the end of its life.

All required information concerning the disposal of the product and country-specific information on recycling facilities can be found on our following websites:

http://www.nec-display-solutions.com/greencompany/ (in Europe),

http://www.nec-display.com (in Japan) or

http://www.necdisplay.com (in USA).

Energy Saving

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

AccuSync LCD73V/LCD170V

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

AccuSync LCD93V/LCD190V

Mode	Power consumption	LED colour
Normal Operation	Approx. 37W	Green
Energy Saving Mode	Less than 2W	Amber
Off Mode	Less than 2W	Unlit

WEEE Mark (European Directive 2002/96/EC)

Within the European Union

EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords. When you need to dispose of your NEC display products, please follow the guidance of your local authority, or ask the shop where you purchased the product, or if applicable, follow any agreements made between yourself and NEC.

The mark on electrical and electronic products only applies to the current European Union Member States.

Outside the European Union

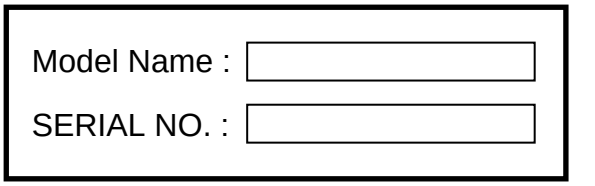
If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority so as to comply with the correct disposal method.

Serial Number Information

Refer to the serial number information shown below.

Model name	LCD Panel	Vista	Classification code
LCD190V-BK (U)	M190EN04 V5C	Non	5
LCD190V-BK (U)	M190EN04 V5D	Non	B
LCD190V-BK-1 (U)	M190EN04 V4	Yes	H

EX.) SERIAL NUMBER LABEL



Manufactured Year : (Last digit)

2006 : 6
2007 : 7

Manufactured Month :

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

Classification code :

Discriminate by cabinet color
Black : 5 (AUO Panel: M190EN04 V5C)
Black : B (AUO Panel: M190EN04 V5D)
Black : H (AUO Panel: M190EN04 V4)

Running number :

Note : This running number does not reset at each month.

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

Factory Code:

TPV China factory : N

Control Code:

For B ver. (Europe/Asia/Australia) : B

DISASSEMBLY

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

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

■ Assembly is the opposite process of disassembly.

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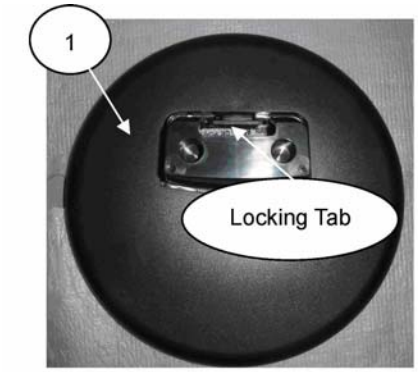
Vista Model

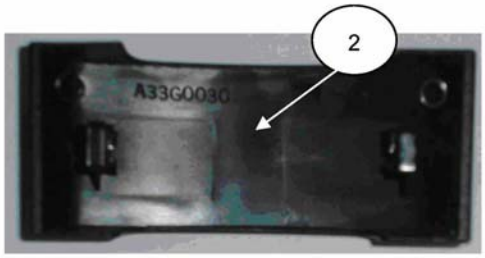
2. LCD190V-BK-1(B): AUO Panel (M190EN04 V4): Classification Code[H] 3-8

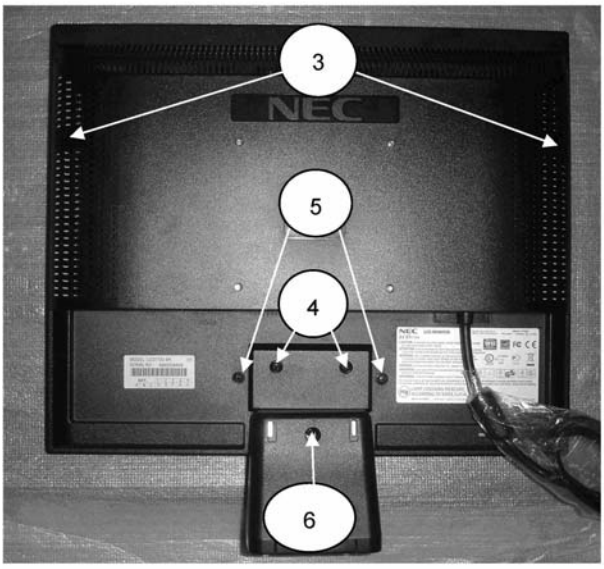
Non Vista Model

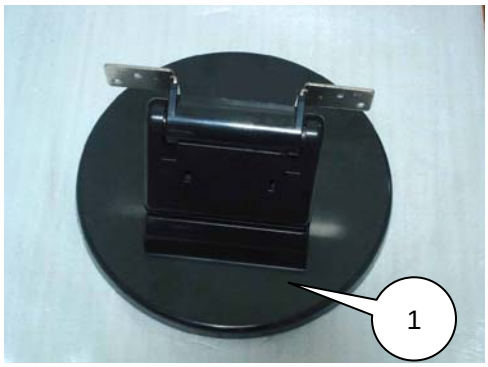
1. LCD190V-BK(B): AUO Panel (M190EN04 V5C/V5D): Classification Code[5][B]

Symbol	(For EU) TPV Part Number	(For Asia/Australia) NECDS Part Number	Description
1	705GQ9K0P34021	79FD2372	STAND-BASE ASS'Y
2	A33G0030 TW 1T 32	79FD2245	CABLE COVER
3	0M1G 330 6 47 CR3	79FD2358	SCREW
4	AM1G1740 12225 CR3	79FD2374	SCREW
5	AM1G1740 8 47 CR3	79FD2363	SCREW
6	0M1G 340 10225 CR3	79FD2376	SCREW

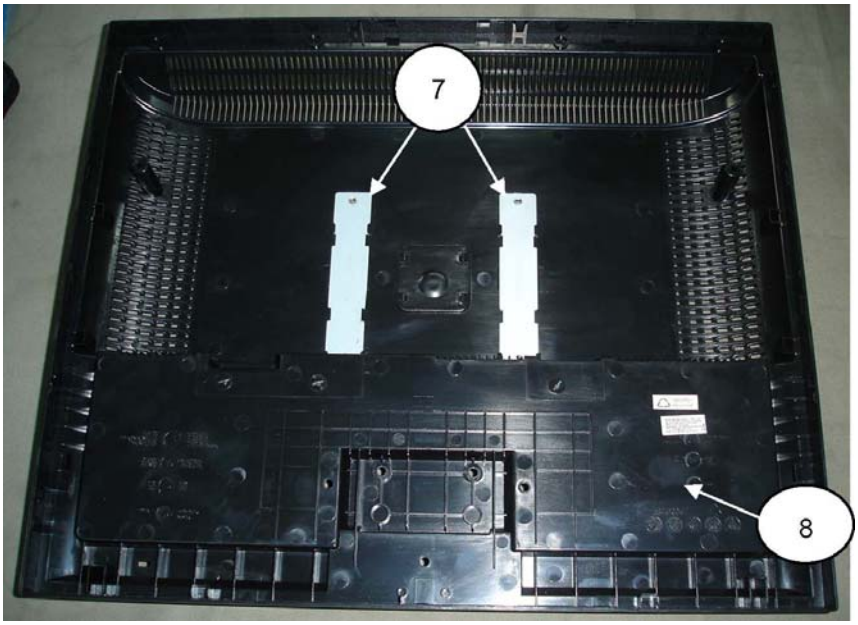




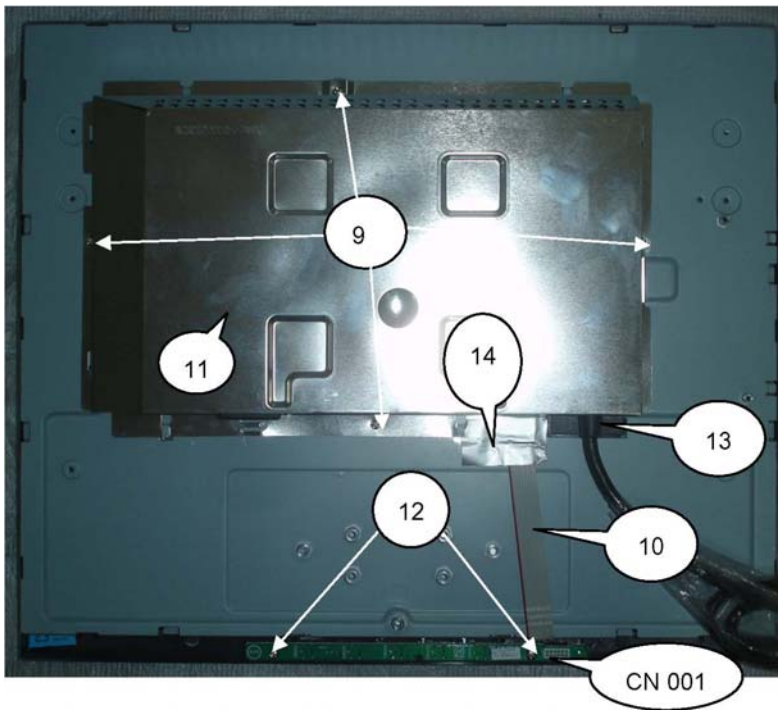


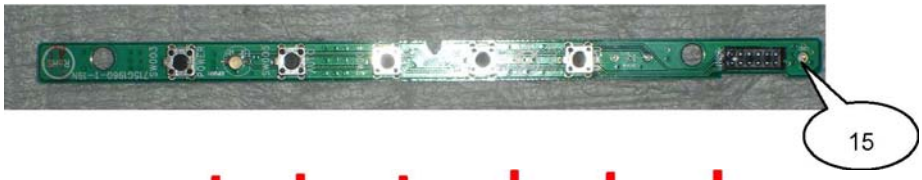


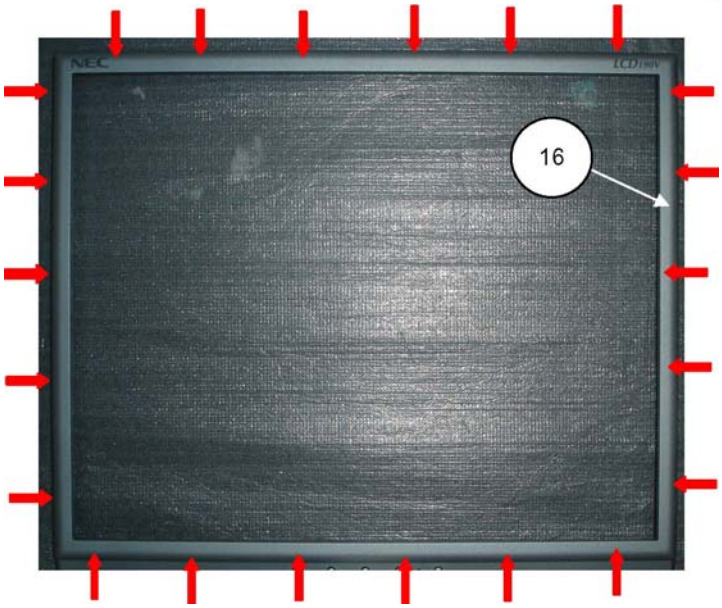
Symbol	(For EU) TPV Part Number	(For Asia/Australia) NECDS Part Number	Description
7	A15G0028 1	79FD2319	VESA BKT
8	A34G0050 TW 1T	79FD2249	REAR COVER



Symbol	(For EU) TPV Part Number	(For Asia/Australia) NECDS Part Number	Description
9	0M1G 330 4120	79FD1540	SCREW
10	095G8014 16670	79FD2267	WIRE HARNESS
11	Q85G0012 1 S	---	SHIELD
12	0Q1G 330 8120	79FD1543	SCREW
13	089G1738LAA553	79FD2239	SIGNAL CABLE D-SUB CABLE
14	052G 1207 A	79FD3731	ALUMINIUM TAPE
15	KEPC986KADP	79FD2252	KEY BOARD
16	A34G0170 TXA1T 30	79FD2373	BEZEL







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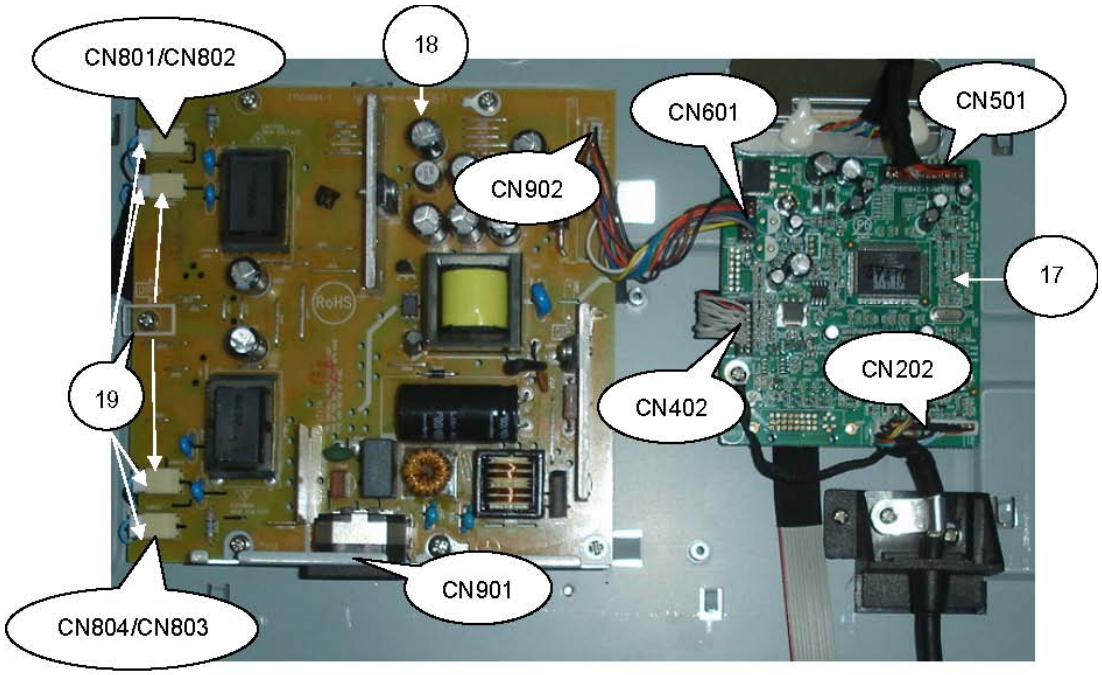
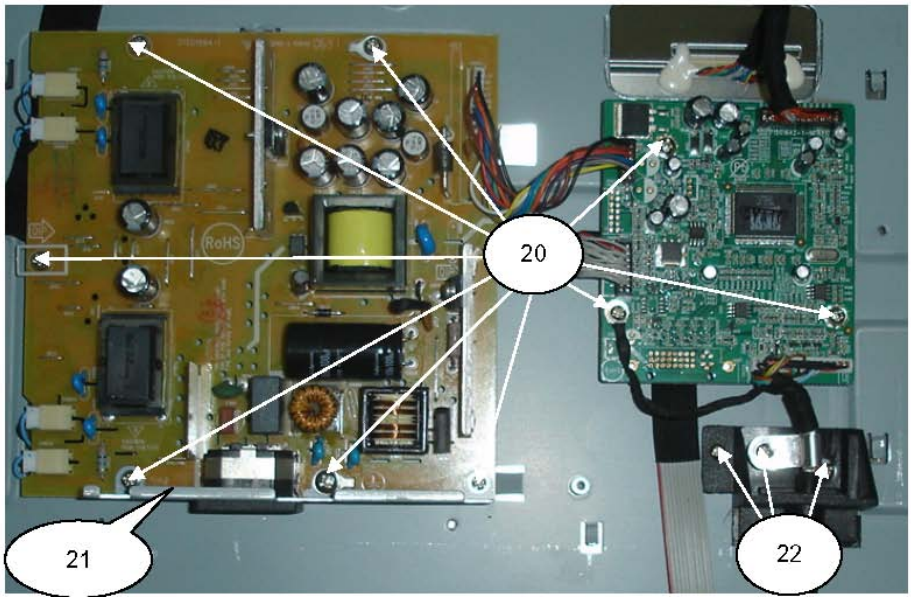
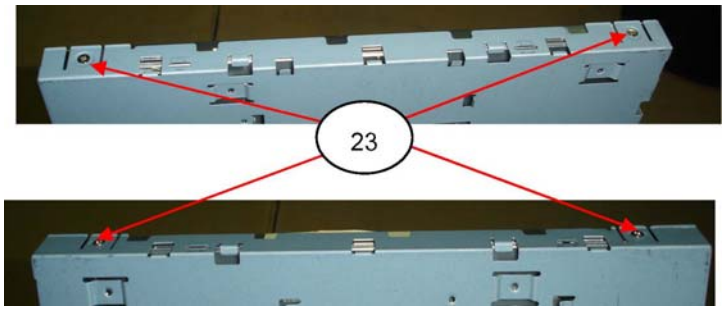
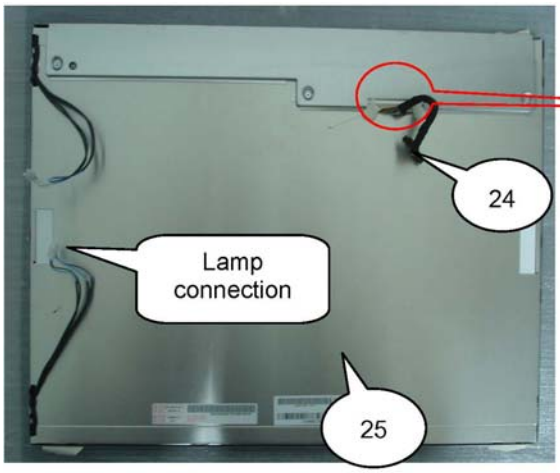
17	CBPC6AGDN2QP	79FD2343	CONVERSION BOARD
18	PWPC1942HDN1P	79FD2278	POWER BOARD
19	011G6054 1	79FD1180	FRAME
20	0M1G1730 6120	79FD1539	SCREW
21	Q15G8313 1	---	AC SOCKET BRACKET
22	0M1G 330 5120	79FD1559	SCREW

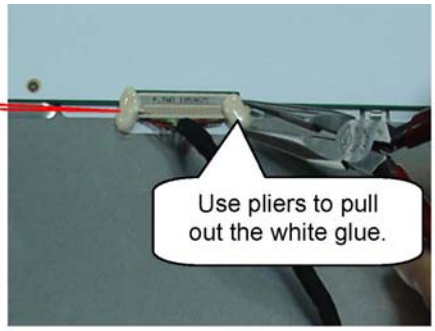


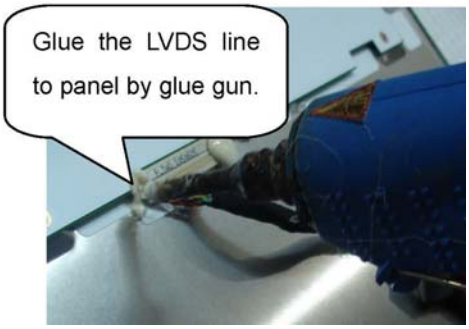


Symbol	(For EU) TPV Part Number	(For Asia/Australia) NECDS Part Number	Description
23	0M1G3030 6125	79FD2276	SCREW
24	095G8018 3X503	79FD2288	LVDS CABLE
25	750GLU90N4531M000N	79FD1897	LCD M190EN04 V5C AUO

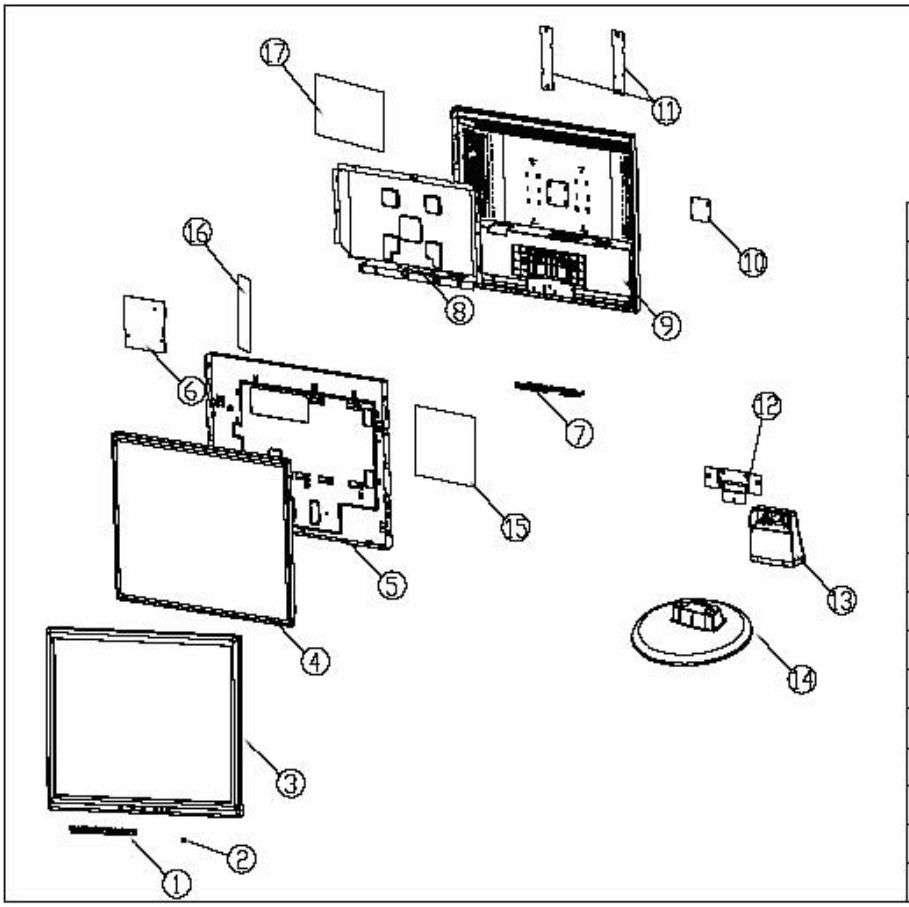








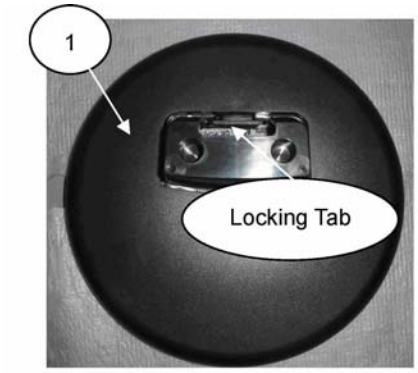
EXPLODE DRAWING

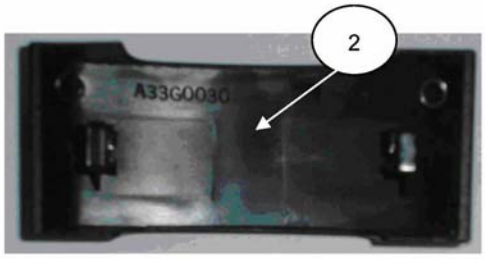


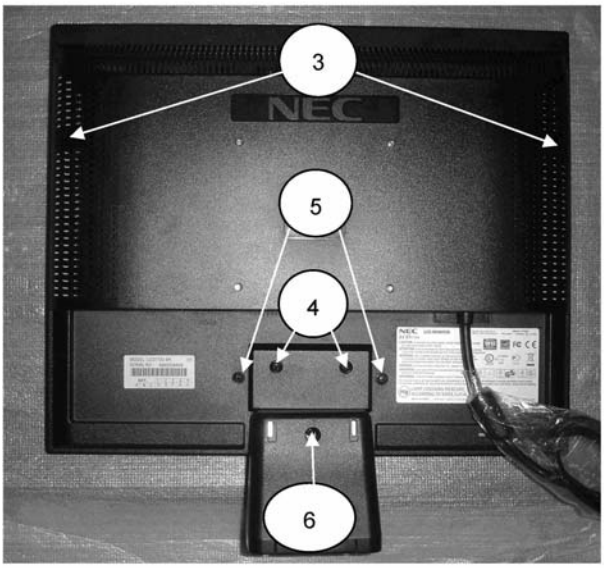
ITEM	TYPE	P/N
17	MYLAR_TOP	Q52G6025 11999
16	MYLAR_BOTTOM	Q52G6025 13 32
15	PWPC	PWPC1742HDN1P
14	BASE	Q34G1844 TW 1T
13	STAND	A34G0046 TW 1T
12	HINGE	A37G0005 1
11	VESA BRACKET	A15G0028 1
10	GATE COVER	Q33G4945 TW 1T
9	REAR COVER	A34G0044 TW 1T
8	MAIN SHIELD	Q85G0012 1 S
7	AC BRACKET	Q15G8313 1
6	MAIN BOARD	SMTC6AGDN2QP
5	MAIN FRAME	A15G0029 1
4	PANEL	750GLU90N4531M
3	BEZEL	A34G0170 TXA1T
2	LED	A33G0029 1 1C
1	BUTTON	A33G0093 TXA1T

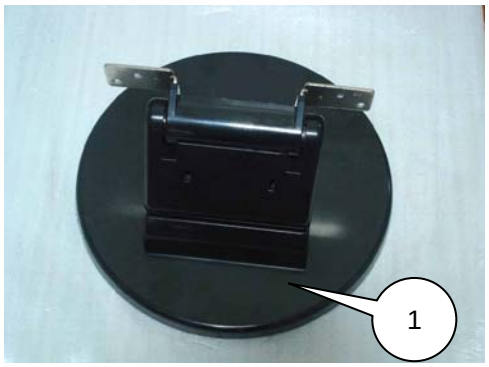
Vista Model
2. LCD190V-BK-1(B): AUO Panel (M190EN04 V4): Classification Code[H]

Symbol	(For EU) TPV Part Number	(For Asia/Australia) NECDS Part Number	Description
1	A34G0045 TW 1T	79FD2717	<G>BASE
2	A33G0030 TW 1T 32	79FD2245	<G>CABLE COVER
3	0M1G 330 6 47 CR3	79FD2358	<G>SCREW
4	AM1G1740 12225 CR3	79FD2374	<G>SCREW
5	AM1G1740 8 47 CR3	79FD2363	<G>SCREW
6	0M1G 340 10225 CR3	79FD2376	<G>SCREW

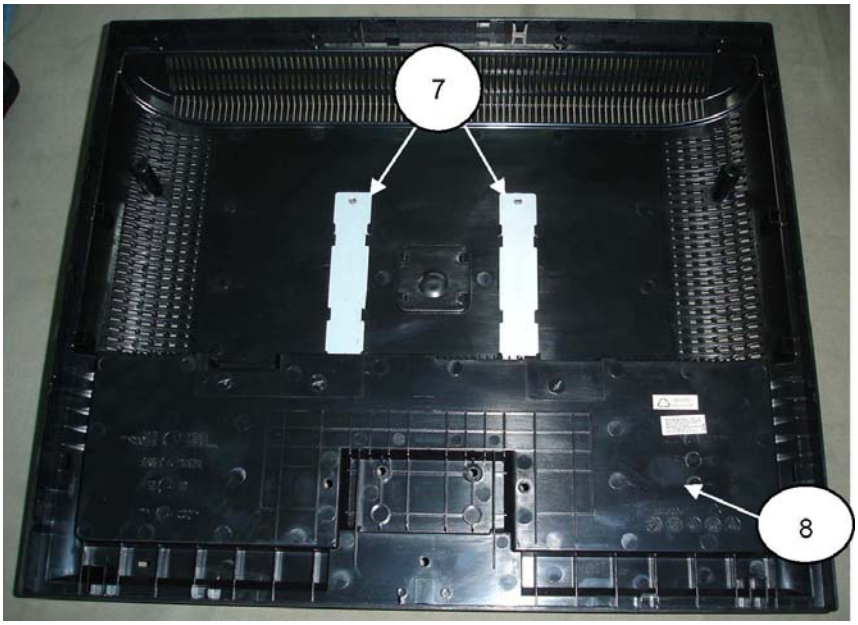




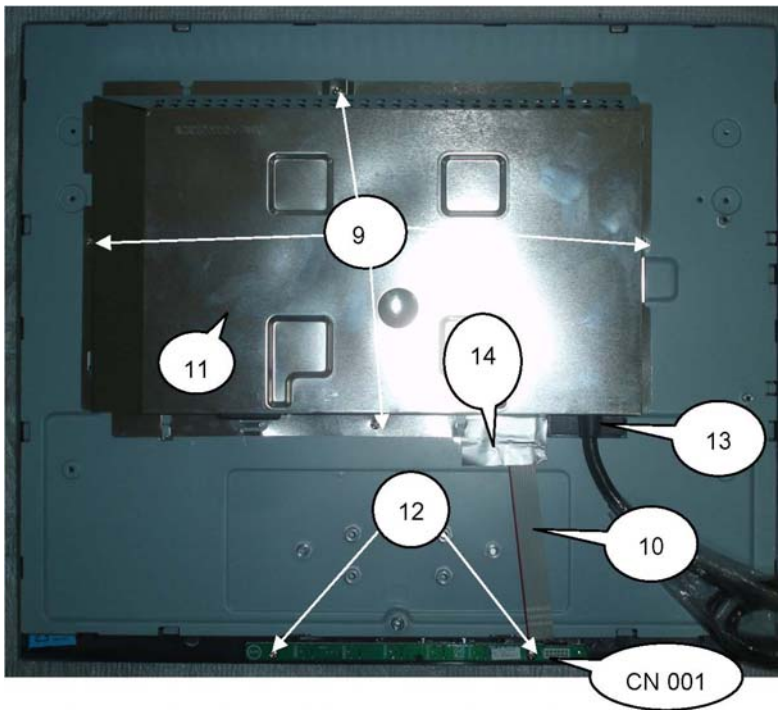


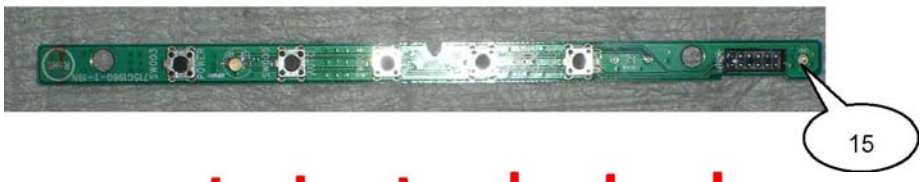


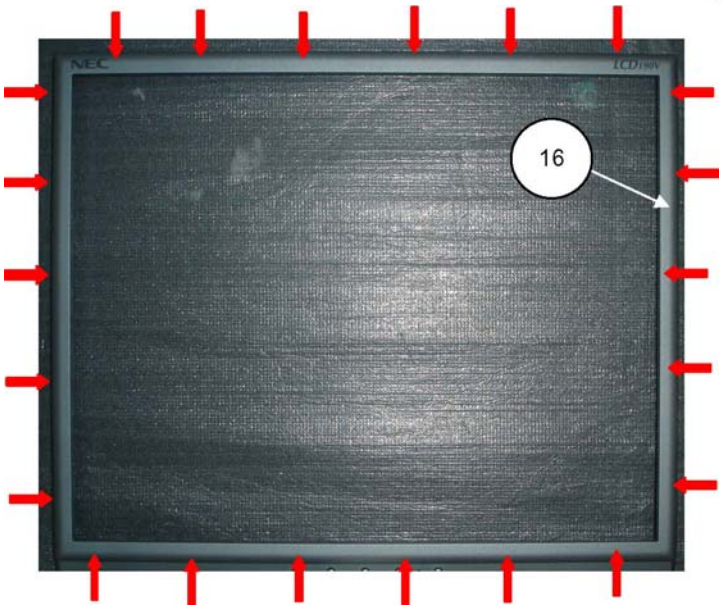
Symbol	(For EU) TPV Part Number	(For Asia/Australia) NECDS Part Number	Description
7	- - -	---	VESA BKT
8	A34G0044 TW 1T	79FD2271	<G>REAR COVER



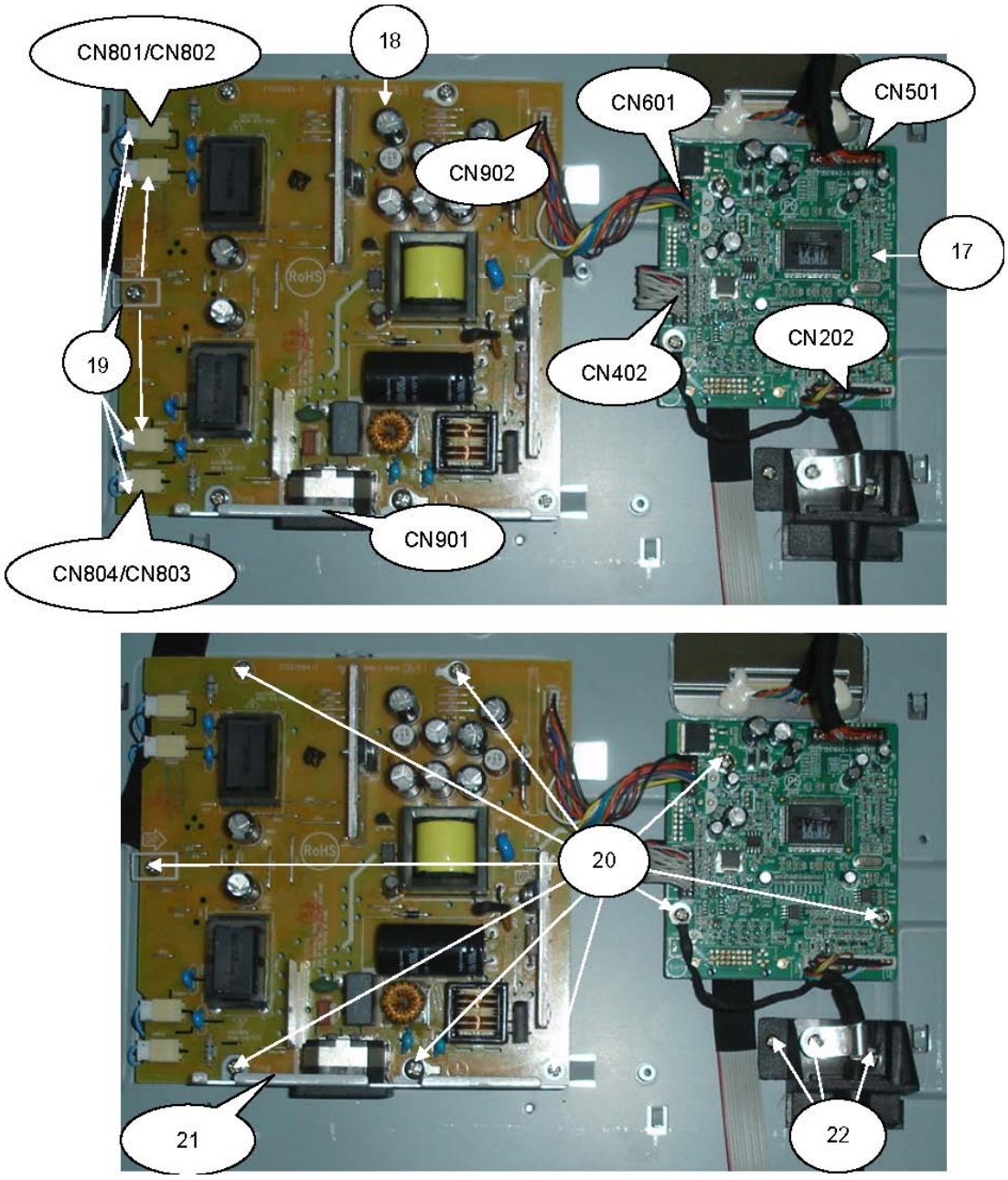
Symbol	(For EU) TPV Part Number	(For Asia/Australia) NECDS Part Number	Description
9	0M1G 330 4120	79FD1540	<G>SCREW
10	095G8014 16670	79FD2267	<G>WIRE HARNESS
11	---	---	SHIELD
12	0Q1G 330 8120	79FD1543	<G>SCREW 3X8MM
13	089G1738LAA553	79FD2239	<G>SIGNAL CABLE D-SUB CAB
14	052G 1207 A	79FD3731	<G>ALUMINIUM TAPE
15	KEPC986KADP	79FD2252	<G>KEY BOARD
16	A34G0170 TXA1T 30	79FD2373	<G>BEZEL



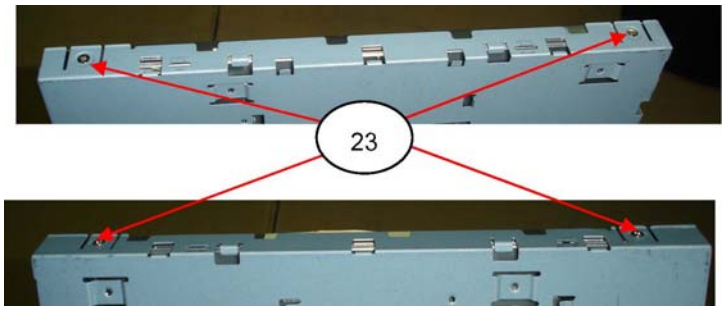


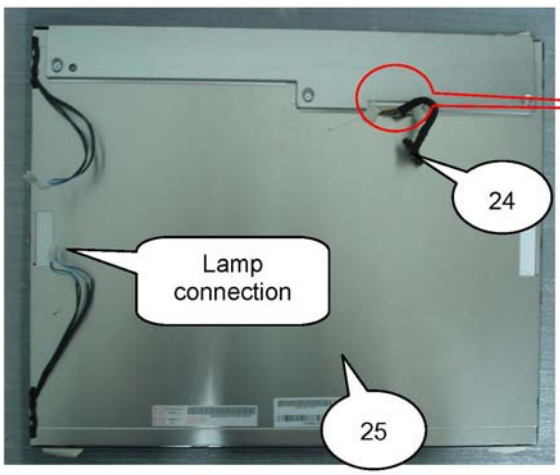


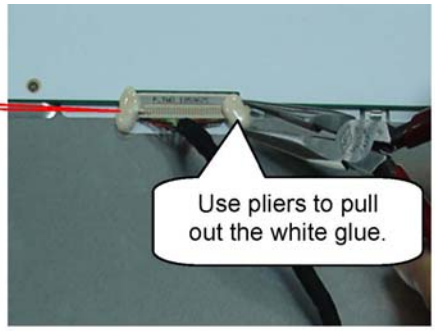
Symbol	(For EU) TPV Part Number	(For Asia/Australia) NECDS Part Number	Description
17	CBPC6AGDNMQP	79FD2709	<G>CONVERSION G1642-1-NE-
18	PWPC1942HDG2P	79FD2710	<G>POWER G1994-1-X-X-1-06
19	011G6054 1	79FD1180	<G>FRAME
20	0M1G1730 6120	79FD1539	<G>SCREW
21	---	---	AC SOCKET BRACKET
22	0M1G1730 6120	79FD1539	<G>SCREW

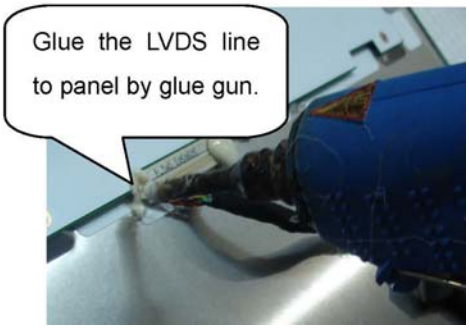


Symbol	(For EU) TPV Part Number	(For Asia/Australia) NECDS Part Number	Description
23	0M1G3030 5125	79FD2502	<G>SCREW
24	095G8018B3X508	79FD2707	<G>LVDS CABLE 30P-24P 110
25	750GLU90G2412M000N	79FD2706	<G>LCD M190EG02 V40 AUO
26	A15G0027 5	79FD2708	<G>MAIN FRAME

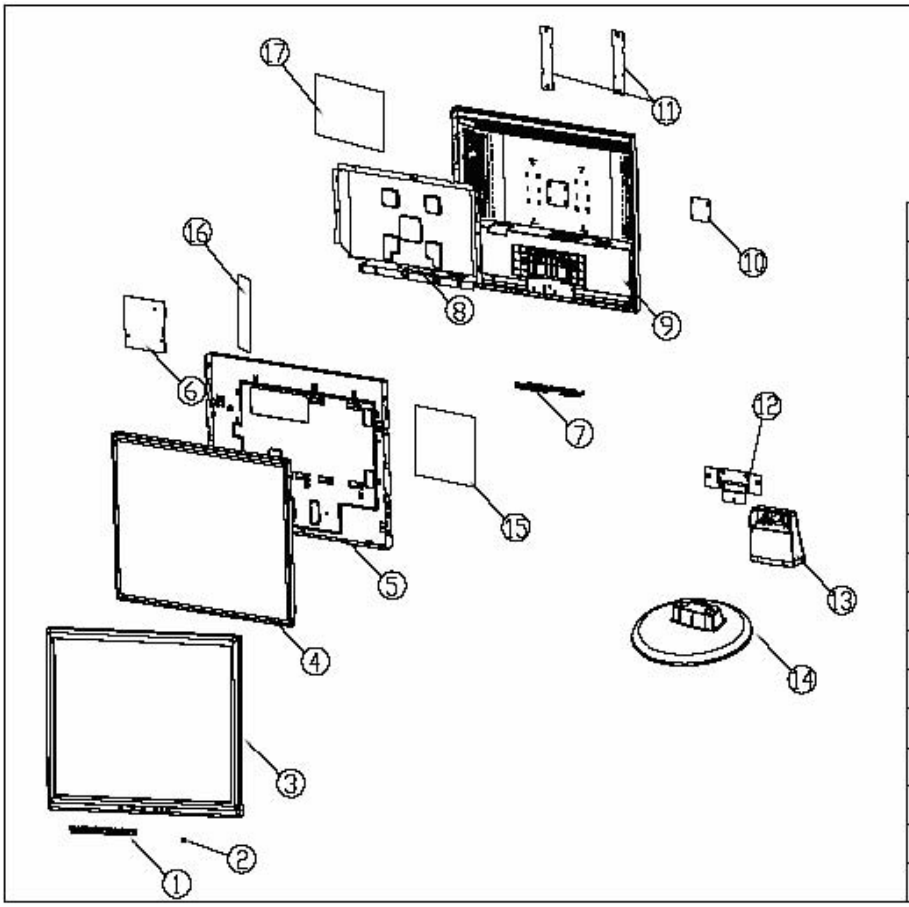








EXPLODE DRAWING



ITEM	TYPE	P/N
17	MYLAR_TOP	Q52G6025 11999
16	MYLAR_BOTTOM	Q52G6025 13 32
15	PWPC	PWPC1742HDN1P
14	BASE	Q34G1844 TW 1T
13	STAND	A34G0046 TW 1T
12	HINGE	A37G0005 1
11	VESA BRACKET	A15G0028 1
10	GATE COVER	Q33G4945 TW 1T
9	REAR COVER	A34G0044 TW 1T
8	MAIN SHIELD	Q85G0012 1 S
7	AC BRACKET	Q15G8313 1
6	MAIN BOARD	SMTC6AGDN2QP
5	MAIN FRAME	A15G0029 1
4	PANEL	750GLU90N4531M
3	BEZEL	A34G0170 TXA1T
2	LED	A33G0029 1 1C
1	BUTTON	A33G0093 TXA1T

ADJUSTMENT PROCEDURES

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1. Application

This adjustment specification should be applied to the LCD190V-BK.

2. Default Setting

Item			**Condition**
Power Supply			AC100V~240V
Input Freq.			1280×1024@75Hz
Initial Values	Brightness		100%
	Contrast		50%
	H. Position		Depends on video mode.
	V. Position		Depends on video mode.
	H. Size		Depends on video mode.
	Fine		0
	Color Temp.		USER (R: 100%, G: 100%, B: 100%)
	OSM Time Off		45 sec.
	OSM Lock Out		NO
	Resolution Notifier		ON
	OSD/OSM SETTING		OSM
	URL SETTING		NECDISPLAYSOLUTIONS.COM
	LANGUAGE		ENGLISH
	DDC/CI	Non Vista Model	-
		Vista Model	ON

3. Basic Operation

Power Button:

When pressed, the monitor enters the off mode, and the LED turns blank. Press again to restore normal status.

– / + Button:

The – / + Button is used to control the monitor functions. Press to switch functions or adjust settings.

SELECT:

The select button is used to enter OSD showing or sub menu adjust window.

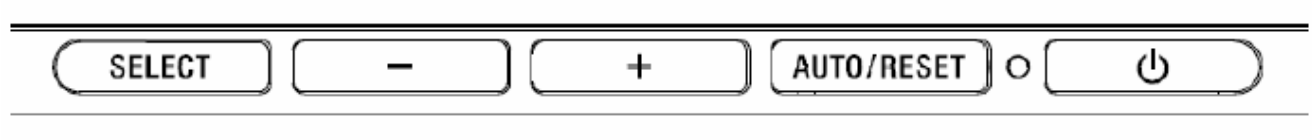
Auto/Reset adjust Key:

Press to activate auto adjusting function at no OSD window, and to call the reset function on OSD window.

Power Indicator:

Green— Power On mode. **Orange**— Power Saving mode. **Black**— Power Off Mode.

Control Buttons



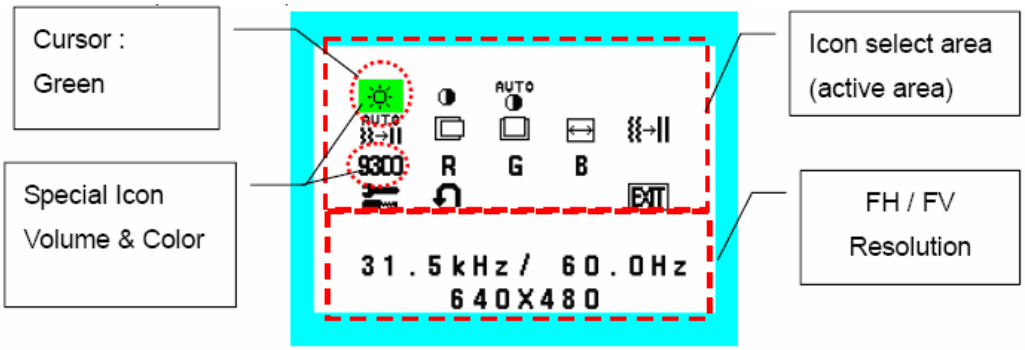
	Basic key function			
KEY	SELECT	−	+	AUTO/RESET
At No OSD showing	Showing OSD	Short cut to Brightness adjust window	Shortcut to Contrast adjust window.	"Auto adjust" operate
At OSD showing (Icon selection stage)	Go to Adjustment stage.	Cursor goes to left.	Cursor goes to right.	No operate for other icon.
At OSD showing (Adjustment stage)	Go to Icon selection stage.	Adjust value decrease OR Cursor for adjust goes to left.	Adjust value increase OR Cursor for adjust goes to right.	Reset operation. Mute off/on switch on Volume adjustment window.

4. General adjustment

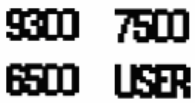
OSM Control

All functions are controllable by OSM using four buttons on the front bezel (excluding power button).

Main menu (Icon select)

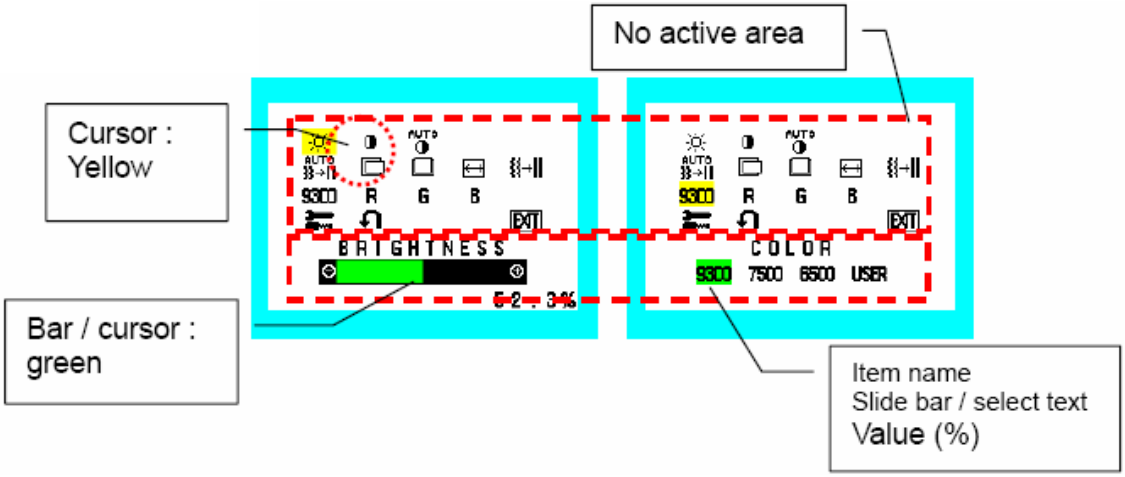


Color select

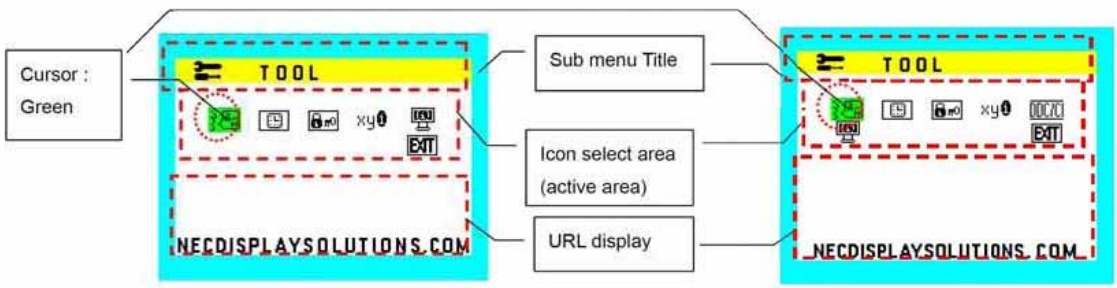


"Color selection" Icon is chosen in 4 types, depending on the Color condition (9300/7500/6500/USER).

Main Menu (Adjust)



Sub Menu (Icon Select)

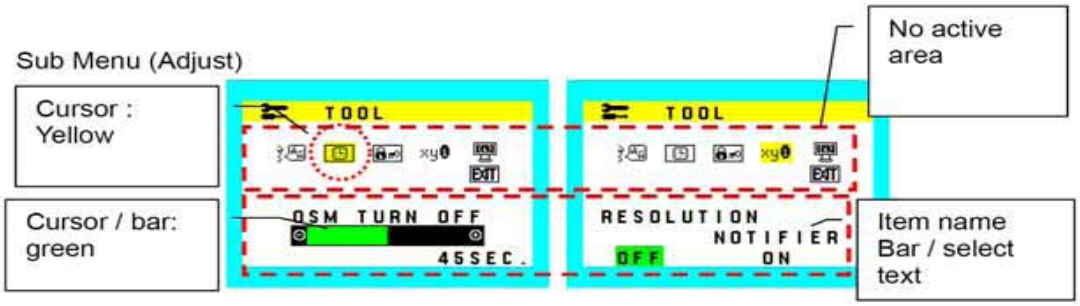


Non Vista Model　　Vista Model

URL display	Destination
NECDISPLAYSOLUTIONS.COM	For North America, Europe, China
None	For Japan

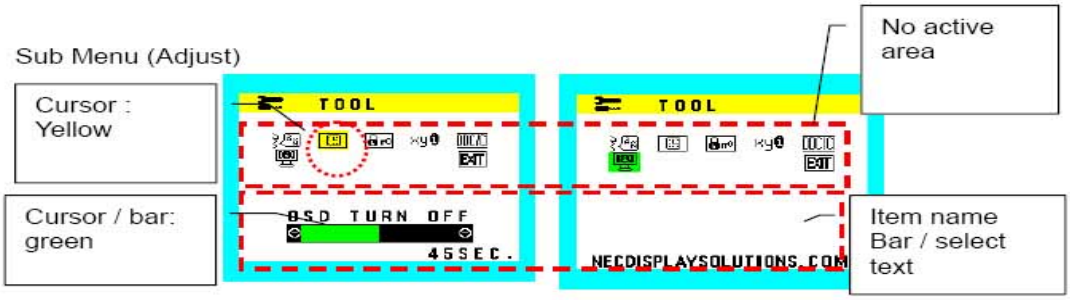
Sub Menu (Adjust)

Non Vista Model



OSM / OSD display	Destinaton
OSM	For North America, Europe, China (NEC)
OSD	For Japan (NEC), All of Mitsubishi

Vista Model



OSM / OSD display	Destination
OSM	For North America, Europe, China
OSD	For Japan

4.1 USER Mode Explanations

Brightness

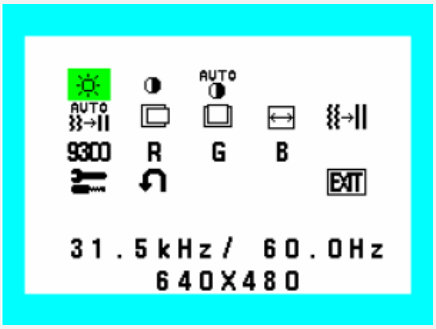
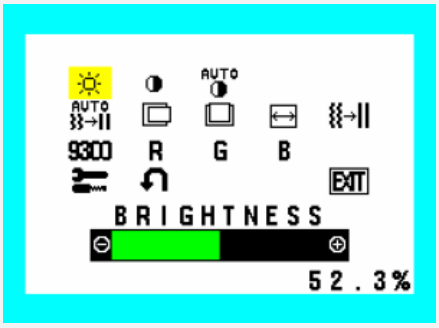
Adjust the background screen brightness by using backlight inverter.

Control range (BAR): 0.0% to 100.0%

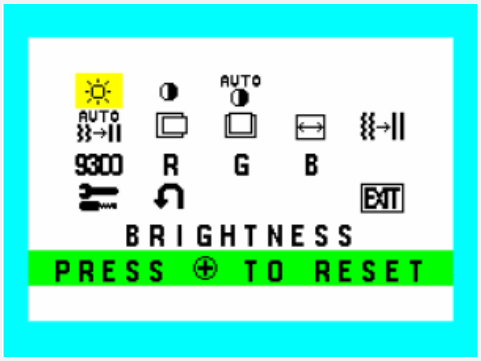
Factory setting: 100%

Actual brightness control range: 30% to 100%

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

Brightness (Icon select)	Brightness (Adjust)
	

1. During Brightness function operate, Brightness Icon and slide bar color is changed from Normal condition.
2. “+” Value increase (to bright)
3. “-” Value decrease (to dark)
4. At exiting from this state, adjusted value is saved to EEPROM.

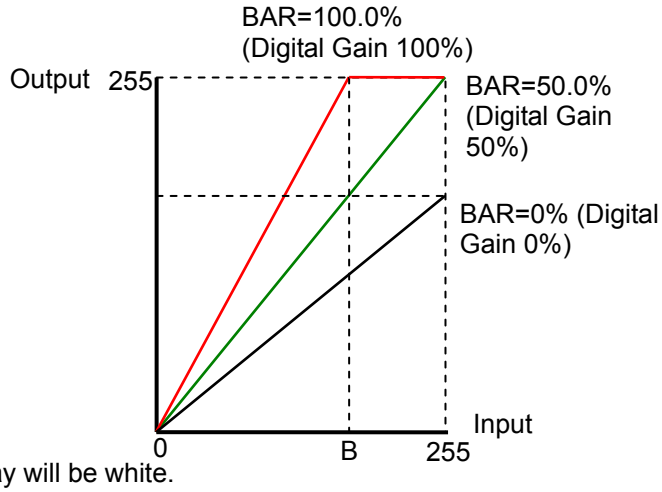
Brightness: (Reset)	
	Recall Brightness value to factory setting

Contrast

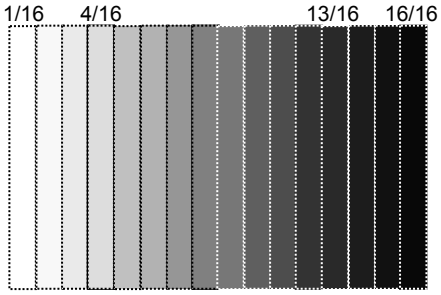
Adjust the image contrast by controlling input signal.

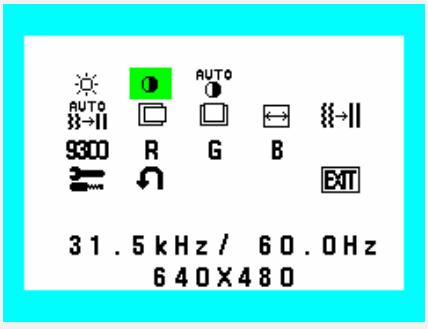
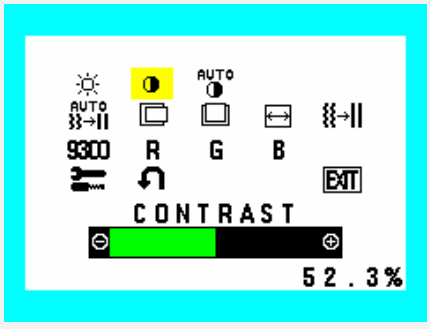
Control range: (BAR): 0.0% to 100.0%

Factory setting: 50%

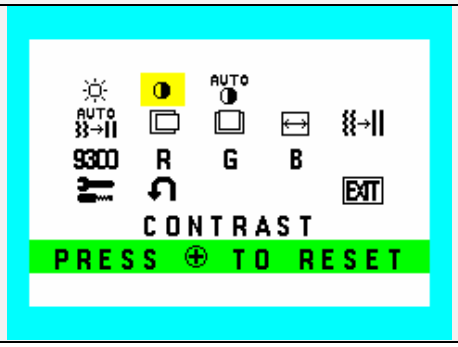


B is around 205/255. It means about 4/16 gray will be white.



Contrast (Icon select)	Contrast (adjust)
	

1. During Contrast function operate, Contrast Icon and slide bar color is changed from Normal condition.
2. “-” Value decrease (to dark)
3. “+” Value increase (to bright)
4. At exiting from this state, adjusted value is saved to EEPROM.

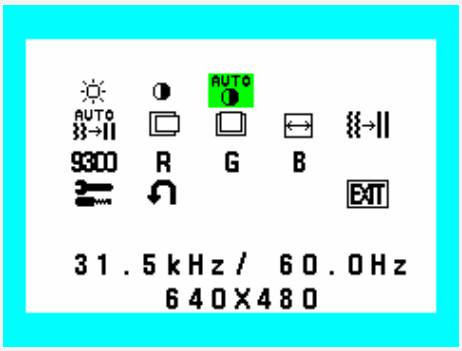
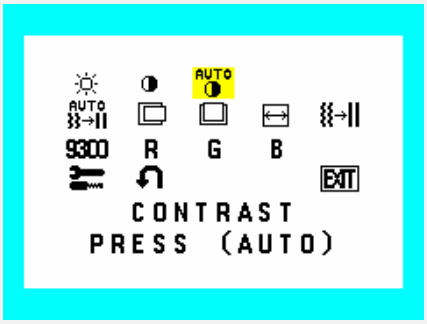
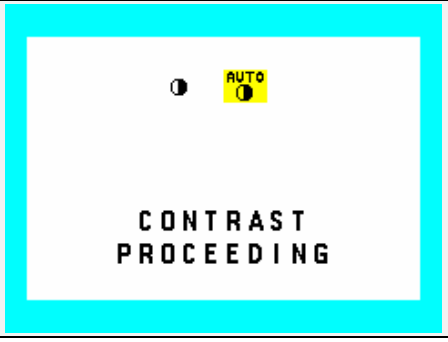
Contrast (reset)	
	Recall Contrast value to factory setting

AUTO (Contrast)

Adjust the CONTRAST to the optimal value for the video-input level automatically. For example, when the amplitude of video input was larger/smaller than 0.7Vp-p, the value of contrast was automatically adjusted to the value, which will be in the same display condition as the video-input level was 0.7Vp-p.

All OSM operations will be canceled while this adjustment is being made.

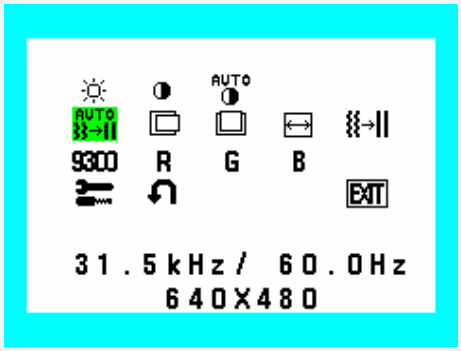
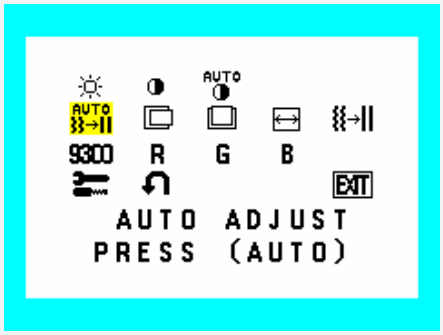
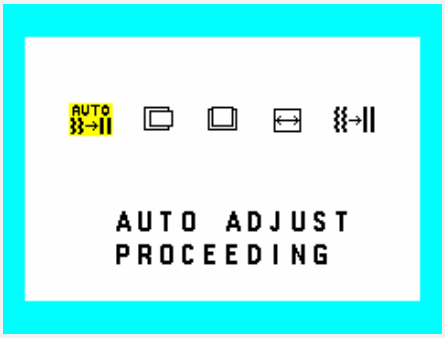
After adjustment execute set to 50% of contrast value.

Auto Contrast (Icon select)	Auto Contrast (adjust)
	
During Auto Contrast function operate, Auto Contrast Icon and slide bar color is changed from Normal condition. This function is only called in the Analog signal input.	
Auto Contrast (Proceeding)	
	Operate “Auto Contrast Adjust” with showing this OSD.

AUTO (Geometry)

Adjust the H.POSITION, V.POSITION, H-SIZE and FINE to the optimal value automatically.

All OSM operations will be canceled while this adjustment is being made.

Auto adjust (Icon select)	Auto adjust (adjust)
	
During AUTO function operate, AUTO Icon and slide bar color is changed from Normal condition. Auto adjust function is only called in the Analog signal input.	
Auto adjust (Proceeding)	
	Operate “Auto Adjust” with showing this OSD.

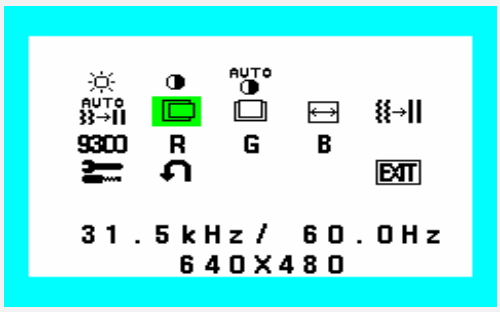
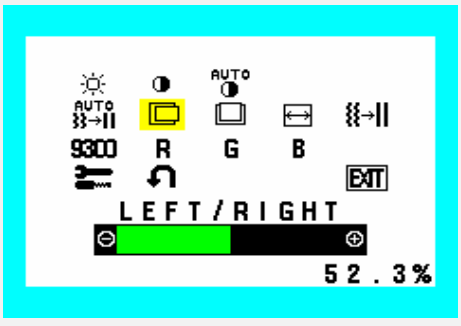
H. position

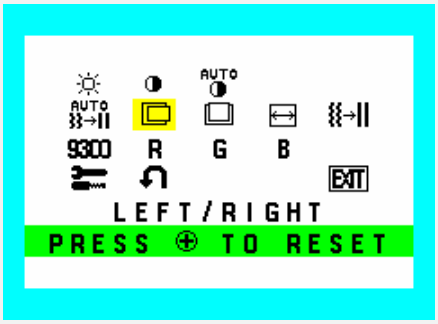
Adjust the horizontal image position.

Indicator Value and Bar of minimum position should be 0.0%

Indicator Value and Bar of maximum position should be 100.0%

Factory setting: Optimal value for the signals which is stated in the VESA standard.

H. Position (Icon select)	H. Position (adjust)
	
1. During H. Position function operate, H. Position Icon and slide bar color is changed from Normal condition. This function is only called in the Analog signal input. 2. “-” Value decrease (to left) 3. “+” Value increase (to right) 4. At exiting from this state, adjusted value is saved to EEPROM.	

H. Position (RESET)	
	Recall H. Position value to factory setting

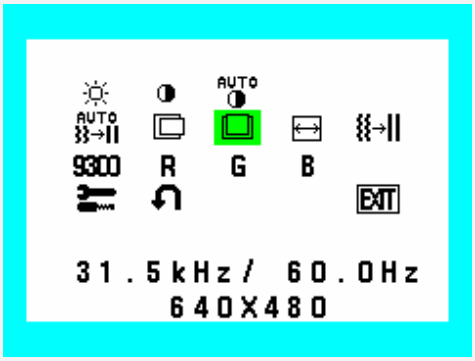
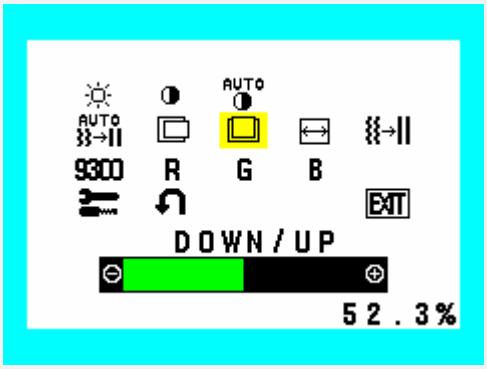
V. position

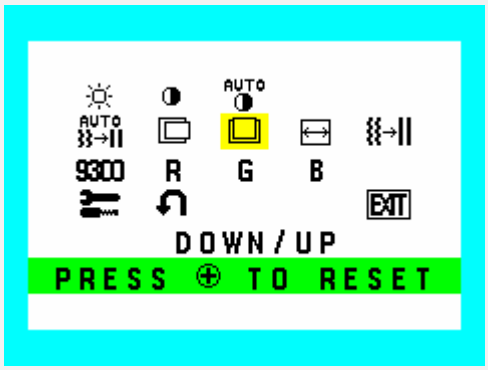
Adjust the horizontal image position.

Indicator Value and Bar of minimum position should be 0.0%

Indicator Value and Bar of maximum position should be 100.0%

Factory setting: Optimal value for the signals which is stated in the VESA standard.

V. Position (Icon select)	V. Position (adjust)
	
1. During V. Position function operate, V. Position Icon and slide bar color is changed from Normal condition. This function is only called in the Analog signal input. 2. “-” Value decrease (to down) 3. “+” Value increase (to up) 4. At exiting from this state, adjusted value is saved to EEPROM.	

V. Position (Reset)	
	Recall V. Position value to factory setting

H. SIZE

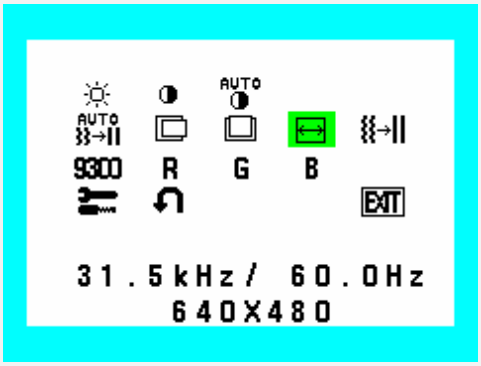
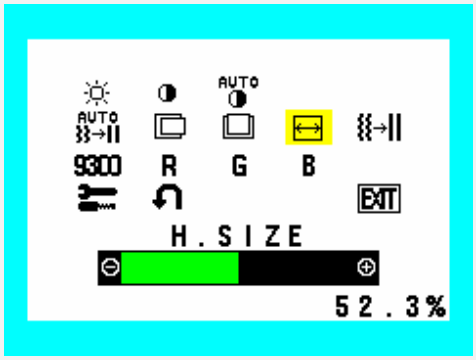
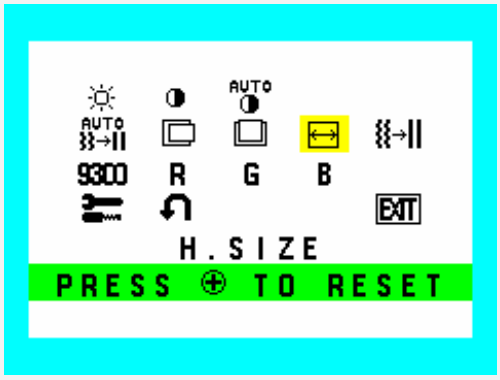
Adjust the frequency of internal pixel clock.

When increasing the value, the width of display image become wider, and when decreasing the value, the width becomes narrower. (Step 1pixel-clock .odd numbered, even numbered steps)

Indicator Value and Bar of minimum position should be 0.0%

Indicator Value and Bar of maximum position should be 100.0%

Factory setting: Optimal value for the signals, which is stated in the VESA standard.

<table>
<tr><th>H. Size (Clock) (Icon select)</th><th>H. Size (Clock) (Adjust)</th></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><td colspan="2">1. During H. Size function operate, H. Size Icon and slide bar color is changed from Normal condition. This function is only called in the Analog signal input.
2. “-” Value decrease (to narrow)
3. “+” Value increase (to wide)
4. At exiting from this state, adjusted value is saved to EEPROM.</td></tr>
<tr><th colspan="2">H. Size (Clock) (Reset)</th></tr>
<tr><td> 
</td><td>Recall H. Size value to factory setting</td></tr>
</table>

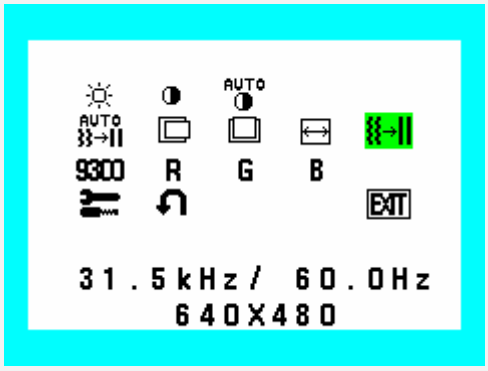
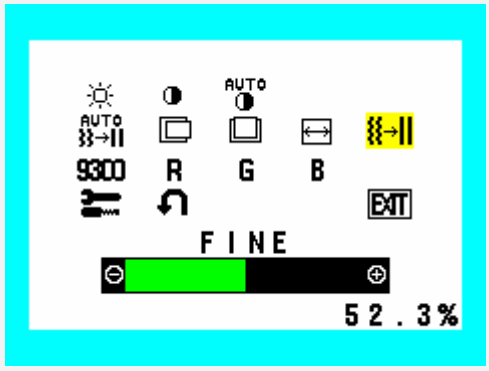
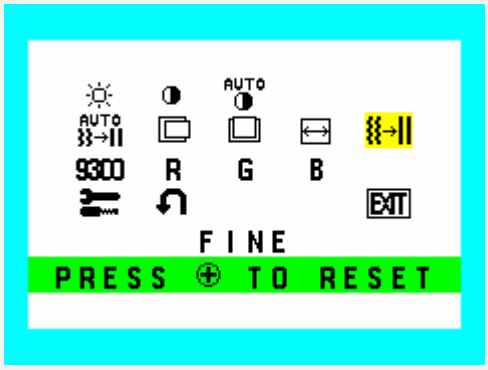
Fine

Adjust the delay of internal clock to control the display focus.

Indicator Value and Bar of minimum position should be 0.0%

Indicator Value and Bar of maximum position should be 100.0%

Factory setting: “0”

<table>
<tr><th>Fine (Phase) (Icon select)</th><th>Fine (Phase) (adjust)</th></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><td colspan="2">1. During Phase function operate, Phase Icon and slide bar color is changed from Normal condition. This function is only called in the Analog signal input.
2. “-” Value decrease
3. “+” Value increase
4. At exiting from this state, adjusted value is saved to EEPROM.</td></tr>
<tr><th colspan="2">Fine (Phase) (Reset)</th></tr>
<tr><td> 
</td><td>Recall Phase value to factory setting</td></tr>
</table>

For Non Vista Model

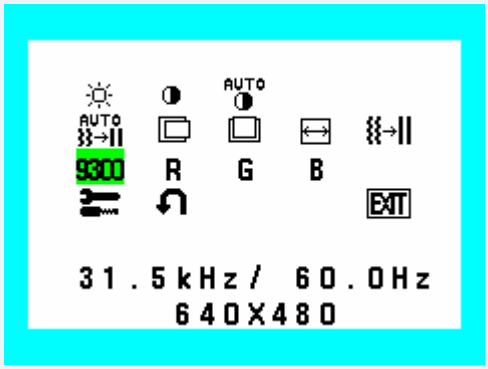
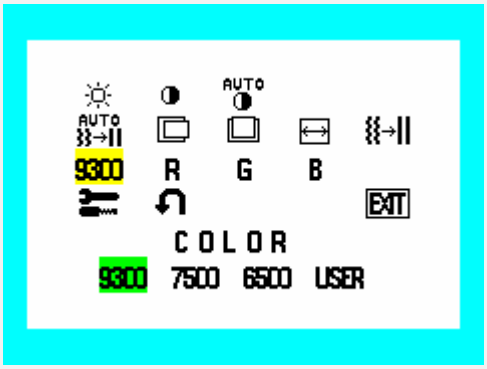
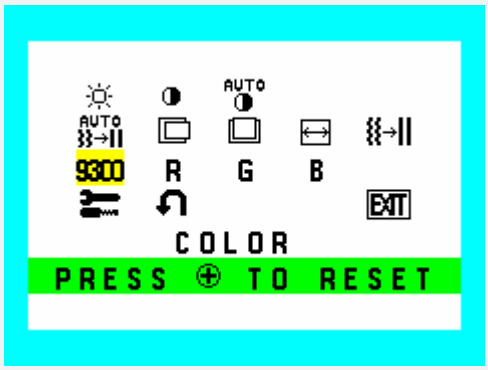
Color

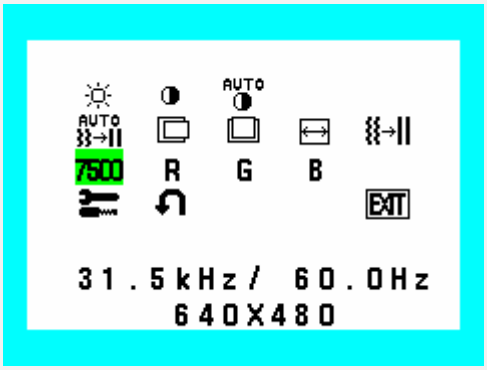
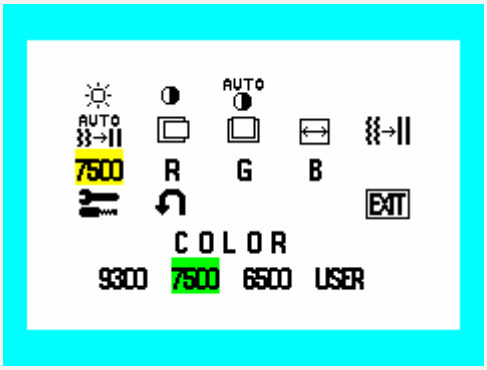
There are four color presets; 9300, 7500, 6500 and USER (which can be customized).

When you are in the USER mode you will not be able to change the RGB value of 9300, 7500 or the 6500 mode.

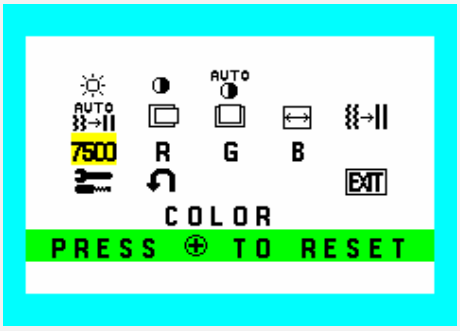
When you are in the display mode of 9300, 7500, or 6500 you will not be able to change the USER value of RGB.

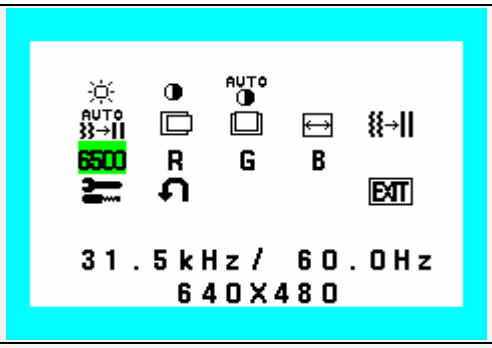
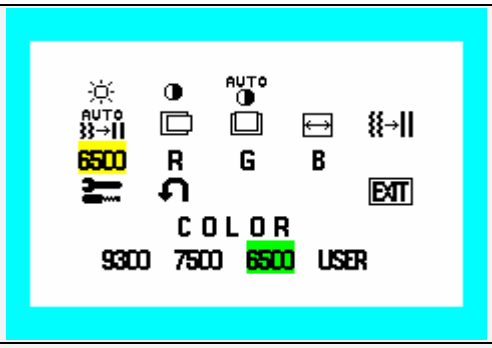
When you are in the change mode of 9300, 7500, or 6500 you will be able to overwrite the USER value of RGB.

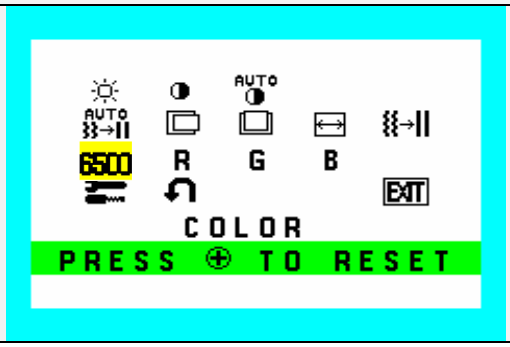
9300 Color select (Icon select)	Color select (adjust)
	
During Color select functions operate, Color select Icon and slide bar color is changed from Normal condition.	
Color select (Reset)	
	Reset: Color select / User R, G, B

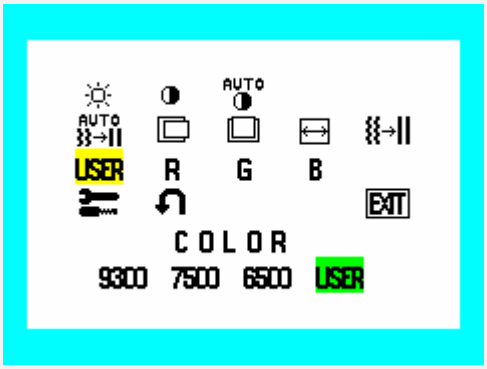
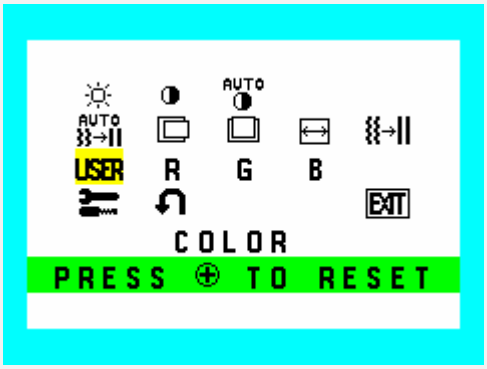
7500 Color select (Icon select)	Color select (adjust)
	
During Color select function operates, Color select Icon and slide bar color is changed from Normal condition.	

For Non Vista Model

Color select (Reset)	
	Reset: Color select / User R, G, B

6500 Color select (Icon select)	Color select (adjust)
	
During Color select function operates, Color select Icon and slide bar color is changed from Normal condition.	

Color select (Reset)	
	Reset: Color select / User R, G, B

Color select (adjust)	Color select (Reset)
	
During USER function operate, USER Icon and slide bar color is changed from Normal condition.	
Reset: Color select / User R, G, B	

COLOR

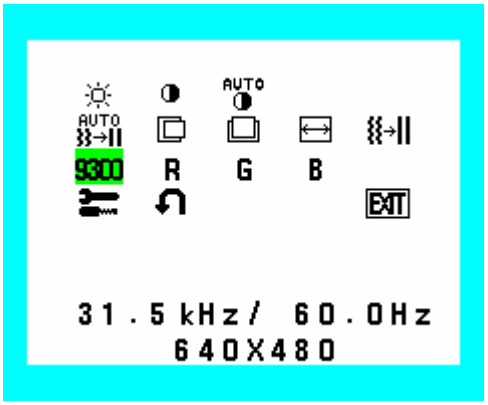
Selecting four preset color(9300,7500,sRGB,NATIVE) and one user customize.

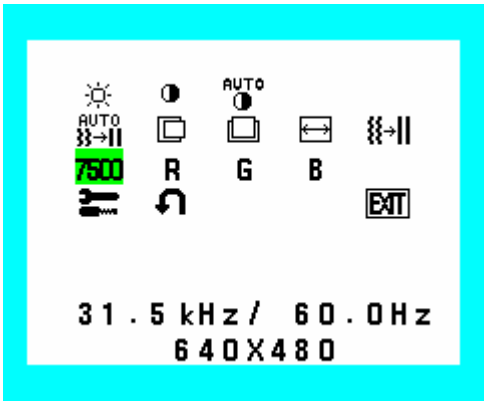
9300, 7500,sRGB and NATIVE can't change RGB value in User Mode But, If open RGB menu when Selecting 9300, 7500, sRGB or NATIVE then display each RGB color value (Don't change User value when only display)

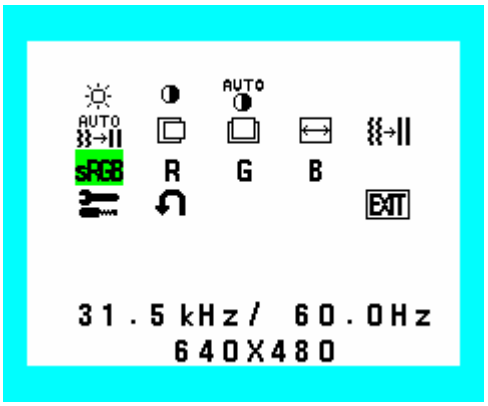
If change RGB menu when Selecting 9300, 7500, sRGB or NATIVE then over write User value from each preset color value. And change user value.

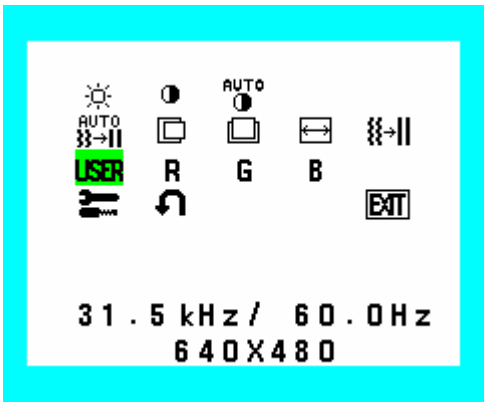
"USER" can change RGB value.

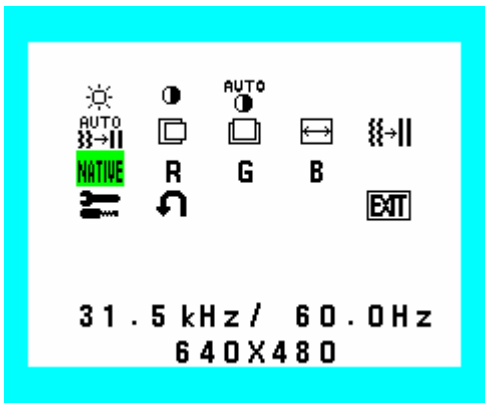
No.	1310	Color select (Icon select)





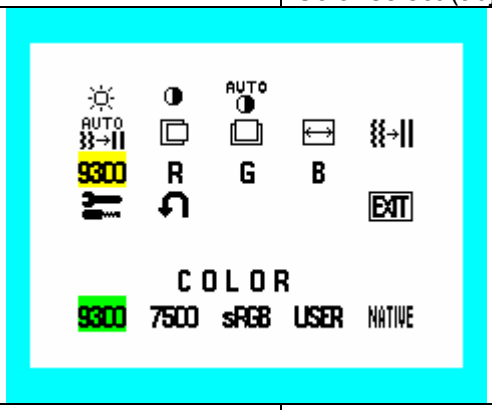






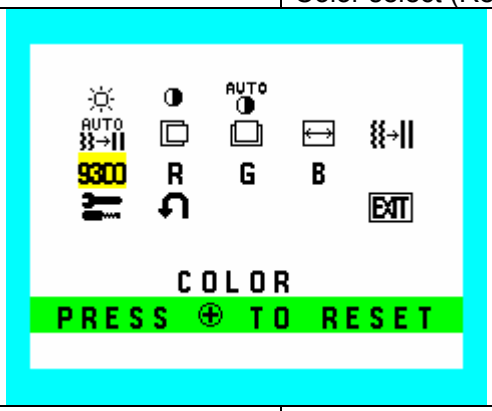
Select	Go to 131* (selected)
-	Go to 1250
+	Go to 1320
Auto/Reset	No Operate

No.	1311	Color select (adjust)



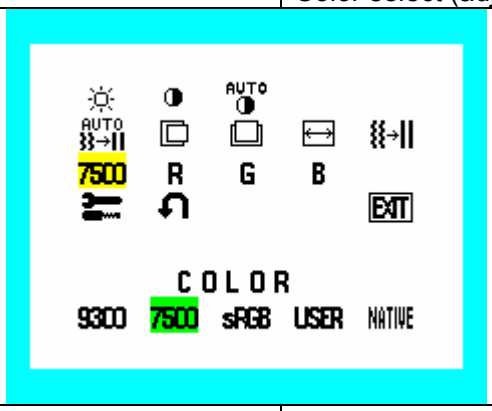
	Select	Go to 1310	At exiting from this state, selected value is saved to EEPROM. Color Select : Timing independent data.
	-	Go to 1315	
	+	Go to 1312	
	Auto/Reset	Go to 1311_rst	

No.	1311_rst	Color select (Reset)



	Select	Go to 1311	Reset : Color select / User R,G,B
	-	Go to 1311	
	+	Operate “reset” Then go to 1314	
	Auto/Reset	No Operate	

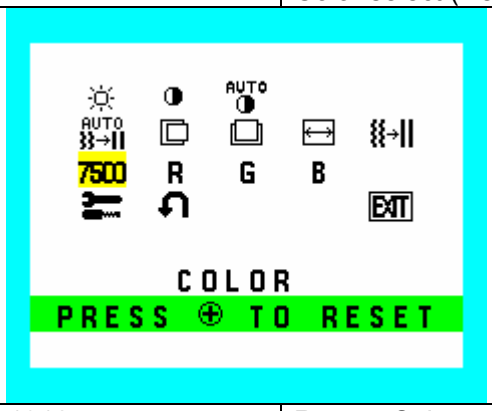
No.	1312	Color select (adjust)



	Select	Go to 1310	At exiting from this state, adjusted value is saved to EEPROM. Color Select : Timing independent data.
	-	Go to 1311	
	+	Go to 1313	
	Auto/Reset	Go to 1312_rst	

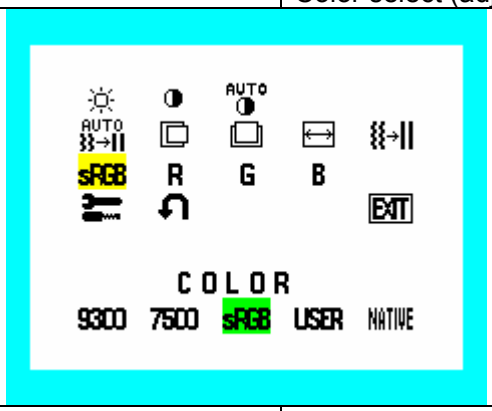
For Vista Model

No.	1312_rst	Color select (Reset)



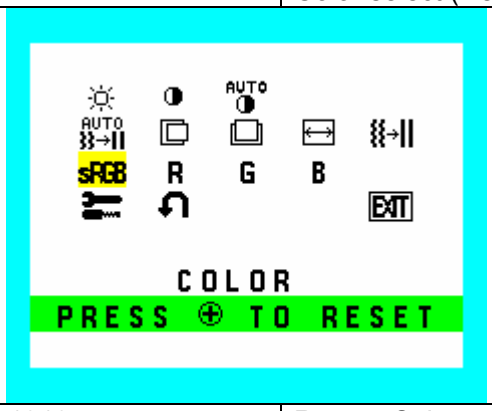
	Select	Go to 1312	Reset : Color select / User R,G,B
	-	Go to 1312	
	+	Operate “reset” Then go to 1315	
	Auto/Reset	No Operate	

No.	1313	Color select (adjust)



	Select	Go to 1310	At exiting from this state, adjusted value is saved to EEPROM. Color Select : Timing independent data.
	-	Go to 1312	
	+	Go to 1314	
	Auto/Reset	Go to 1313_rst	

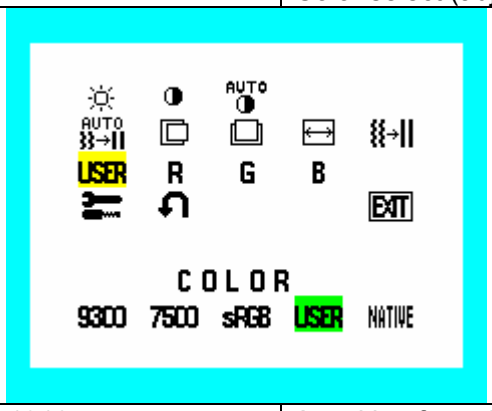
No.	1313_rst	Color select (Reset)



	Select	Go to 1313	Reset : Color select / User R,G,B
	-	Go to 1313	
	+	Operate “reset” Then go to 1315	
	Auto/Reset	No Operate	

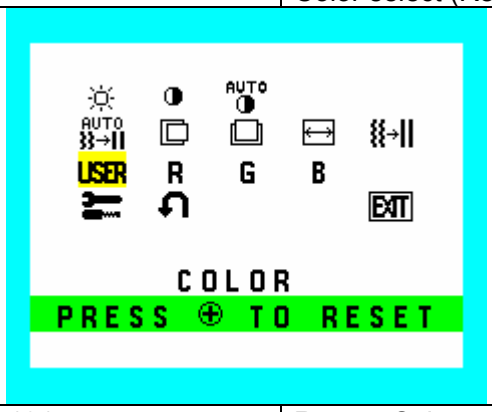
For Vista Model

No.	1314	Color select (adjust)



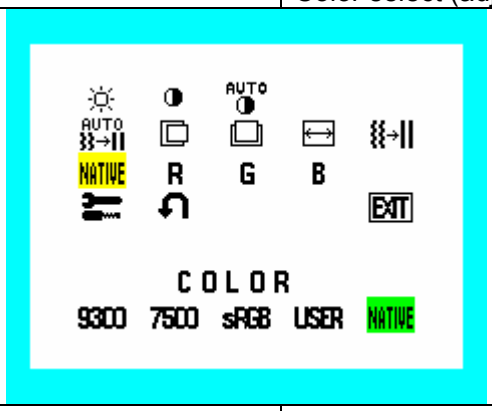
	Select	Go to 1310	At exiting from this state, adjusted value is saved to EEPROM. Color Select : Timing independent data.
	-	Go to 1313	
	+	Go to 1315	
	Auto/Reset	Go to 1314_rst	

No.	1314_rst	Color select (Reset)



	Select	Go to 1314	Reset : Color select / User R,G,B
	-	Go to 1314	
	+	Operate “reset” Then go to 1315	
	Auto/Reset	No Operate	

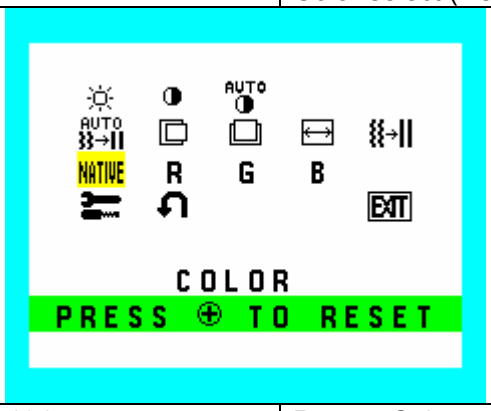
No.	1315	Color select (adjust)



	Select	Go to 1310	At exiting from this state, adjusted value is saved to EEPROM. Color Select : Timing independent data.
	-	Go to 1314	
	+	Go to 1311	
	Auto/Reset	Go to 1315_rst	

For Vista Model

No.	1315_rst	Color select (Reset)



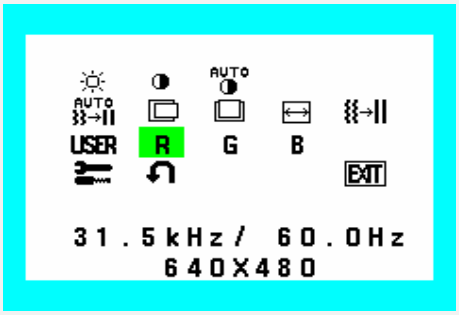
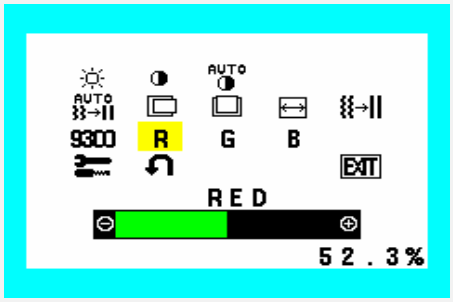
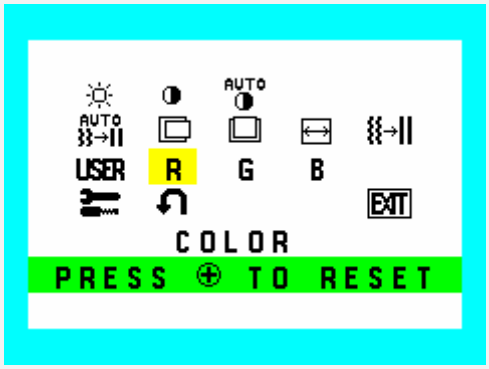
	Select	Go to 1315	Reset : Color select / User R,G,B
	-	Go to 1315	
	+	Operate “reset” Then go to 1315	
	Auto/Reset	No Operate	

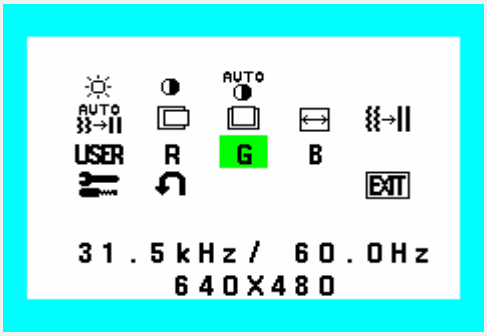
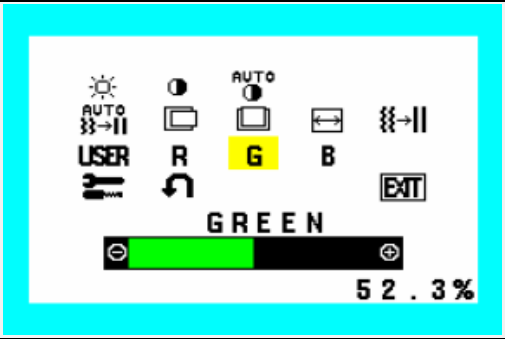
RGB adjust

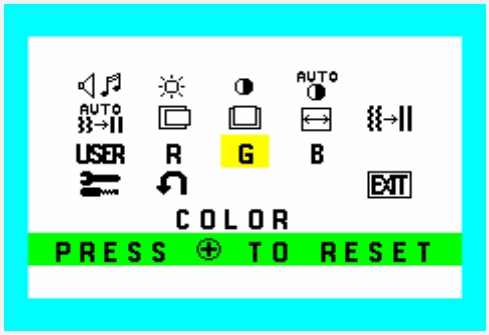
Adjust 3 colors (Red, Green, Blue) independently.

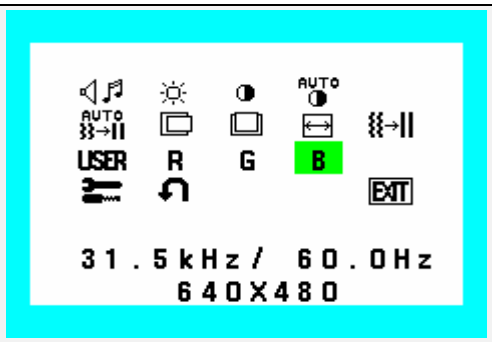
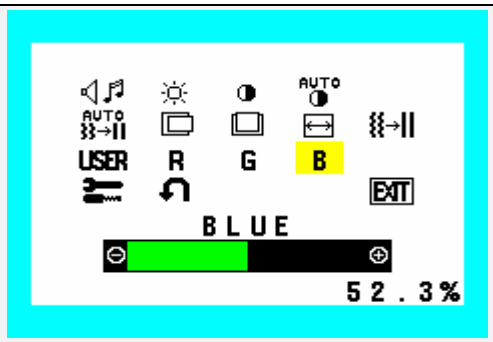
Control range (BAR): 0% to 100% (each color)

Default Setting: 100%

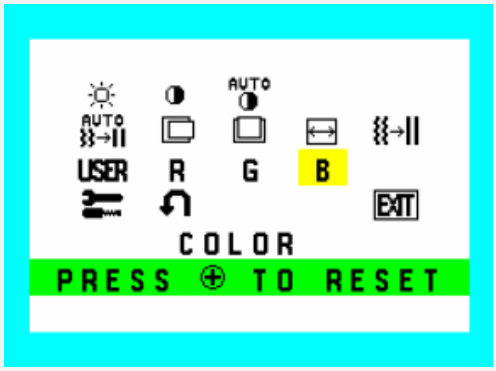
Color Red (Icon select)	Color Red (adjust)
	
1. During Color Red function operates, Color Red Icon and slide bar color is changed from Normal condition. 2. “-”Value decrease (Red gain decrease) 3.”+” Value increase (Red gain increase) 4. At exiting from this state, adjusted value is saved to EEPROM.	
Color Red (Reset)	
	Reset: Color select / User R, G, B

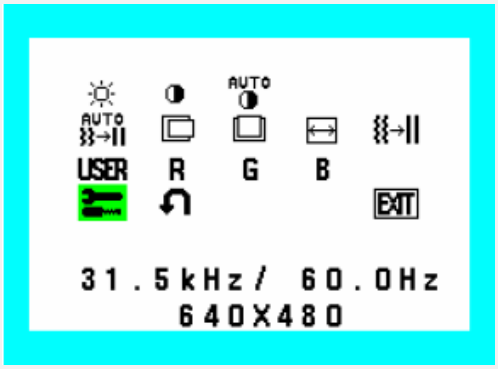
Color Green (Icon select)	Color Green (adjust)
	
1. During Color Green function operate, Color Green Icon and slide bar color is changed from Normal condition. 2. “-”Value decrease Green gain decrease) 3.”+” Value increase (Green gain increase) 4. At exiting from this state, adjusted value is saved to EEPROM.	

Color Green (Reset)	
	Reset: Color select / User R, G, B

Color Blue (Icon select)	Color Blue (adjust)
	

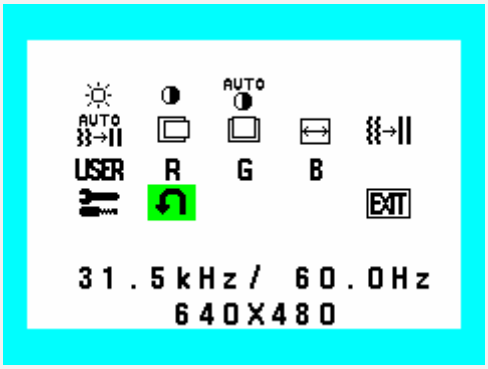
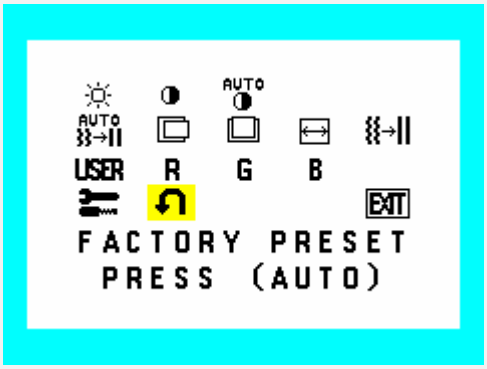
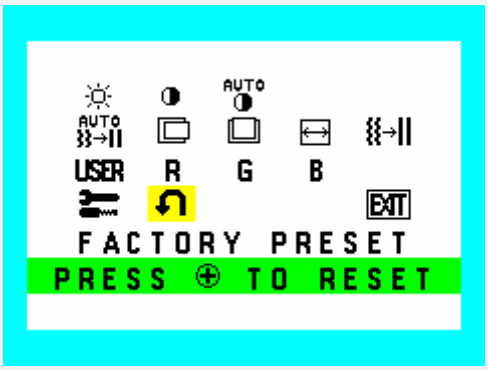
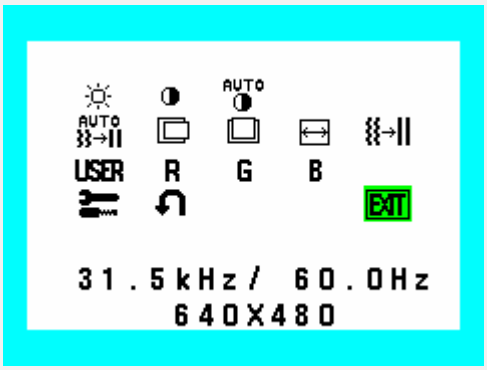
1. During Color Blue function operates, Color Blue Icon and slide bar color is changed from Normal condition.
2. “-”Value decrease (Blue gain decrease)
3.”+” Value increase (Blue gain increase)
4. At exiting from this state, adjusted value is saved to EEPROM.

Color Blue (Reset)	
	Reset: Color select / User R, G, B

Tool (Icon select)	
	

Factory Reset

Reset all user settings to factory preset value except language selection.

<table>
<tr><th>Factory Preset (Icon select)</th><th>Factory Preset (adjust)</th></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><td colspan="2">During Color Blue function operate, Color Blue Icon and slide bar color is changed from Normal condition.</td></tr>
<tr><th>Factory Preset (confirmation)</th><th>Exit (OSD Close)</th></tr>
<tr><td> 
</td><td> 
</td></tr>
</table>

Language

Select one language for OSD.

Seven languages are available for OSD menu.

The seven languages are English, Germany, French, Spanish, Italian, Swedish and Japanese.

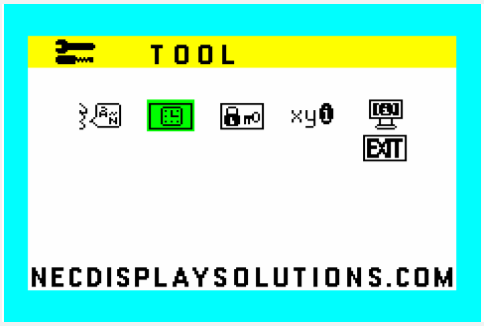
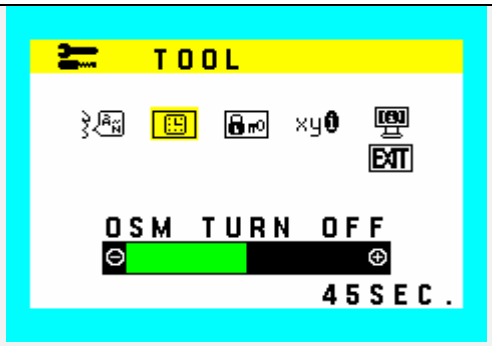
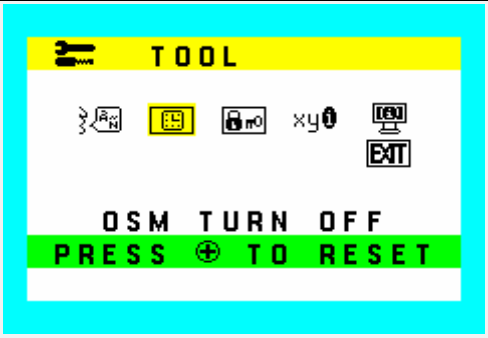
Language (Icon select)	Language (adjust)
Press SELECT key again you can exit it. At exiting from this state, adjustment value is saved to EEPROM.	

OSD TURN OFF

Select OSD Menu turn off time.

10 - 120 seconds are available by 5-second step.

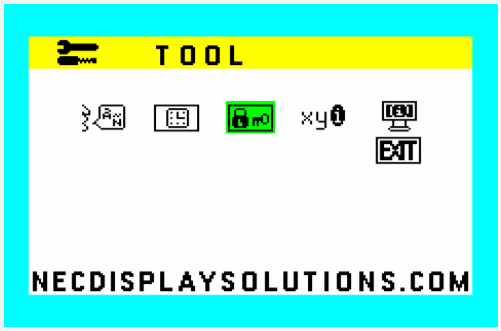
Factory setting: 45 seconds.

OSD Turn off (Icon select)	OSD Turn off (adjust)
	
1. During OSD Turn off function operates; OSD Turn off Icon and slide bar color is changed from Normal condition. 2. "-“ Value decrease (to short) 3. "+” Value increase (to long) 4. At exiting from this state, adjusted value is saved to EEPROM.	
OSD Turn off (Reset)	
	Reset: OSD Turn Off

OSD lock out

This function locks out all access to OSD controls except volume, brightness and contrast control. When attempting to activate OSD controls while in the lock out mode, simple OSD menu of volume, brightness and contrast will appear. To activate the OSD Lock Out function, enter to OSD LOCK OUT menu, then press “+” key and AUTO key hold down simultaneously.

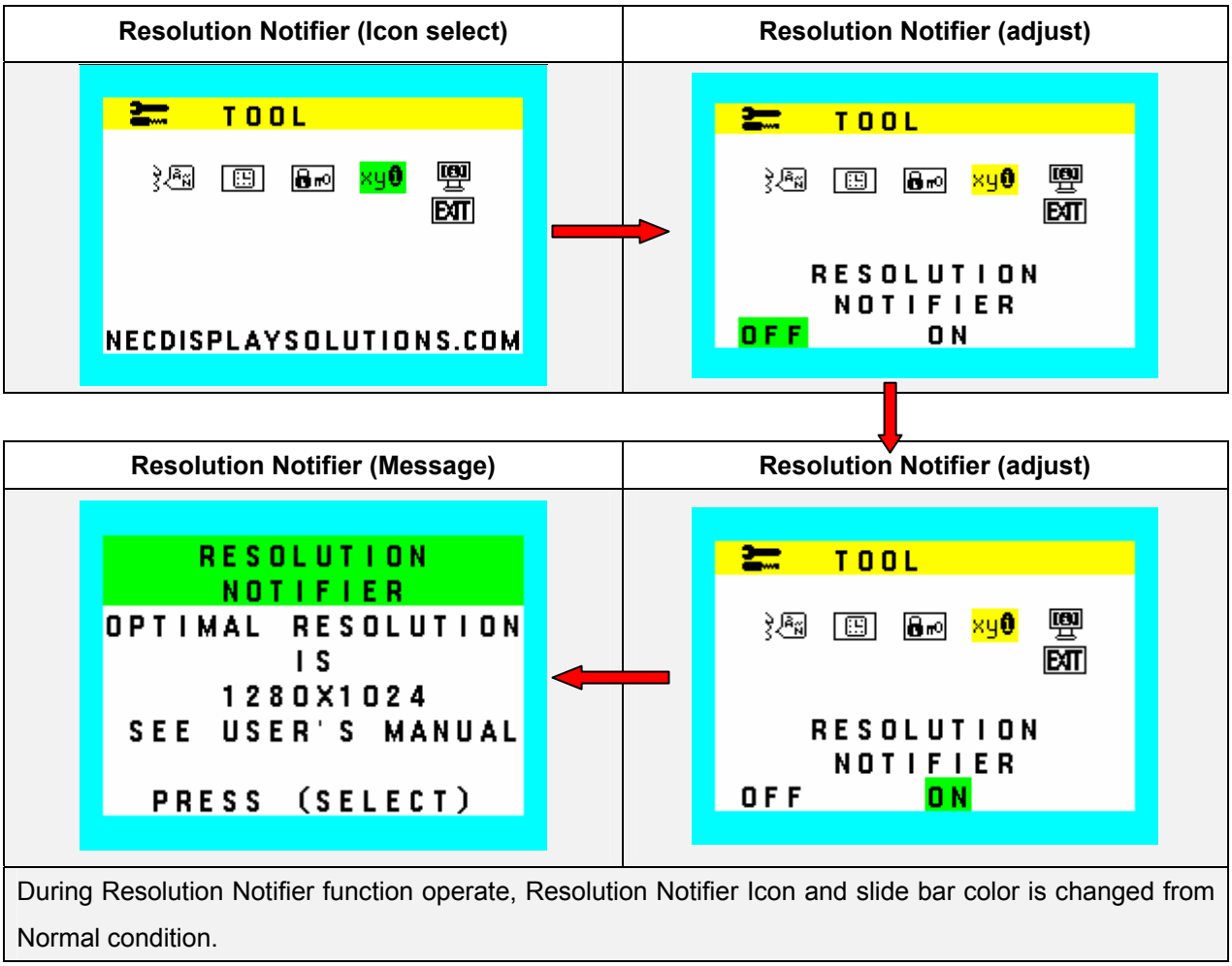
To de-activate the OSD Lock Out function, press “+” key and AUTO key hold down simultaneously.

OSD Lock Out (Icon Select)	OSD Lock Out (Adjust)
	

For Non Vista Model

Resolution Notifier

Activate or de-activate Resolution Notify function.



During Resolution Notifier function operate, Resolution Notifier Icon and slide bar color is changed from Normal condition.

This function gives warning about the display resolution.

This warning will appear in 30 seconds after the video signals except SXGA mode are input and the message shall turn off after OSD Turn Off time, or push “SELECT” key.

Resolution notifier OSD shall be shown under following conditions.

1. Resolution Notifier function is enabled.
2. CPU detects video signal is support mode (=not out of range mode) and not optimal resolution (1280x1024).
3. 30 seconds passed from the decision of video mode, and no OSD menu was shown at that time.

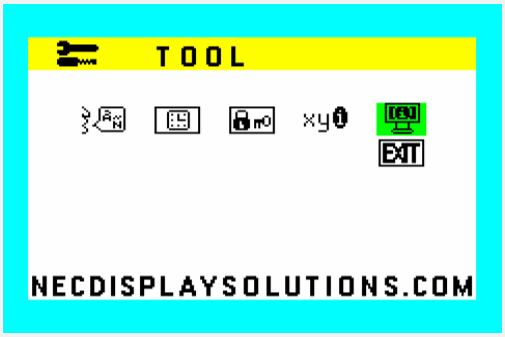
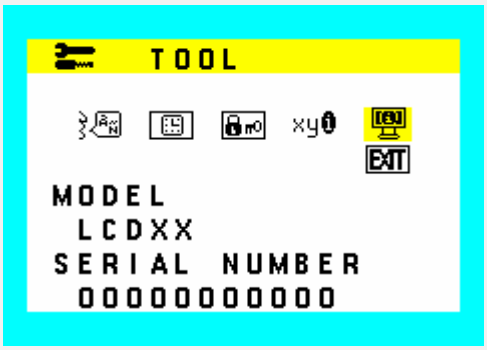
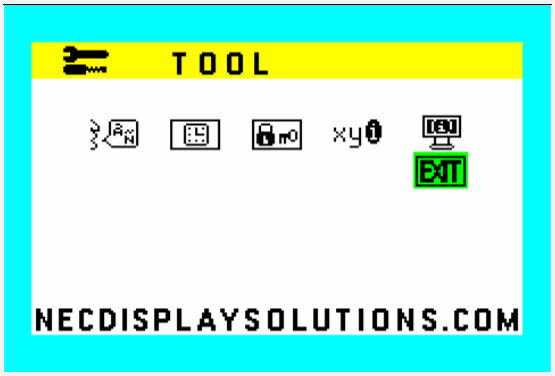
Resolution notifier OSD does NOT have priority over main OSD menu. If 30sec passed and if Main OSD menu is shown at that time, open Resolution notifier OSD "just after Main menu close".

For Non Vista Model

Monitor Information (INFO)

Indicate the model and serial number of the unit.

Model Name and serial number should be stored in EEPROM. And Model name should be programmed in factory. Number of characters for model name is max 10 and Number of characters for serial number is max 13.

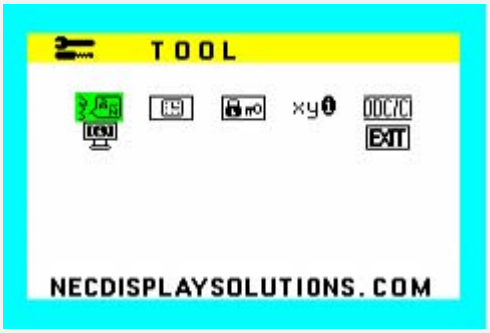
Monitor Info. (Icon select)	Monitor Info. (Information display)
	
Reserve memory area for Model name and serial number Model name: 10 characters max. Serial number: 13 character max. Model name indication: NEC Brand model: LCD93V	
Exit (sub menu close)	
	

Language

Select one language for OSD.

Seven languages are available for OSD menu.

The seven languages are English, Germany, French, Spanish, Italian, Swedish and Japanese.

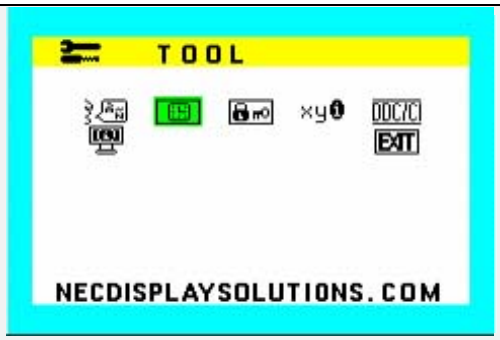
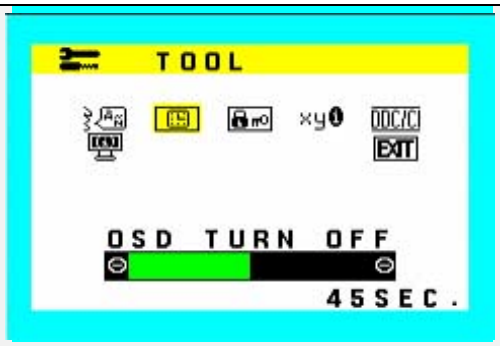
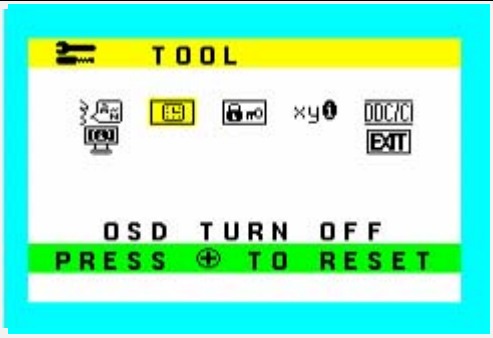
Language (Icon select)	Language (adjust)
	
Press SELECT key again you can exit it. At exiting from this state, adjustment value is saved to EEPROM.	

OSD TURN OFF

Select OSD Menu turn off time.

10 - 120 seconds are available by 5-second step.

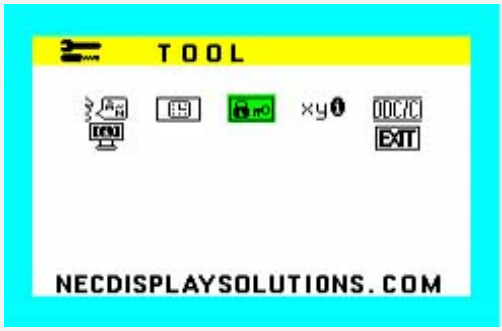
Factory setting: 45 seconds.

OSD Turn off (Icon select)	OSD Turn off (adjust)
	
1. During OSD Turn off function operates; OSD Turn off Icon and slide bar color is changed from Normal condition. 2. "-“ Value decrease (to short) 3. "+” Value increase (to long) 4. At exiting from this state, adjusted value is saved to EEPROM.	
OSD Turn off (Reset)	
	Reset: OSD Turn Off

OSD lock out

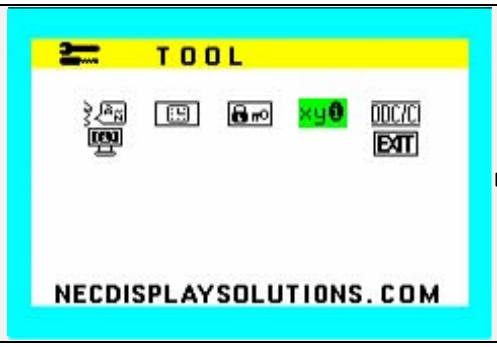
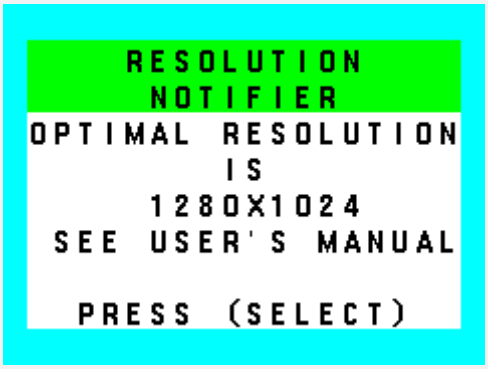
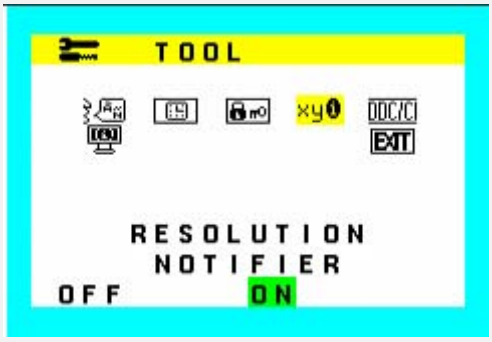
This function locks out all access to OSD controls except volume, brightness and contrast control. When attempting to activate OSD controls while in the lock out mode, simple OSD menu of volume, brightness and contrast will appear. To activate the OSD Lock Out function, enter to OSD LOCK OUT menu, then press “+” key and AUTO key hold down simultaneously.

To de-activate the OSD Lock Out function, press “+” key and AUTO key hold down simultaneously.

OSD Lock Out (Icon Select)	OSD Lock Out (Adjust)
	

Resolution Notifier

Activate or de-activate Resolution Notify function.

Resolution Notifier (Icon select)	Resolution Notifier (adjust)
	
Resolution Notifier (Message)	**Resolution Notifier (adjust)**
	
During Resolution Notifier function operate, Resolution Notifier Icon and slide bar color is changed from Normal condition.	

This function gives warning about the display resolution.

This warning will appear in 30 seconds after the video signals except SXGA mode are input and the message shall turn off after OSD Turn Off time, or push “SELECT” key.

Resolution notifier OSD shall be shown under following conditions.

1. Resolution Notifier function is enabled.
2. CPU detects video signal is support mode (=not out of range mode) and not optimal resolution (1280x1024).
3. 30 seconds passed from the decision of video mode, and no OSD menu was shown at that time.

Resolution notifier OSD does NOT have priority over main OSD menu. If 30sec passed and if Main OSD menu is shown at that time, open Resolution notifier OSD "just after Main menu close".

For Vista Model

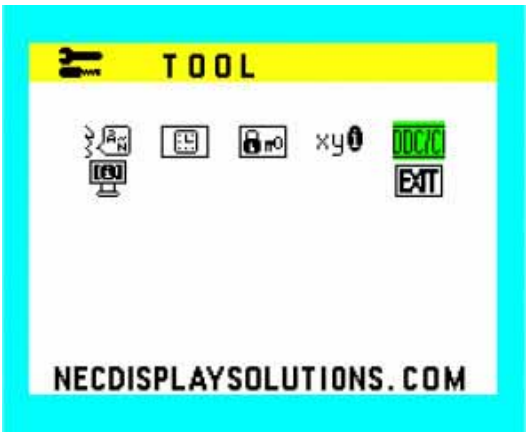
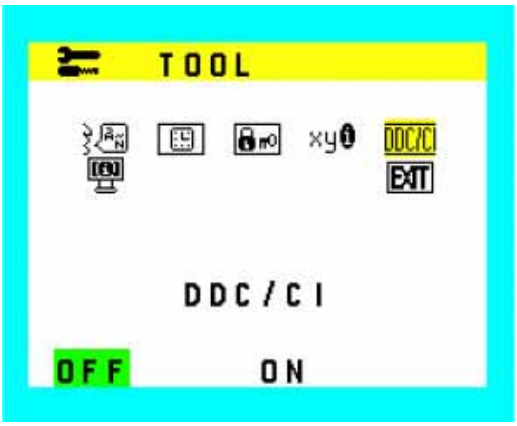
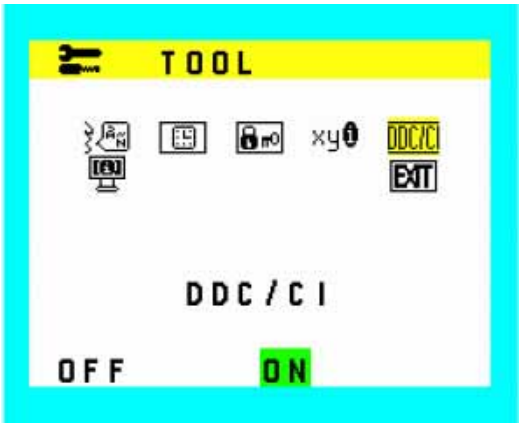
DDC/CI, Enable/Disenable selection

Enable or disenable DDC/CI performance.

This OSM is able to select “DDC/CI enable(ON)” or “DDC/CI disenable (OFF)”

Default : Enable (ON)

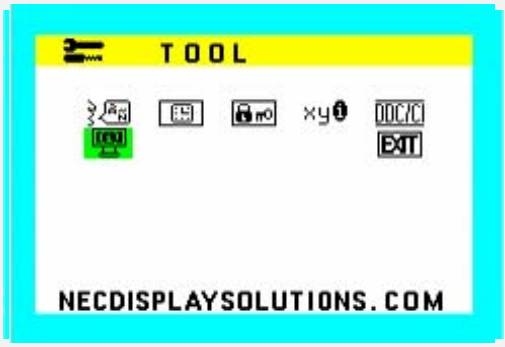
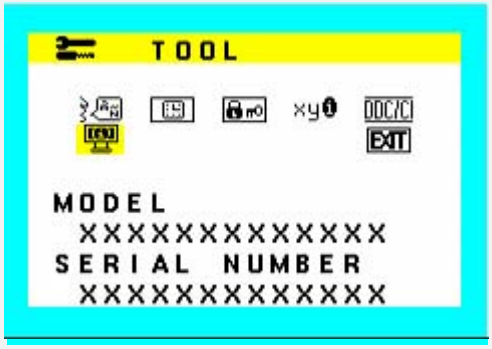
(This is requirement from WINDOWS VISTA)

<table>
<tr><td>DDC/CI selection (Icon select)</td><td></td></tr>
<tr><td> 
</td><td></td></tr>
<tr><td colspan="2">At exiting from this state, adjusted value is saved to EEPROM.
Color Select : Timing independent data.</td></tr>
<tr><td>DDC/CI selection (adjust)</td><td>DDC/CI selection (adjust)</td></tr>
<tr><td> 
</td><td> 
</td></tr>
</table>

Monitor Information (INFO)

Indicate the model and serial number of the unit.

Model Name and serial number should be stored in EEPROM. And Model name should be programmed in factory. Number of characters for model name is max 10 and Number of characters for serial number is max 13.

<table>
<tr><th>Monitor Info. (Icon select)</th><th>Monitor Info. (Information display)</th></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><td colspan="2">Reserve memory area for Model name and serial number
Model name: 10 characters max.
Serial number: 13 character max.
Model name indication:
NEC Brand model: LCD93V</td></tr>
<tr><th>Exit (sub menu close)</th><th></th></tr>
<tr><td>
</td><td></td></tr>
</table>

For Non Vista Model

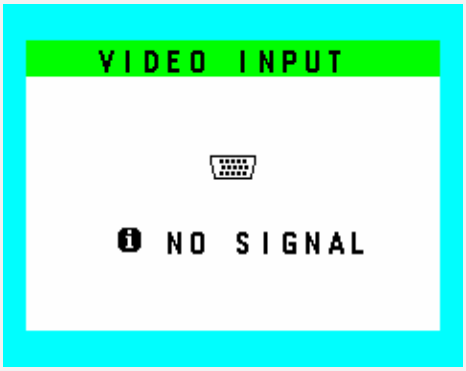
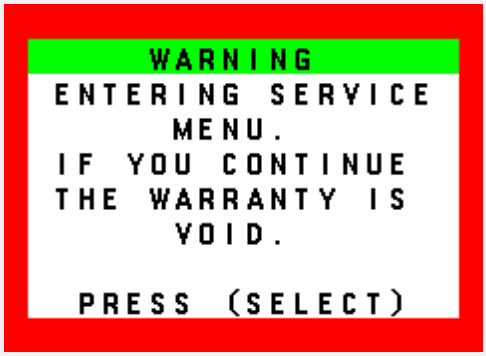
OSM Functions –Warnings

NO SIGNAL

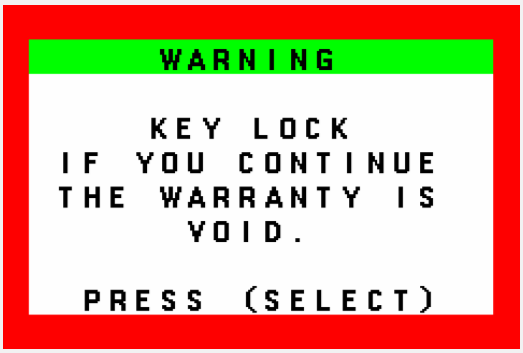
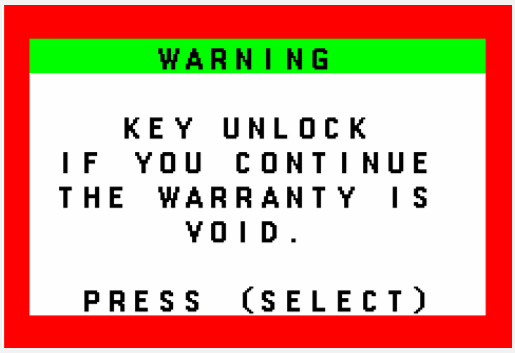
This function gives a warning when input signal is not active. After power on or when input signal become inactive, this warning will appear.

No signal OSD shall be shown after around 0.5sec from decision of video mode. This OSD shall be turned off after 5 seconds automatically. Then go to power saving mode.

“No Signal” OSD Shall be displayed in the center of screen.

Video Input: No Signal (ANALOG)	Warning for factory menu
	
This is right. Because this warning message is for user. We urge to no enter to service menu.	

Warning of entering and exiting Key lockout mode

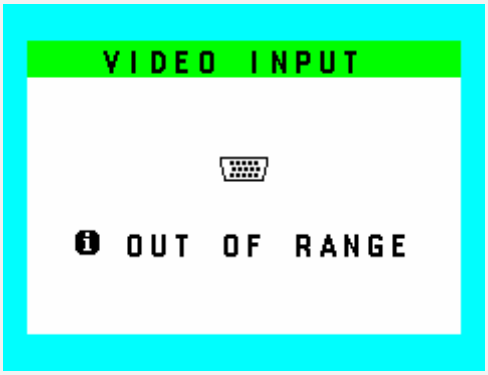
Entering Key lockout mode	Exiting Key lockout mode
	

For Non Vista Model

Out of Range

This function gives warning about input resolution or refresh rate which the monitor cannot display.

If video signal is not proper timing when monitor power on or input signal is changed.

Video Input: Out of Range (ANALOG)	When an out of range condition is formed, it displays OSD of the out of range mode. Measured frequency is in the following case. 1. The out of range display of the screen non- display (The background screen is in the mute condition (The black background)). When the screen can not be displayed in the specification of the LCD panel by changing " H.size scaling rate and so on", “Out Of Range” OSD Shall be displayed in the center of screen. 2. The out of range display of the screen display (When the screen can be displayed in the specification of the LCD panel by changing " H.size, scaling rate and so on") “Out Of Range” OSD Shall be displayed in the center of screen. Also, when judging case 2, Auto adjust function shall be proceeded. The Auto adjust function is described in section (Auto Adjust)
	

OSD Function –Short cut

Auto Adjust (Geometry)

This function is to adjust the H. Position, V. Position, H. Size and Fine to the optimal value automatically.

To call this function, press “Auto/Reset” button.

Other Functions

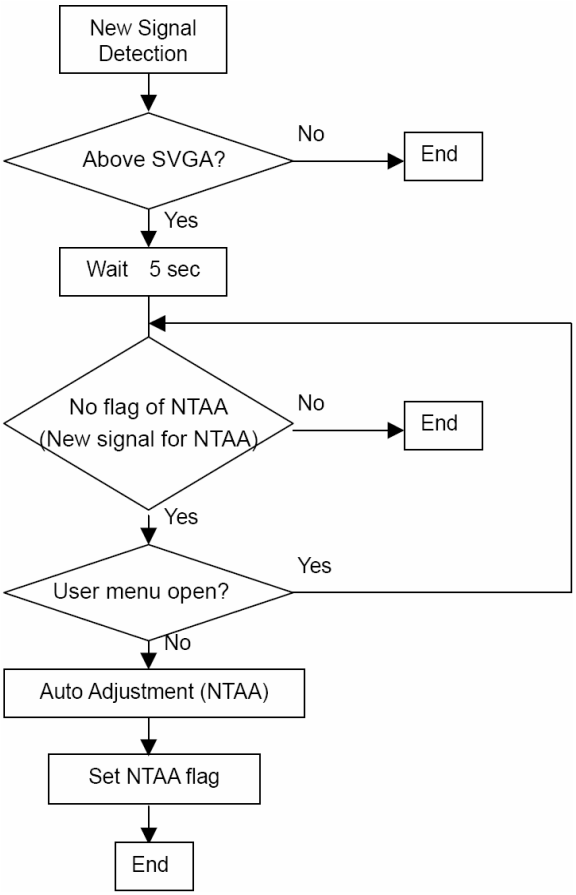
No Touch Auto Adjust

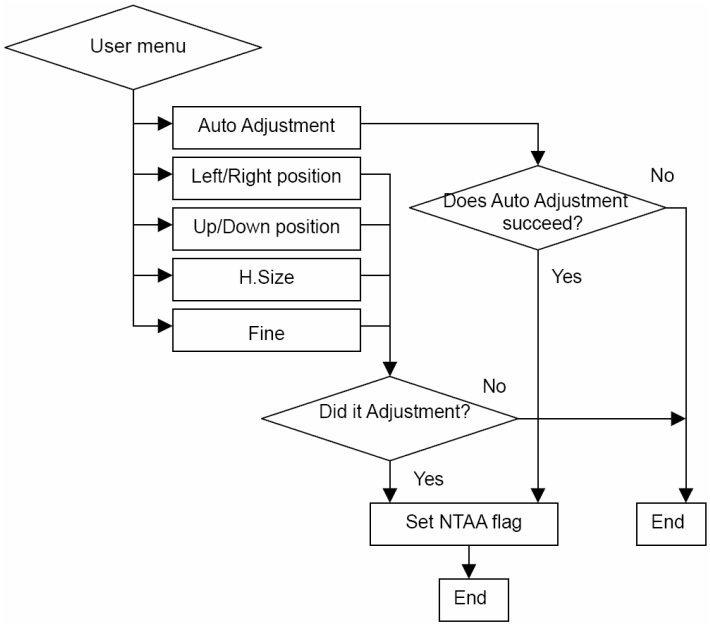
When the monitor receives a SVGA or higher video signal, the Auto Adjust function should execute automatically only once for each video mode.

The NTAA function set the NTAA flag, of that video mode, to 'ON'. The NTAA flag should be reset to factory default in the user menu and Factory preset in Factory/Service menu.

The character string "PROCEEDING…" should be blinked during execution of automatic adjustment. All key inputs, except power key, will not function during execution.

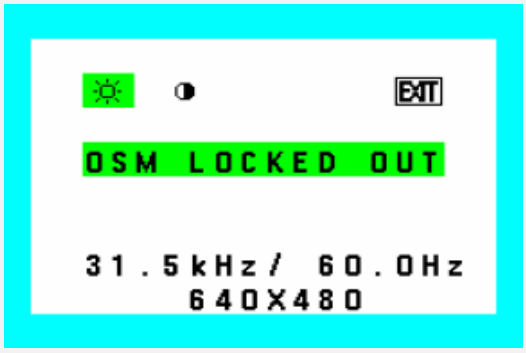
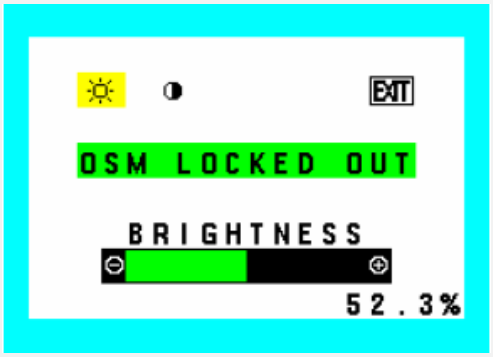
For Non Vista Model

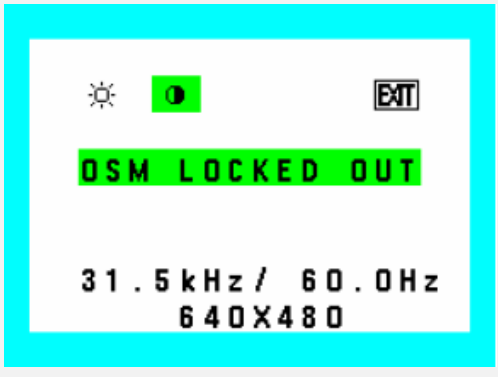
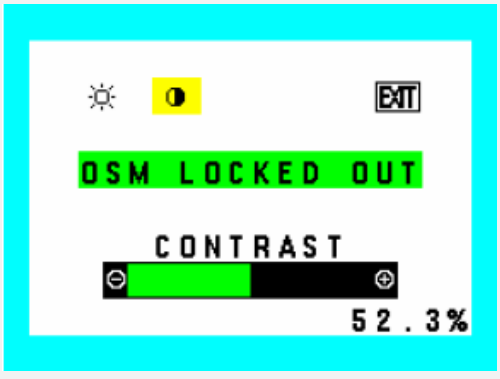




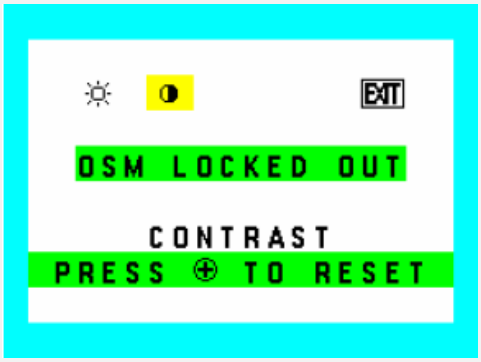
For Non Vista Model

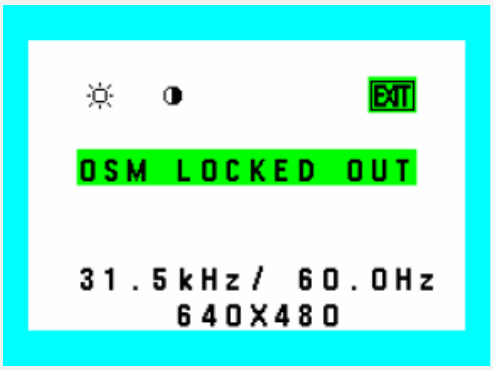
OSD Lockout

Brightness (Icon select)	Brightness (Adjust)
	
1. During **Brightness** function operate, **Brightness** Icon and slide bar color is changed from Normal condition. 2. " - " Value decrease (to dark) 3. "+ " Value increase (to bright) 4. At exiting from this state, adjusted value is saved to EEPROM.	
Brightness (reset)	
	Reset: Brightness value

Contrast (Icon select)	Contrast (adjust)
	
1. During **Contrast** function operate, **Contrast** Icon and slide bar color is changed from Normal condition. 2. " - " Value decrease (to dark) 3. "+ " Value increase (to bright)	

For Non Vista Model

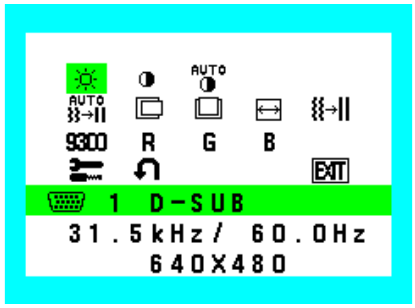
Contrast (reset)	
	Reset: Contrast value

Exit (Close OSM)	
	Lock Out “OFF” is saved.

4.2 Factory mode Explanations

If there is specific key input, while displaying Display mode OSM, enter to the Factory or Service menu.

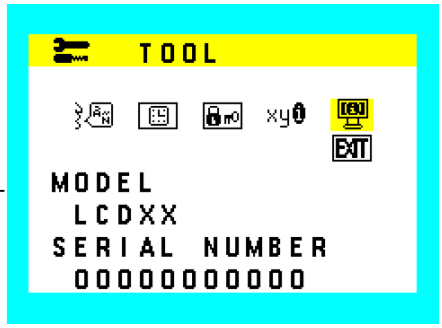
When “Reset” + “Minus” + “Plus” key was input during displaying Display mode OSM, open Waning OSM shows below.



Enter into OSD,

Select TOOL

Select Monitor Info



Press "Reset” +

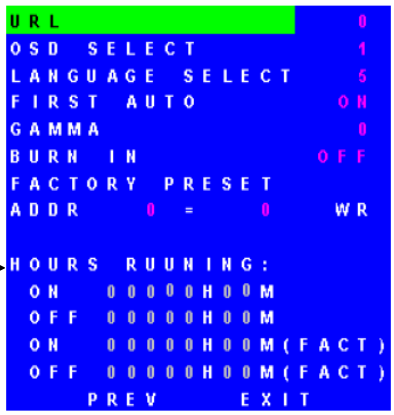
“Minus” + “Plus” key

Press the AUTO key

If “Select” key was pushed, return to TOOL mode.

If “Auto” key was pushed, enter to Factory mode, as below.

Select NEXT



Factory mode first page

For Non Vista Model

Factory mode first page: Auto Contrast

Adjust each R, G, B contrast (gain) and offset. Method of auto adjust is using ADC gain and offset. All value shall be adjustable manually.

Auto Level → Press this icon, Software will find out the Gain, offset, offset1 value automatically.

Black Level → Digital Offset (setting by software)

Offset1 → Analog RGB offset1 (scalar internal DC bias calibration data, setting by software)

Offset → Analog RGB offset (Signal DC bias calibration data, setting by software)

Gain → Analog RGB gain (setting by software)

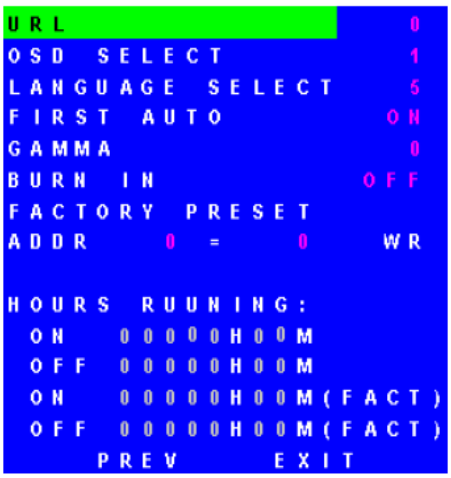
9300 → Digital RGB gain (for setting white balance 9300)

7500 → Digital RGB gain (for setting white balance 7500)

6500 → Digital RGB gain (for setting white balance 6500)

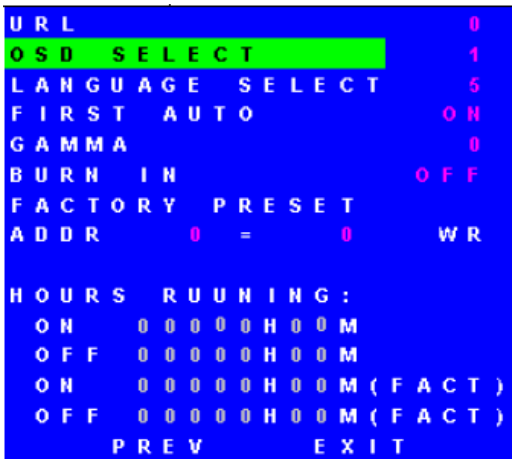
Factory mode second page

URL

<table>
<tr><td colspan="2">Select URL display</td><td></td></tr>
<tr><td rowspan="5"> 
</td><td>Select</td><td>Enter and withdraw from the changing area.</td></tr>
<tr><td>-</td><td>Value decrease</td></tr>
<tr><td>+</td><td>Value Increase</td></tr>
<tr><td>1-2/Reset</td><td>Not Available</td></tr>
<tr><td colspan="2">Value :
0: No URL display
1: NECDISPLAYSOLUTIONS.COM</td></tr>
</table>

For Non Vista Model

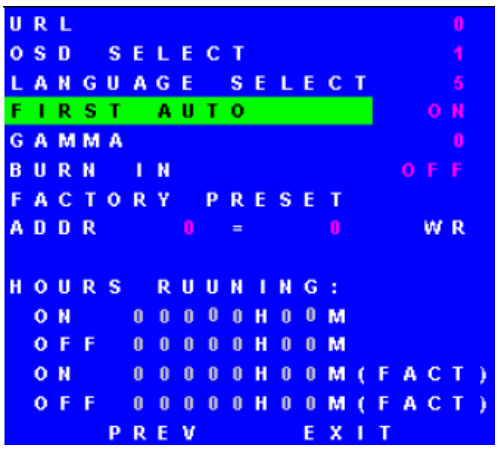
OSD SELECT

Select "OSM" or "OSD" for display.	
	Select: Enter and withdraw from the changing area. -: Value decrease +: Value Increase 1-2/Reset: Not Available 0: OSM, Be careful the following menu: OSM turn off, OSM turn off reset, OSM lock out, OSM lock out submenu 1: OSD, Be careful the following menu: OSD turn off, OSD turn off reset, OSD lock out, OSD lock out submenu

LANGUAGE SELECT

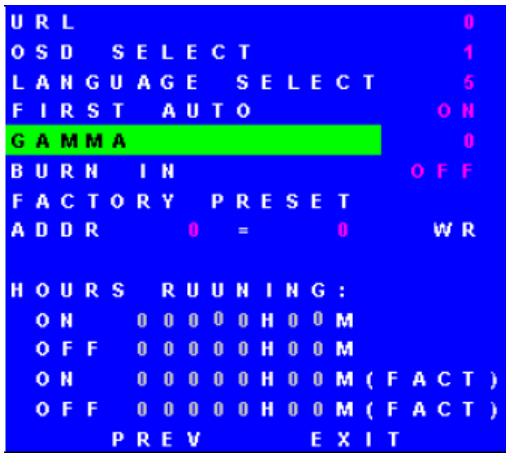
Select default of user mode language.	
	Select: Enter and withdraw from the changing area. -: Value decrease +: Value Increase 1-2/Reset: Not Available Select default of User mode language. 0 English 5 Japanese

FIRST AUTO

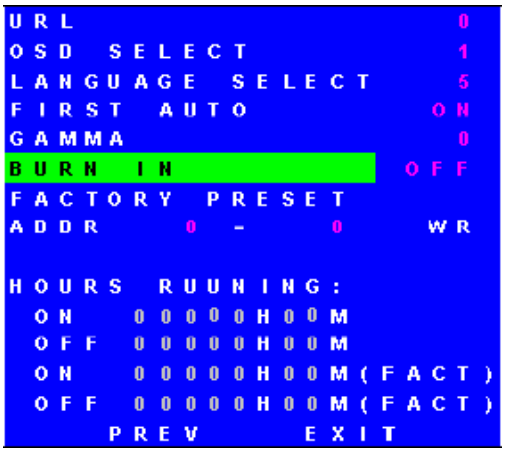
First auto	
	Select: Enter and withdraw from the changing area -: Value decrease +: Value Increase 1-2/Reset: Not Available Select NTAA setting, Value: ON: Represent the Auto adjustment activates automatically while the signal timing has been detected at first time only. OFF: Disable Automatic Auto adjust

For Non Vista Model

GAMMA

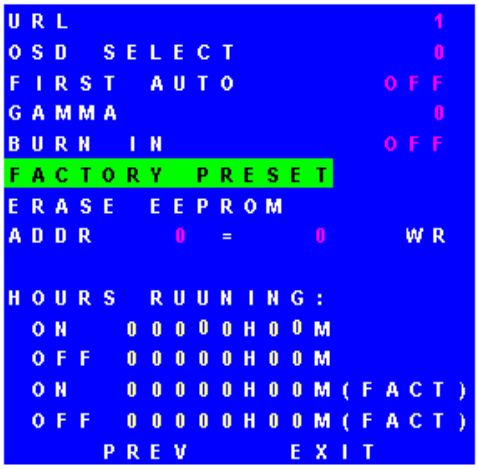
Select Gamma display	
	Select: Enter and withdraw from the changing area -: Value decrease +: Value Increase 1-2/Reset: Not Available Value : 0 By-pass 1 Enable

BURN IN mode

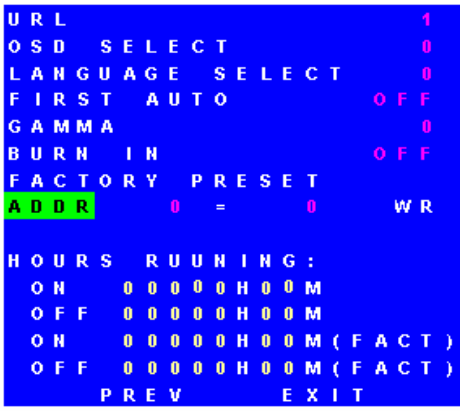
Burn in	
	Select: Enter and withdraw from the changing area -: Value decrease +: Value Increase 1-2/Reset: Not Available 1. Monitor can display some color Pattern with no signal-input. 2. Select ON or OFF to activate the Burn – in mode in factory mode, then turn on the monitor with no Signal input will activated the Burn in pattern 3. Burn In Pattern is cycling (FULL WHITE) ->(FULL BLACK) -> (FULL RED) -> (FULL GREEN) ->(FULL BLUE) 4. It will change the pattern about once every 2 seconds.

For Non Vista Model

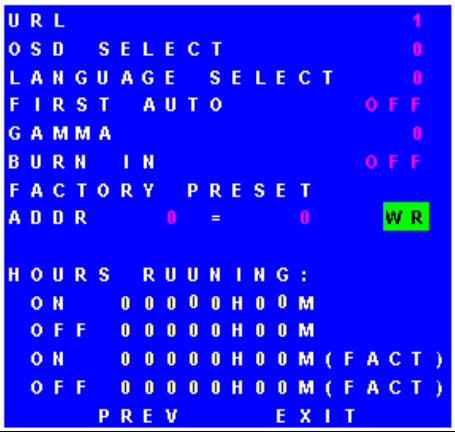
FACTORY PRESET

Factory Preset		
	Select	Operate Factory preset function
	-	Value decrease
	+	Value Increase
	1-2/Reset	Not Available
	While the cursor (Highlight) is on Factory Preset in Service menu, when “Select” key was pushed, proceed to the following procedure. 1. Reset all items of factory preset in user mode. 2. Clear Reset-able Hours Running. 3. Operate Auto Adjust.	

ADDR

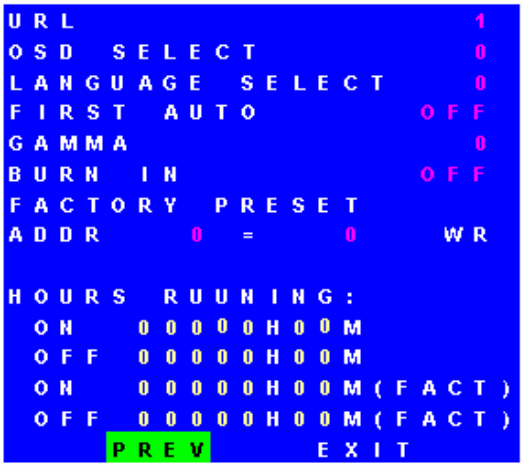
ADDR		
	Select	Operate Factory preset function
	-	Value decrease
	+	Value Increase
	1-2/Reset	Not Available
	To specify the access address of the register index of GM2621. (for DEBUG)	

WR

WR		
	Select	Operate Factory preset function
	-	Value decrease
	+	Value Increase
	1-2/Reset	Not Available
	To modify the content of the specify address of GM2621. (for DEBUG)	

For Non Vista Model

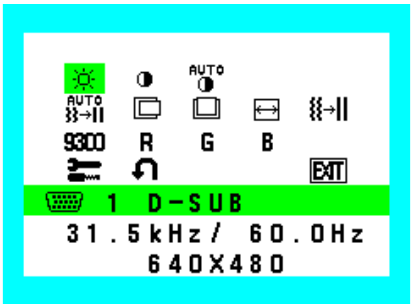
HOURS RUNNING

HOURS RUNNING	
	1. Indicate the “monitor power ON time” and “power save time” counted from factory shipment. 2. Hour Running function has four kinds of timer. a. Monitor power on time (Reset-able) b. Power save time (Reset-able) c. Monitor power on time (Un reset-able) d. Power save time (Un reset-able) Note1: Power save time = Stand by mode + Suspend mode + off mode (Do not include complete off mode.)

Note: “PREV”: Return to Factory mode first page. “EXIT”: Exit the Factory mode.

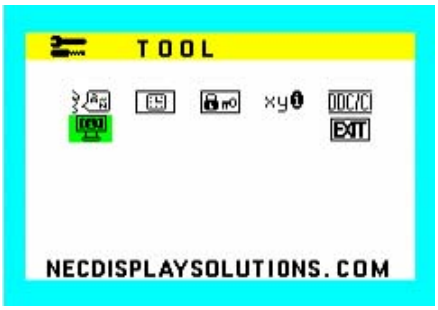
If there is specific key input, while displaying Display mode OSM, enter to the Factory or Service menu.

When “Reset” + “Minus” + “Plus” key was input during displaying Display mode OSM, open Waning OSM shows below.

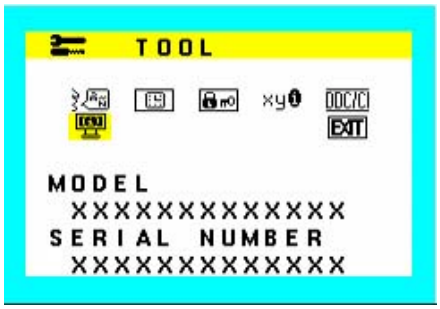


Enter into OSD,

Select TOOL



Select Monitor Info



Press "Reset” +

“Minus” + “Plus” key

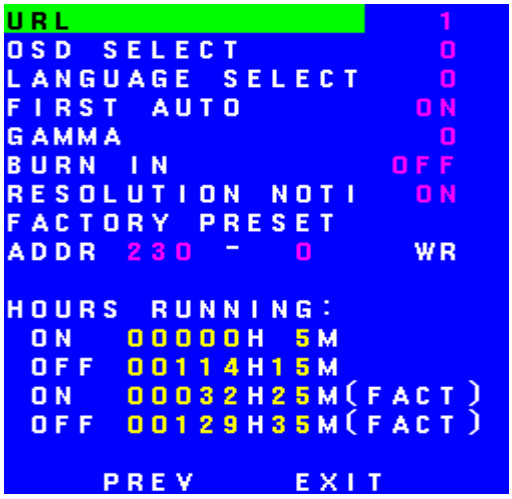
Press the AUTO key

If “Select” key was pushed, return to TOOL mode.

If “Auto” key was pushed, enter to Factory mode, as below.

Factory mode first page

Select NEXT



Factory mode second page

For Vista Model

Factory mode first page: Auto Contrast

Adjust each R, G, B contrast (gain) and offset. Method of auto adjust is using ADC gain and offset. All value shall be adjustable manually.

Auto Level → Press this icon, Software will find out the Gain, offset, offset1 value automatically.

Black Level → Digital Offset (setting by software)

Offset1 → Analog RGB offset1 (scalar internal DC bias calibration data, setting by software)

Offset → Analog RGB offset (Signal DC bias calibration data, setting by software)

Gain → Analog RGB gain (setting by software)

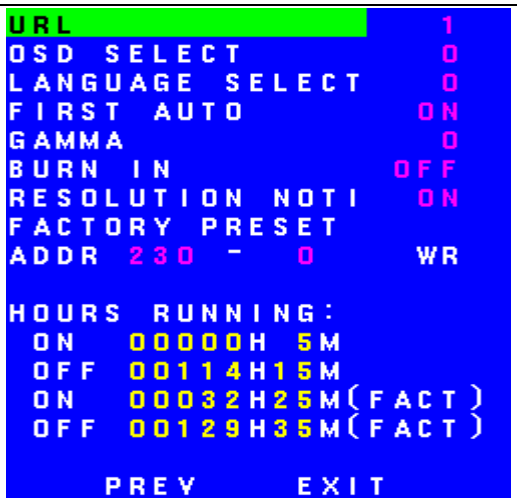
9300 → Digital RGB gain (for setting white balance 9300)

7500 → Digital RGB gain (for setting white balance 7500)

6500 → Digital RGB gain (for setting white balance 6500)

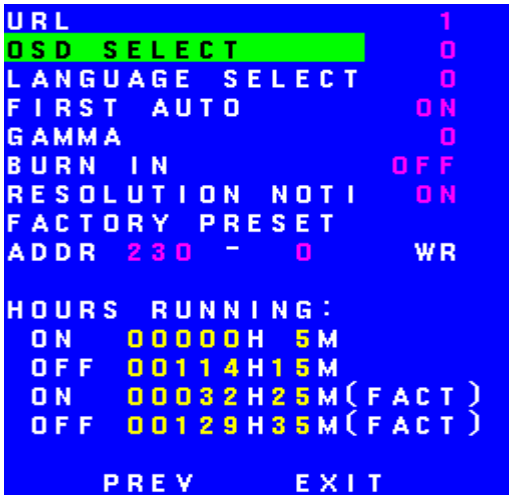
Factory mode second page

URL

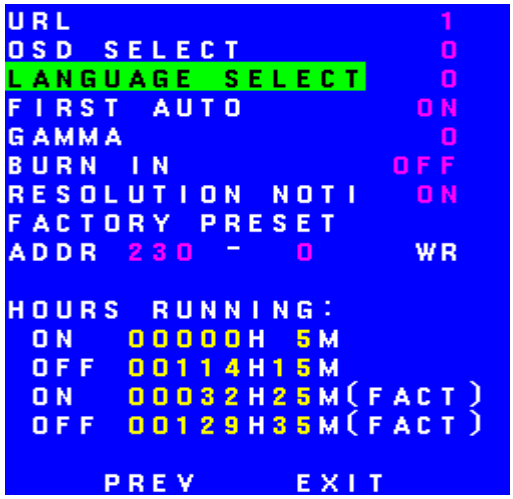
Select URL display	
	Select: Enter and withdraw from the changing area. -: Value decrease +: Value Increase 1-2/Reset: Not Available Value : 0: No URL display 1: NECDISPLAYSOLUTIONS.COM

For Vista Model

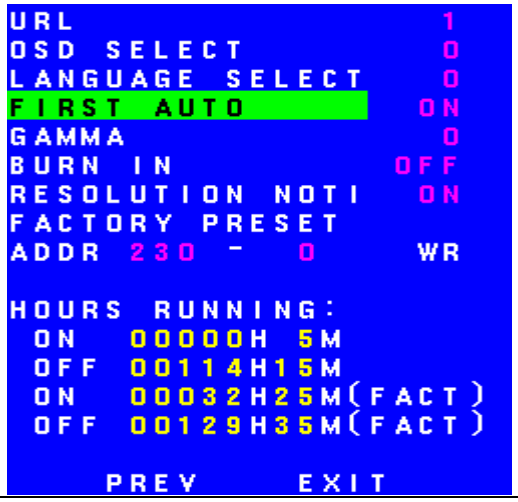
OSD SELECT

Select "OSM" or "OSD" for display.		
	Select	Enter and withdraw from the changing area.
	-	Value decrease
	+	Value Increase
	1-2/Reset	Not Available
	0: OSM, Be careful the following menu: OSM turn off, OSM turn off reset, OSM lock out, OSM lock out submenu 1: OSD, Be careful the following menu: OSD turn off, OSD turn off reset, OSD lock out, OSD lock out submenu	

LANGUAGE SELECT

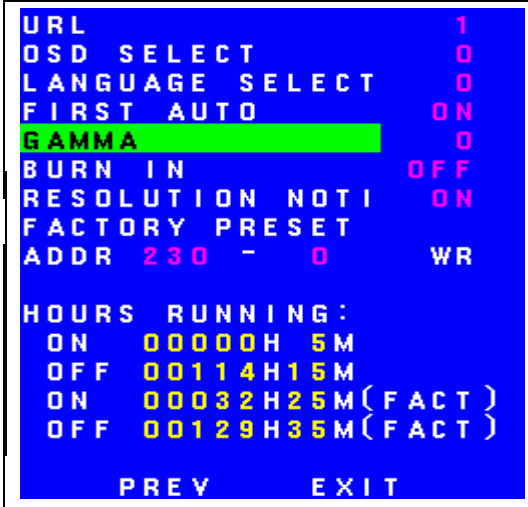
Select default of user mode language.		
	Select	Enter and withdraw from the changing area.
	-	Value decrease
	+	Value Increase
	1-2/Reset	Not Available
	Select default of User mode language. 0 English 5 Japanese	

FIRST AUTO

First auto		
	Select	Enter and withdraw from the changing area
	-	Value decrease
	+	Value Increase
	1-2/Reset	Not Available
	Select NTAA setting, Value: ON: Represent the Auto adjustment activates automatically while the signal timing has been detected at first time only. OFF: Disable Automatic Auto adjust	

GAMMA

Select Gamma display



Select	Enter and withdraw from the changing area
-	Value decrease
+	Value Increase
1-2/Reset	Not Available

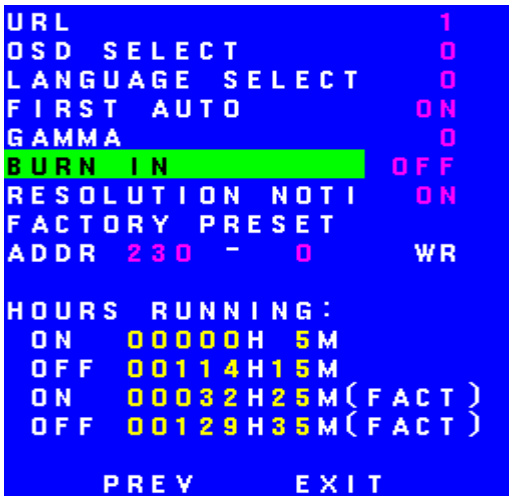
Value :

0 By-pass

1 Enable

BURN IN mode

Burn in

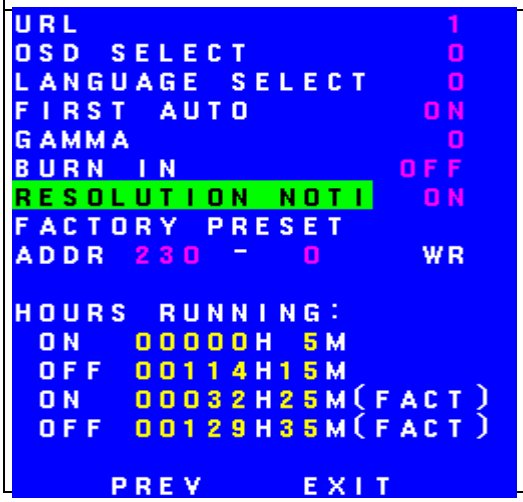


Select	Enter and withdraw from the changing area
-	Value decrease
+	Value Increase
1-2/Reset	Not Available

1. Monitor can display some color Pattern with no signal-input.
2. Select ON or OFF to activate the Burn – in mode in factory mode, then turn on the monitor with no Signal input will activated the Burn in pattern
3. Burn In Pattern is cycling (FULL WHITE) ->(FULL BLACK) -> (FULL RED) -> (FULL GREEN) ->(FULL BLUE)
4. It will change the pattern about once every 2 seconds.

RESULUTION NOTIFIER

Resolution Notifier



Select	Enter and withdraw from the changing area
-	Value decrease
+	Value Increase
1-2/Reset	Not Available

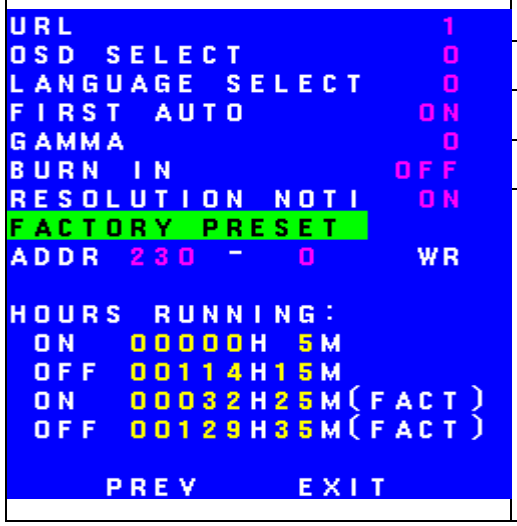
Select Resolution Notifier setting

Value :

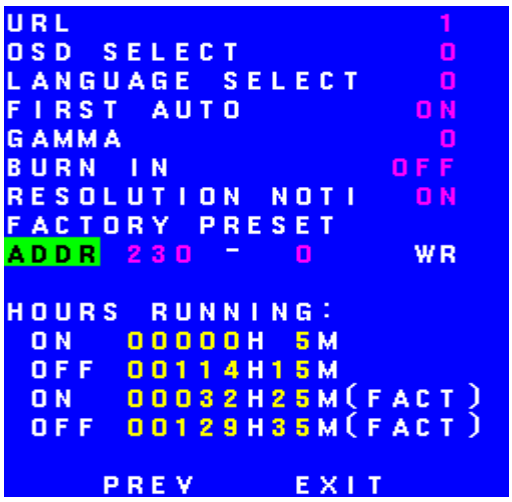
0 Active

1 inactive

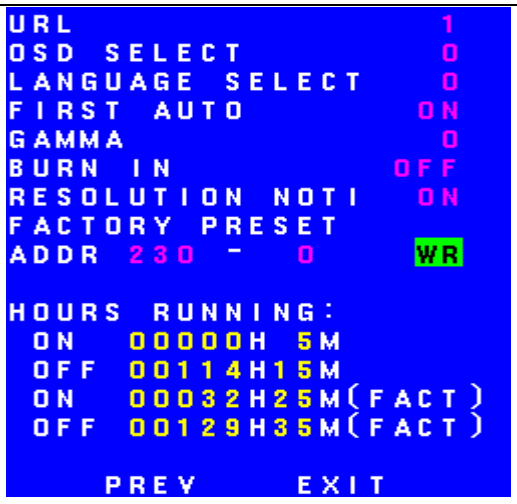
FACTORY PRESET

Factory Preset		
	Select	Operate Factory preset function
	-	Value decrease
	+	Value Increase
	1-2/Reset	Not Available
	While the cursor (Highlight) is on Factory Preset in Service menu, when “Select” key was pushed, proceed to the following procedure. 1. Reset all items of factory preset in user mode. 2. Clear Reset-able Hours Running. 3. Operate Auto Adjust.	

ADDR

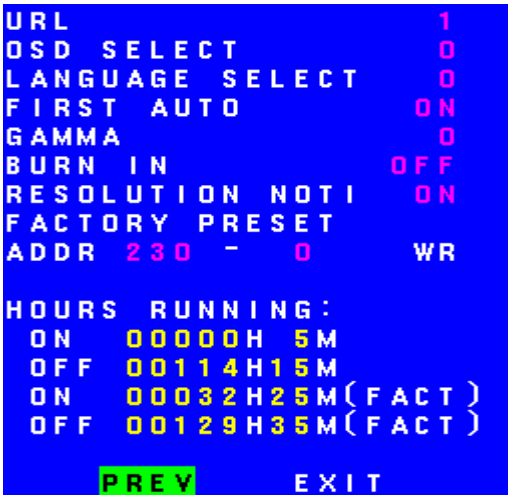
ADDR		
	Select	Operate Factory preset function
	-	Value decrease
	+	Value Increase
	1-2/Reset	Not Available
	To specify the access address of the register index of GM2621. (for DEBUG)	

WR

WR		
	Select	Operate Factory preset function
	-	Value decrease
	+	Value Increase
	1-2/Reset	Not Available
	To modify the content of the specify address of GM2621. (for DEBUG)	

For Vista Model

HOURS RUNNING

HOURS RUNNING	
	1. Indicate the “monitor power ON time” and “power save time” counted from factory shipment. 2. Hour Running function has four kinds of timer. a. Monitor power on time (Reset-able) b. Power save time (Reset-able) c. Monitor power on time (Un reset-able) d. Power save time (Un reset-able) Note1: Power save time = Stand by mode + Suspend mode + off mode (Do not include complete off mode.)

Note: “PREV”: Return to Factory mode first page. “EXIT”: Exit the Factory mode.

5. Adjustment Mode Setting

AUTO LEVEL

1) Enter an input signal of VESA (1280×1024 @75Hz) input signal all white.
2) Enter the factory mode according to “4.2 Factory mode Explanation”
3) Pressing the (-) or (+) button, adjust the high light to [AUTO LEVEL]. When the SELECT button is pressed, adjustment of the bias and the gain is carried out.

4) When adjustments have been finished, Pressing the (-) or (+) button, adjust the high light to [EXIT]. When the SELECT button is pressed, close the factory mode.

Note: Check whether RGB data is as follows in the case of Auto Color adjustment.

Auto Color R/G/B Data for AU panel (AUO M190EN04 V5C/V5D/V4)

	R	G	B
9300	62	66	58
7500	66	66	45
6500	79	76	48

1) Select “R”, “G”, or “B” in the factory mode by pressing the “- (LEFT)” or “+ (RIGHT)” button.
2) When the MENU button is pressed, the high light moves to R/G/B data.
3) Press the “- (LEFT)” or “+ (RIGHT)” button to turn a numerical value is changed.
4) After the MENU button has been pressed, select “AUTO” and press the MENU button again. This causes the factory mode to be closed. (Try to display the OSD to confirm whether the service mode or the factory mode has been closed.)

6. Panel Brightness Check

1) Enter the input signal of 1280×1024 @75Hz, in Full white pattern.
2) Proceed “Factory Preset” function of miscellaneous menu.
3) OSM setting “BRIGHTNESS” to Max. (100%) and “CONTRAST” to 100%.
4) Color temperature setting to “USER” (R: 100%, G: 100%, B: 100%).
5) Check the center luminance should ≥ 270cd/m^2.

7. Panel Color Check

1) Enter an input signal of 1280×1024 @75Hz, in Full white pattern.
2) Proceed “Factory Preset” function. Brightness: 100%, Contrast: 100%
3) Color temperature setting to “USER” (R: 100%, G: 100%, B: 100%).
4) Check the center color coordination. x = 313 ±30, y = 329 ±30, Y=190±30

8. Color Temperature Check

1) Enter an input signal of 1280×1024 @75Hz, in Full white pattern.
2) OSM “BRIGHTNESS” setting to Max. (100%) and “CONTRAST” setting to 50%.
3) Color temperature setting to each color.
4) Each color temperature setting as below:

9300K: x = 283 ±30 y = 297 ±30 Y=190±20

7500K: x = 299 ±30 y = 315 ±30 Y=190±20

6500K: x = 313 ±30 y = 329 ±30 Y=220±20

INSPECTION

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1. General Description

For AU Panel (M190EN04 V5C/V5D/V4)

Item			Specification
LCD Module	Panel		AUO M190EN04 V5C/V5D/V4
	Size		19" (48.2cm)
	Active Display Area		376.32 (H) x 301.056 (V) mm
	Resolution		1280x1024 dots (SXGA)
	Pixel Pitch		0.294mm
	Color Depth		16,2 million or more
	Luminance *1)		270cd/m2 (Typ.)
	Viewing Angle(Typ.)	CR>10	Up 65 / Down 60 / Left 70 / Right 70
		CR>5	Up 75 / Down 70 / Left 80 / Right 80
	Contrast Ratio		550:1 (typ)
	Back Light		CCFL x 4pcs.
Input Signals	Horizontal frequency		31.5kHz – 81.1kHz
	Vertical frequency		55.0Hz - 76.0 Hz
	Video Signal		Analog RGB
	Sync. Signal		Separate Sync. (TTL)
	Pixel Clock		25.0MHz – 135.0MHz
	Input connector		Mini D-sub 15Pin
Preset Timings			Factory preset: 19 / User preset: 21
Functions	Front Control		SELECT, -, +, AUTO/RESET, Power
	OSM		Brightness, Contrast, Auto Contrast, Auto Adjust, H.Posi, V.posi, H.Size, Fine, Color Control, Language, OSD Turn Off, OSD Lock Out, Resolution Nortifier, Monitor Info., Factory Reset, DDC/CI (Vista Model)
	Remote Control		VESA DDC 2Bi/CI
Regulations	Safety		UL / cUL, CE, TuV GS, CB Certificate, GOST
	EMC		FCC ClassB, Canadian DOC ClassB, CE
	VLF / ELF		MPR-II, TCO'03
	Power Management		VESA DPMS, EPA(Tier 2), TCO'03
	Ergonomics		TuV GS, TuV Ergonomie, TCO'03, ISO13406-2
	Plug and Play		VESA DDC2B&2Bi
	Others		Windows XP / Vista (Vista Model) Logo, RoHS, WEEE
Environment Condition	Temperature		5°C to 35°C / 41°F to 95°F
	Humidity		10-80% (without condensation)

*1) The definition of TYP Luminance

You should satisfy this value for products of 60% and more.

OSM functions condition, Factory preset; Brightness control range (BAR): 100%, Color select: USER (Native)

Power Supply	Input Voltage		AC100-240V, 50 / 60Hz
	Power consumption	Typ	37 W (0.75 – 0.4 A @ 100 - 240V)
		Power saving	<2W
		Power off	<1W
	Input Connector		3P IEC Type
Weight	with Stand		Approx. 5.3 kg
	without Stand		Approx. 4.9 kg
Dimension	Net		405.5(W) x 405.5(H) x 205.0(D) mm
	Gross		468 (W) x 495 (H) x 156 (D) mm
VESA compatible arm mounting interface			100mmx100mm
Tilt / Swivel / Rotation			Up & Down 20deg to -5deg / NA / NA
Accessories	AC Power cord		1.8m
	Signal Cable		1.8m : miniD-sub15pin (Captive type)
	Others		User's manual, Utility Disk, Set-up sheet, Sales Office List, Caution Sheet, Navi Set flyer.

2. Electrical Characteristics

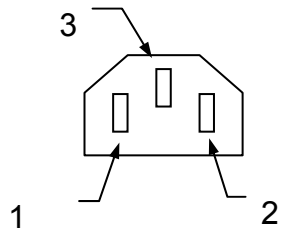
2.1 Power Supply

Input Voltage	AC 100-240V +/- 10%
Current	0.7A (AC100V) / 0.4A (AC240V)
Frequency	50 / 60 Hz +/-3Hz
Power Consumption	37W±15%
AC Leakage current	< 0.25 mA (Japan model) / < 1.5 mA (others)
Inrush current (cold start)	< 50A $_{0\text{-}P}$ (AC100V / AC120V) / < 90A$_{0\text{-}P}$ (AC240V)

kk+Inlet connector type: 3 polarity, 10A 250V 65degC

VDE, UL CSA approved CEE input connector.

EN60320 Class I standard compliant



Pin	Name	Definition
1	L	Live
2	N	Neutral
3	FG	GND (Ground)

2.2 LCD without Acrylic Panel

For AU Panel (AUO M190EN04 V5C/V5D/V4)

Vendor	Quanta Display Inc.
Type name	AUO M190EN04 V5C/V5D/V4

Item			Specifications	Remarks
LCD Module type			19" / 48.2 cm diagonal	
Display Type			Active matrix thin-film-transistor (TFT)	
Display Mode			TN, Normally White	
Resolution			1280(H) x 1024(V)	Aspect ratio 5:4
Active Display Area			376.320(H) x 301.056(V)	Unit : mm
Pixel Pitch			0.294(H) x 0.294(V)	Unit : mm
Color Depth			16,2 million color (R,G,B: 6bit + FRC)	
Color Filter			RGB Stripe	
Surface Treatment			Anti-glare treatment of the front polarizer	
Viewing Angle (Typical)	Horizontal(ϕ)		140 degrees (-70 to 70 degrees)	CR>=10
			-	CR>=5
	Vertical(θ)		135 degrees (-60 to 75 degrees)	CR>=10
			-	CR>=5
Contrast ratio			550:1 (typ)	
Luminance			270 (typ)	Unit: cd/m2
Response time		Rise time	Tr = 5.6 (typ.)	Unit : ms
		Fall time	Tf = 2.4 (typ.)	Unit : ms
Back Light		Type	CCFL (x 4 pcs)	
		Life time	50,000 (typ)	Unit : Hours
Color Chromaticity (typical)	Red	x	0.634±0.03	Viewing Angle = 0 degree
		y	0.354±0.03	
	Green	x	0.287±0.03	
		y	0.621±0.03	
	Blue	x	0.138±0.03	
		y	0.077±0.03	
	White	x	0.313±0.03	
		y	0.329±0.03	

*) This is reference specification.

You should confirm panel vendor newest specification.

2.3 Full Scan Capacity

In case the input video mode is not 1280 x 1024, the image area shall be expanded to 1280 x 1024 smoothly with the function of scaling engine.

Standard resolution: 1280 x 1024

Expand method: Full expand mode with smoothing as follows

Down scaling: Down scaling at over 1280 x 1024 mode

Picture Size (In Full-Screen mode)

Multi-pixel mode	Input display Resolution	Expanded Rate		Expanded Resolution
		Horizontal	Vertical	
Expansion	720×350	1.78	2.93	1280×1024
Expansion	640×350	2.0	2.93	1280×1024
Expansion	640×400	2.0	2.56	1280×1024
Expansion	720×400	1.78	2.56	1280×1024
Expansion	640×480	2.0	2.13	1280×1024
Expansion	800×600	1.6	1.71	1280×1024
Expansion	832×624	1.54	1.64	1280×1024
Expansion	1024×768	1.25	1.33	1280×1024
Expansion	1152×864	1.11	1.19	1280×1024
Expansion	1152×870	1.11	1.18	1280×1024
Expansion	1152×900	1.11	1.14	1280×1024
Expansion	1280×960	1.0	1.07	1280×1024
Standard	1280×1024	1.0	1.0	1280×1024
Down Scale	1600×1200	0.8	0.85	1280×1024

2.4 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.

2.5 White Color Temperature

For Non Vista Model

White color temperature has 4 presets; 9300, 7500, 6500, USER (Native).

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

Target of color setting

Color Temp.	Color Coordinate		Tolerance	Color Coordinate		Tolerance
	X	Y		U'	V'	
9300K	0.283	0.297	±0.03	0.189	0.446	u'v' ≤ 0.01*
7500K	0.299	0.315	±0.03	0.193	0.459	u'v' ≤ 0.01*
6500K	0.3127	0.3291	±0.03	0.198	0.468	u'v' ≤ 0.01*

For Vista Model

White color temperature is 5 preset as 9300, 7500, sRGB, USER, NATIVE.
Default color selection is NATIVE.
Default value of user color should be Native which is maximum setting for panel.

Target of color setting

Color Temp.	Color Coordinate		Tolerance	Color Coordinate		Tolerance
	x	y		u'	v'	
9300K	0.283	0.297	±0.015	0.189	0.446	Δu'v' ≤ 0.01*
7500K	0.299	0.315	±0.015	0.193	0.459	Δu'v' ≤ 0.01*
sRGB(6500K)	0.3127	0.3291	±0.015	0.198	0.468	Δu'v' ≤ 0.01*

*) TCO'03 A.2.6.1 "Color temperature variation" should follow.

2.6 Check Power Manage Function

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

Power Management condition and status

State	Signals			Power Supply	LCD	LED
	Horizontal	Vertical	Video			
On	Pulses	Pulses	Active	On	On	Green
Stand-by	No Pulses	Pulses	Blanking		Off	Amber
Suspend	Pulses	No Pulses				
Off	No Pulses	No Pulses				
Complete	N/A	N/A	N/A			Off

Power Management should work correctly in case of sync on green and composite sync.

Input signal sync type and power Management condition:

State	Input signal type			Status	Power Supply	LCD	LED
	Horizontal	Vertical	Green				
Separate	H.Sync	V.Sync	Video	On	On	On	Green
Composite	H.Sync + V.Sync	No Pulses	Video	Stand-by		Off	Amber
Sync on Green	No Pulses	No Pulses	Video + H.Sync + V.Sync	Off			

3. External Inspection on the LCD Module

For AU Panel (AUO M190EN04 V5C/V5D/V4)

Condition

Viewing distance: 35 ± 5cm

Ambient illumination: 300 to 700 Lux (Standard 500 Lux)

Ambient temperature: 20-25°C

Viewing Angle: The surface of the module and the inspector's line of view shall be at 90 degree.

Display pattern: Black for bright dot(s)

Whit for dark dot(s)

Pure R, G, B and Monotone Gray for bright and dark dot(s)

Inspection area: active area

TROUBLE SHOOTING

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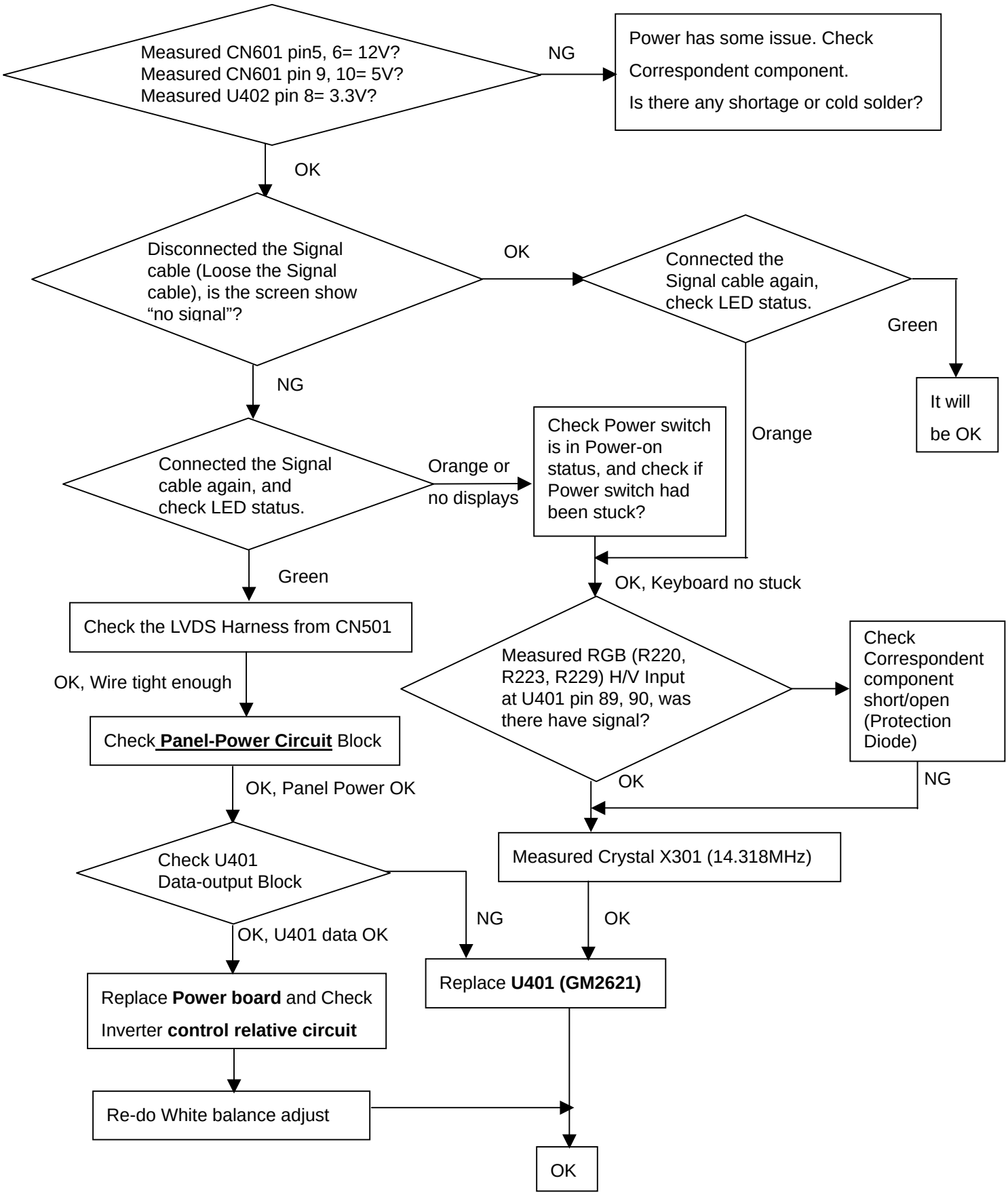
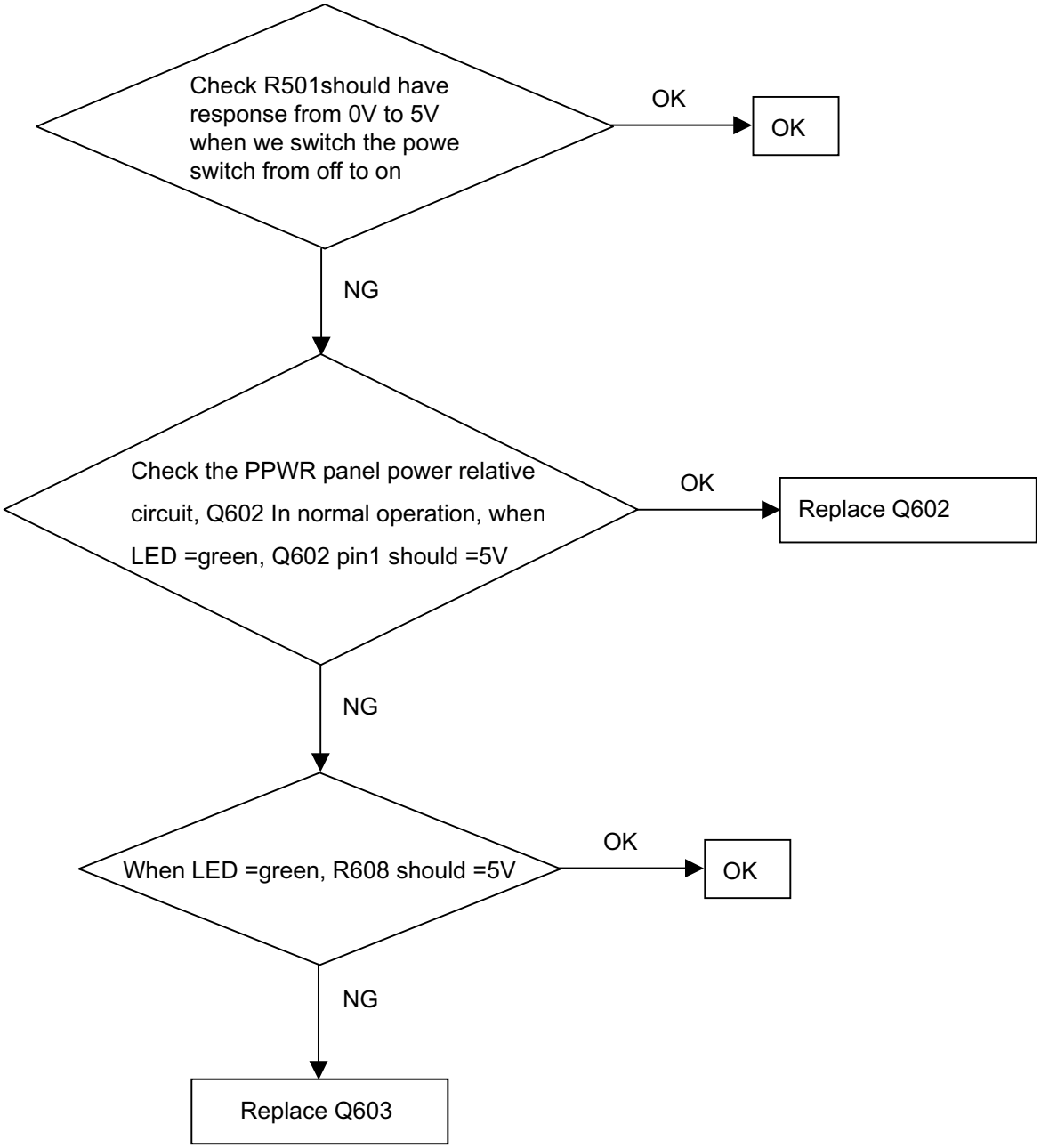
1. No Display on Screen



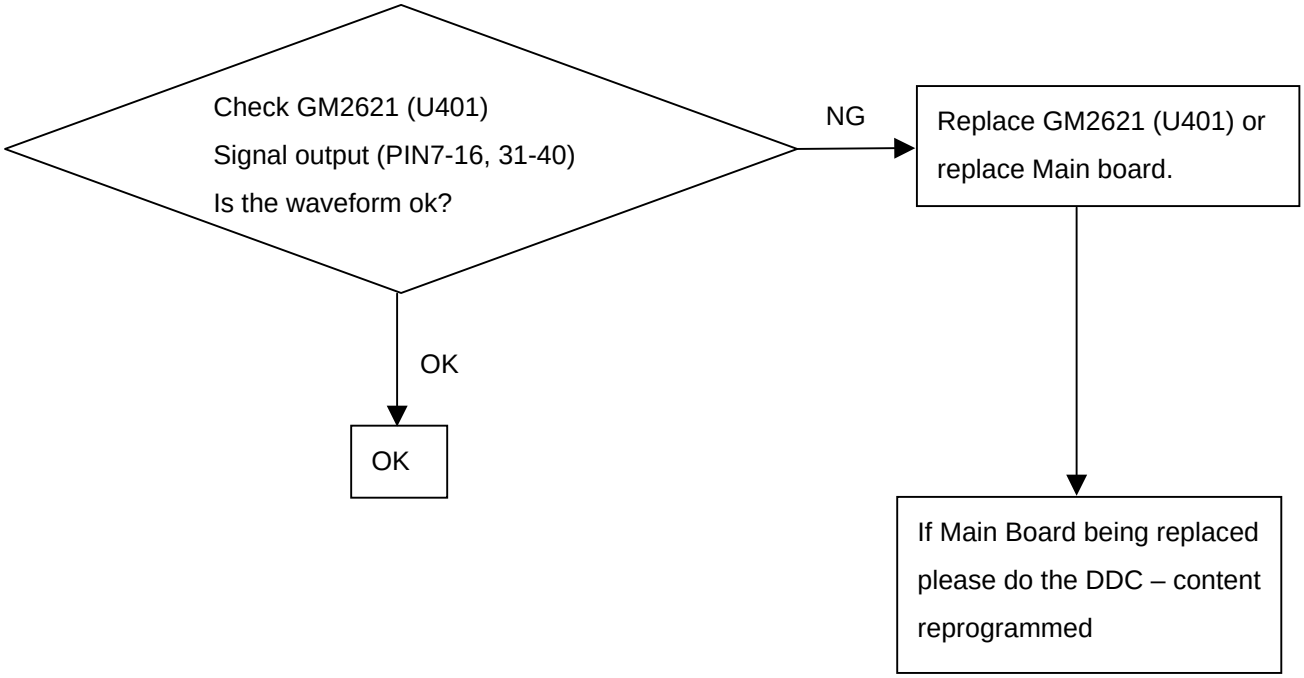
Note: 1. If replace "**Main-Board**", Please re-do "DDC-content" programmed & "White-Balance".

2. If replace "**Power Board**" only, Please re-do "White-Balance"

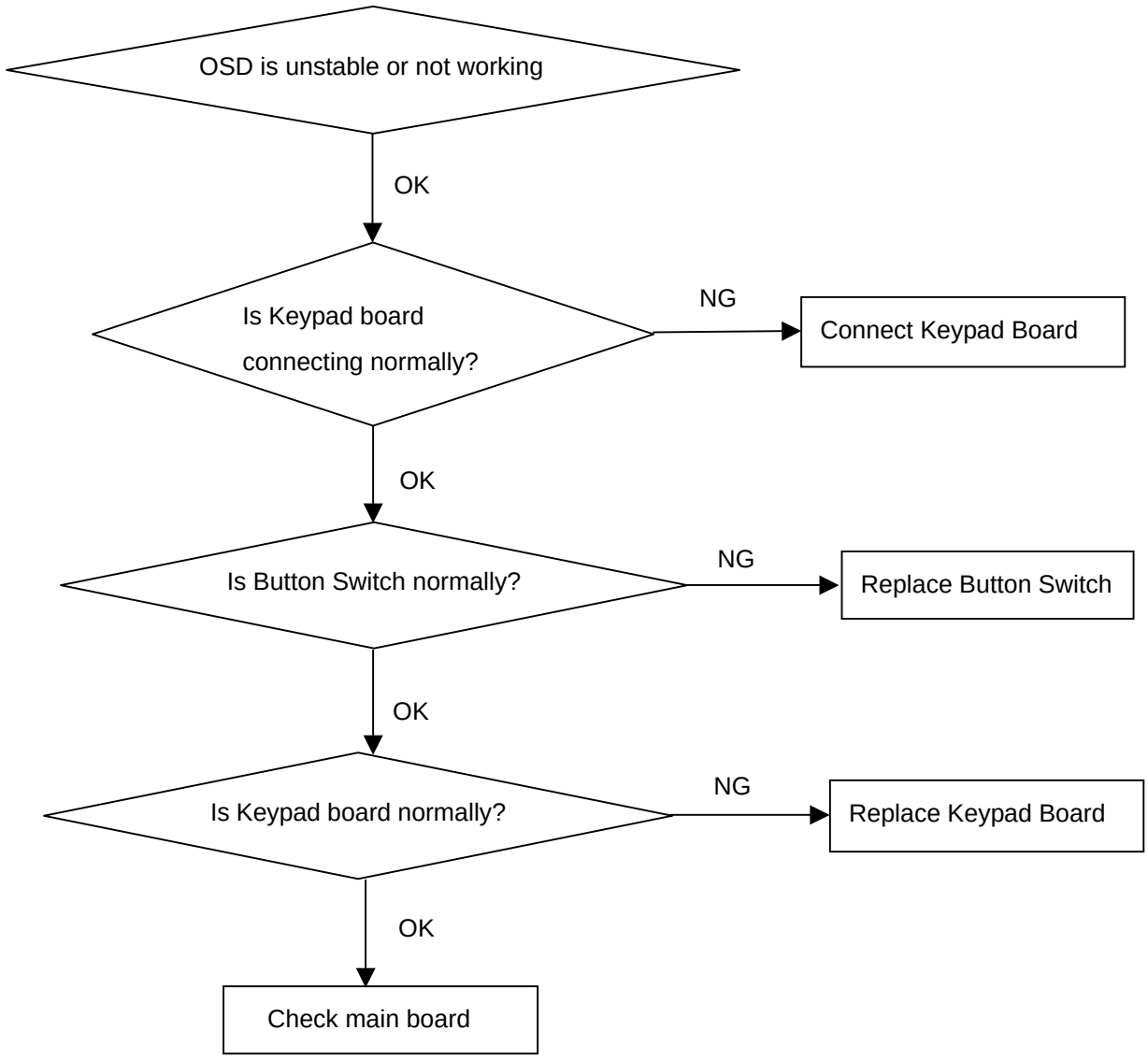
2. Panel Power Circuit



3. U401-Data Output

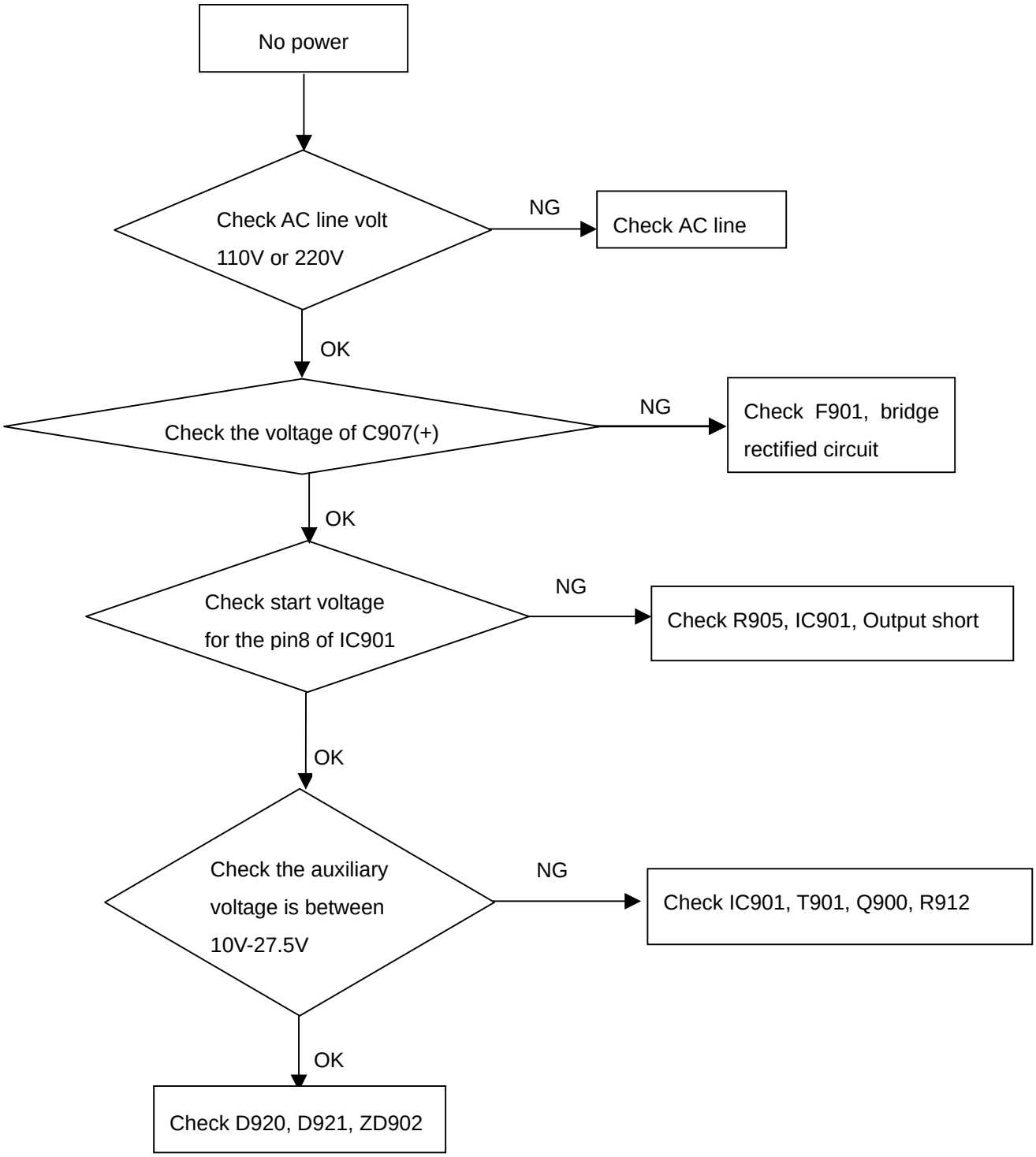


4. Keypad Board

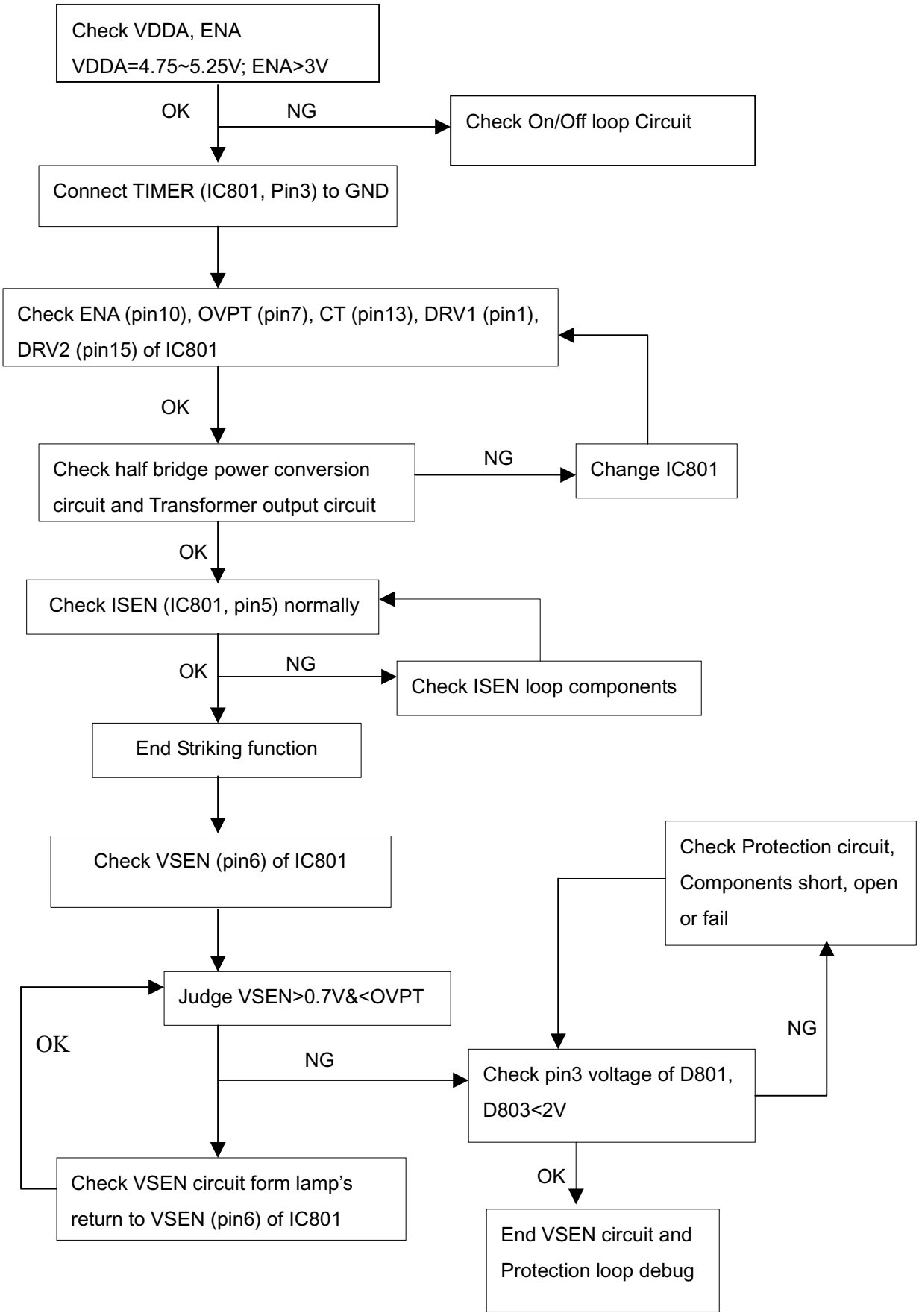


5. PWPC

5.1 No Power



5.2 No Backlight



CIRCUIT DESCRIPTION

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1. General Description

The LCD monitor contains a panel, a main board, an inverter/power board and a keyboard.

2. Main Board

The main board contains many components such as, panel control logic, brightness control logic, DDC and CD convert, and DC circuit.

2.1 Description of Main Chips

MCU: Integrated in GM2621 scaler IC, which the main function is to provide areas such as power control, OSD control, frequency calculation, RS232 communication.

GM2621: Scaler IC, integrate 8051, ADC, OSD, SCALER, convert analog RGB into digital and room and shrink scaling output to timing control circuit of LCD panel.

AIC1084: DC power convert, used to 5V convert 3.3V.

AI1117D: DC power convert, used to 5V convert 1.8V.

24C02: 1K EEPROM, is used to save DDC data which contains the basic parameter of facility, supplier, product name, maximum H-frequency, support resolution and so on.

24C16: 4K EEPROM, which contains the basic parameter of facility, supplier, product name, maximum H-frequency, support resolution, is used to save DDC data.

2.2 GM2621

The gm2621 is an all-in-one dual input LCD monitor controller supporting resolutions up to SXGA that is available in a very low pin count package. The gm2621 leverages Genesis patented advanced image-processing technology as well as a proven integrated ADC/PLL and an Ultra-Reliable DVI™ compliant digital receiver to deliver a high-quality solution for mainstream analog and dual input monitors. Gm2621 includes an on-chip, industry standard, dual channel LVDS transmitter for direct interfacing of commercially available LVDS LCD panel modules.

In addition, gm2621 includes an integrated X86 OCM with SPI compatible interface, a multicolor proportional font OSD engine, a programmable coefficient scaling engine, dual channel Schmitt and Reset circuitry. Along with the high quality and reliability, gm2621 also provides a very low cost system design because of the reduction in the number of system components used and reduction in the board size due to a smaller package.

Table 1: LVDS Panel Interface

Pin Name	No	I/O	Description
AVSS_BIAS	1	AG	Analog ground for LVDS PLL and Bandgap
VDD_OUT_33	2	P	Digital 3.3V supply for LVDS output
RESERVED	3	AO	Reserved; Do not connect
RESERVED	4	AO	Reserved; Do not connect
RESERVED	5	AO	Reserved; Do not connect
RESERVED	6	AO	Reserved; Do not connect
E_CH3P_LV	7	AO	LVDS even channel 3 positive
E_CH3N_LV	8	AO	LVDS even channel 3 negative
E_CLKP_LV	9	AO	LVDS even channel clock positive
E_CLKN_LV	10	AO	LVDS even channel clock negative
E_CH2P_LV	11	AO	LVDS even channel 2 positive
E_CH2N_LV	12	AO	LVDS even channel 2 negative
E_CH1P_LV	13	AO	LVDS even channel 1 positive
E_CH1N_LV	14	AO	LVDS even channel 1 negative
E_CH0P_LV	15	AO	LVDS even channel 0 positive
E_CH0N_LV	16	AO	LVDS even channel 0 negative
RESERVED	19	AO	Reserved; Do not connect
RESERVED	20	AO	Reserved; Do not connect
RESERVED	21	AO	Reserved; Do not connect
RESERVED	22	AO	Reserved; Do not connect
RESERVED	23	AO	Reserved; Do not connect
RESERVED	24	AO	Reserved; Do not connect
VDD_OUT_33	25	P	Digital 3.3V supply for LVDS output
VSS_OUT	26	G	Digital ground for LVDS output
RESERVED	27	AO	Reserved; Do not connect
RESERVED	28	AO	Reserved; Do not connect
RESERVED	29	AO	Reserved; Do not connect
RESERVED	30	AO	Reserved; Do not connect
O_CH3P_LV	31	AO	LVDS odd channel 3 positive. Reserved for gm5611 and gm2611.
O_CH3N_LV	32	AO	LVDS odd channel 3 negative. Reserved for gm5611 and gm2611.
O_CLKP_LV	33	AO	LVDS odd channel clock positive. Reserved for gm5611 and gm2611.
O_CLKN_LV	34	AO	LVDS odd channel clock negative. Reserved for gm5611 and gm2611.
O_CH2P_LV	35	AO	LVDS odd channel 2 positive. Reserved for gm5611 and gm2611.
O_CH2N_LV	36	AO	LVDS odd channel 2 negative. Reserved for gm5611 and gm2611.
O_CH1P_LV	37	AO	LVDS odd channel 1 positive. Reserved for gm5611 and gm2611.
O_CH1N_LV	38	AO	LVDS odd channel 1 negative. Reserved for gm5611 and gm2611.
O_CH0P_LV	39	AO	LVDS odd channel 0 positive. Reserved for gm5611 and gm2611.
O_CH0N_LV	40	AO	LVDS odd channel 0 negative. Reserved for gm5611 and gm2611.
RESERVED	41	AO	Reserved; Do not connect
RESERVED	42	AO	Reserved; Do not connect
RESERVED	43	AO	Reserved; Do not connect
RESERVED	44	AO	Reserved; Do not connect
RESERVED	45	AO	Reserved; Do not connect
RESERVED	46	AO	Reserved; Do not connect
VDD_OUT_33	47	P	Digital 3.3V supply for LVDS output
VSS_OUT	48	G	Digital ground for LVDS output
AVDD_BIAS_33	128	AP	Analog 3.3V supply for LVDS PLL and Bandgap
PBIAS	49	O	Panel backlight enable
PPWR	127	O	Panel power enable

Table 2: VGA Analog Input Port

Pin Name	No	I/O	Description
HSYNC	89	I	ADC input horizontal sync or composite sync input. [Input, programmable Schmitt Trigger, 5V-tolerant]
VSYNC	90	I	ADC input vertical sync. [Input, programmable Schmitt Trigger, 5V-tolerant]
AVDD_ADC_33	92	AP	Analog power (3.3V) for ADC.
BLUE+	93	AI	Positive analog input for Blue channel.
BLUE-	94	AI	Negative analog input for Blue channel.
AVSS_ADC	95	AG	Analog ground for ADC.
GREEN+	96	AI	Positive analog input for Green channel and SOG input.
GREEN-	97	AI	Negative analog input for Green channel.
AVSS_ADC	98	AG	Analog ground for ADC.
RED+	99	AI	Positive analog input for Red channel.
RED-	100	AI	Negative analog input for Red channel.
AVDD_ADC_33	101	AP	Analog power (3.3V) for ADC. Must be bypassed with capacitor to AVSS_ADC pin.
AVSS_ADC	102	AG	Analog ground for ADC.
AVSS_ADC	103	AG	Analog ground for ADC.
AVDD_ADC_18	104	AP	Analog power (1.8V) for ADC. Must be bypassed with capacitor to AVSS_ADC pin.

Table 3: DVI Receiver

Pin Name	No	I/O	Description
AVSS_DVI	68	AG	Analog GND for DVI input. Reserved for gm2621 and gm2611; Do not connect.
REXT	69	AI	External reference resistor. A 1%, 250Ω resistor should be connected from this pin to pin 74. Reserved for gm2621 and gm2611; Do not connect.
AVDD_DVI_18	70	AP	Analog VDD (1.8V) for DVI input. Must be bypassed with external capacitor(s) to AVSS_DVI. Reserved for gm2621 and gm2611; Do not connect.
AVSS_DVI	71	AG	Analog GND for DVI input. Reserved for gm2621 and gm2611; Do not connect.
RX2+	72	AI	DVI input channel 2 positive. Reserved for gm2621 and gm2611; Do not connect.
RX2-	73	AI	DVI input channel 2 negative. Reserved for gm2621 and gm2611; Do not connect.
AVDD_DVI_33	74	AP	Analog VDD (3.3V) for DVI input. Reserved for gm2621 and gm2611; Do not connect.
RX1+	75	AI	DVI input channel 1 positive. Reserved for gm2621 and gm2611; Do not connect.
RX1-	76	AI	DVI input channel 1 negative. Reserved for gm2621 and gm2611; Do not connect.
AVSS_DVI	77	AG	Analog GND for DVI input. Reserved for gm2621 and gm2611; Do not connect.
AVDD_DVI_18	78	AP	Analog VDD (1.8V) for DVI input. Must be bypassed with external capacitor(s) to AVSS_DVI. Reserved for gm2621 and gm2611; Do not connect.
AVSS_DVI	79	AG	Analog GND for DVI input. Reserved for gm2621 and gm2611; Do not connect.
RX0+	80	AI	DVI input channel 0 positive. Reserved for gm2621 and gm2611; Do not connect.
RX0-	81	AI	DVI input channel 0 negative. Reserved for gm2621 and gm2611; Do not connect.
AVDD_DVI_33	82	AP	Analog VDD (3.3V) for DVI input. Reserved for gm2621 and gm2611; Do not connect.
RXC+	83	AI	DVI clock input positive. Reserved for gm2621 and gm2611; Do not connect.
RXC-	84	AI	DVI clock input negative. Reserved for gm2621 and gm2611; Do not connect.
AVSS_DVI	85	AG	Analog GND for DVI input. Reserved for gm2621 and gm2611; Do not connect.
AVDD_DVI_18	86	AP	Analog VDD (1.8V) for DVI input. Must be bypassed with external capacitor(s) to AVSS_DVI. Reserved for gm2621 and gm2611; Do not connect.

Table 4: Clocks

Pin Name	No	I/O	Description
VDD_RPLL_18	106	P	Digital 1.8V power for PLL.
VSS_RPLL	107	G	Ground for PLL.
XTAL	108	AO	Connect to 14.3MHz crystal. Should be bypassed with capacitor to AVDD_RPLL_33.
TCLK	109	AI	Connect to 14.3MHz crystal. Should be bypassed with capacitor to AVDD_RPLL_33.
AVDD_RPLL_33	110	AP	Analog power (3.3V) for PLL.

Table 5: Digital Power and Ground

Pin Name	No	I/O	Description
RVDD_33	53 63 91	P	Digital output VDD. Connect to digital 3.3V.
CVDD_18	17 55 87 118	P	Core VDD. Connect to digital 1.8V.
CRVSS	18 52 54 88 117	G	Chip digital ground.

Table 6: System Interface

Pin Name	No	I/O	Description
DDC_SCL_VGA	64	I	DDC2Bi clock for Analog Port
DDC_SDA_VGA	65	IO	DDC2Bi data for Analog Port, internal pullup of 10K ohms.
DDC_SCL_DVI/ HOST_SCL	66	I	DDC2Bi clock for DVI Port or host 2-wire clock signal for debugging.
DDC_SDA_DVI/ HOST_SDA	67	IO	DDC2Bi data for DVI Port or host 2-wire data signal for debugging, internal pullup of 10K ohms.
GPO_0	51	IO	General-purpose output GPO_0. Also used for bootstrap control.
GPO_1	56	IO	General-purpose output GPO_1. Also used for bootstrap control.
GPO_2	57	IO	General-purpose input/output GPO_2. Also used for bootstrap control.
GPO_3	58	IO	General-purpose output GPO_3. Also used for bootstrap control.
PWM0 / GPO_4	50	IO	PWM0 output or optional general-purpose output GPO_4. Also used for bootstrap control.
GPO_6	105	O	General-purpose output GPO_6. Output drive limited to 1.8V only.
PWM1 / GPO_5	119	IO	PWM1 output or optional general-purpose output GPO_5. Also used for bootstrap control.
RESETn	111	AIO	Bypass with 0.01uF capacitor to GND.
GPIO_8	120	IO	General-purpose input/output 8
GPIO_9	121	IO	General-purpose input/output 9
GPIO_10	122	IO	General-purpose input/output 10
GPIO_11	123	IO	General-purpose input/output 11
GPIO_12	124	IO	General-purpose input/output 12
GPIO_13	125	IO	General-purpose input/output 13
GPIO_14	126	IO	General-purpose input/output 14

Table 7: General-Purpose LBADC

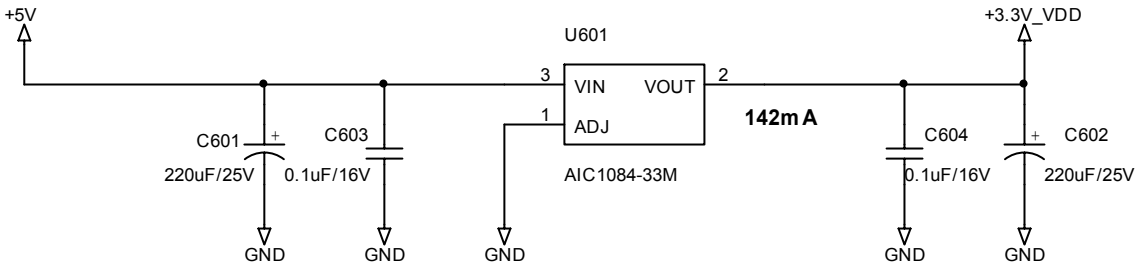
Pin Name	No	I/O	Description
LBADC_VSS	112	G	Ground for general-purpose LBADC.
LBADC_IN3	113	AI	General-purpose LBADC input 3.
LBADC_IN2	114	AI	General-purpose LBADC input 2.
LBADC_IN1	115	AI	General-purpose LBADC input 1.
LBADC_VDD_33	116	P	3.3V supply for general-purpose LBADC. Connect to the same power rail as RVDD_33.

Table 8: SPI ROM

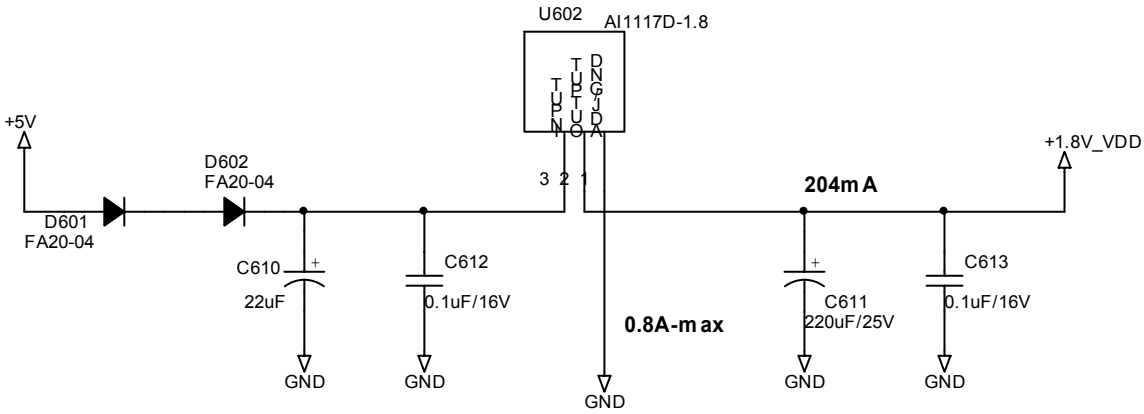
Pin Name	No	I/O	Description
SPI_CSn	59	IO	SPI ROM chip select. Also used for bootstrap control.
SPI_CLK	60	IO	SPI ROM Clock output.
SPI_DI	61	IO	SPI ROM Data input. Connect this pin to the data output of Serial FLASH.
SPI_DO	62	IO	SPI ROM Data output. Connect this pin to the data input of Serial FLASH.

2.3 DC to DC

The required power supply are different for each chip, and the voltage of 12v & 5v offered by PWPC can not reach the requirement, thus two pieces of DC to DC chips (AIC1084, AI1117D) are utilized. The circuit diagrams are as follows;



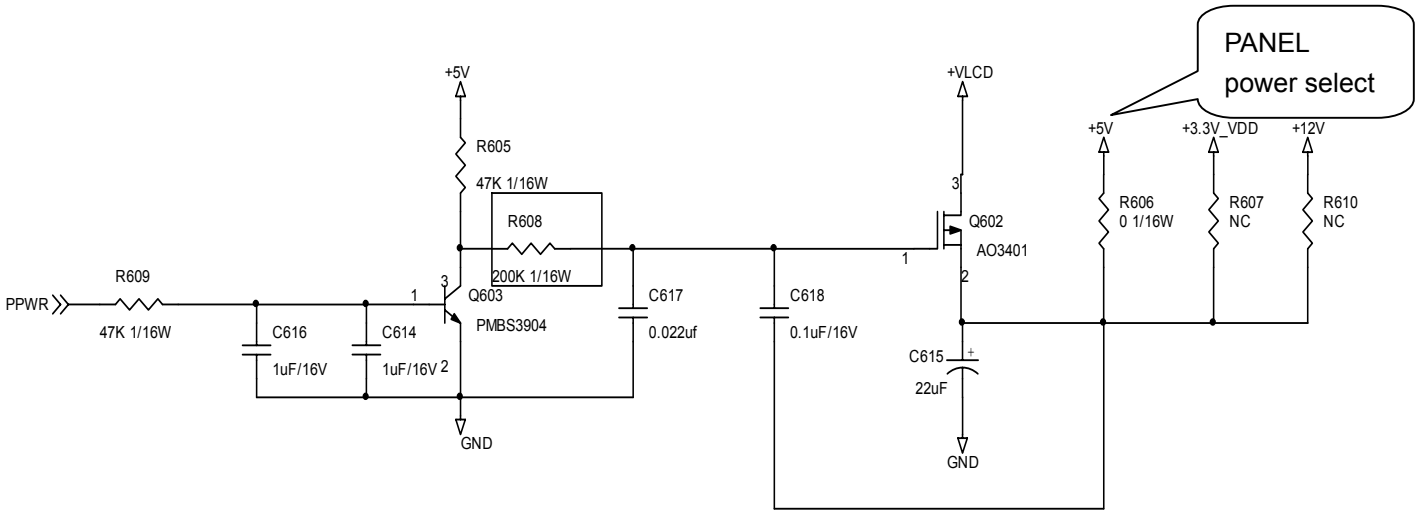
5V TO 3.3V



5V TO 1.8V

2.4 Panel Control Circuit

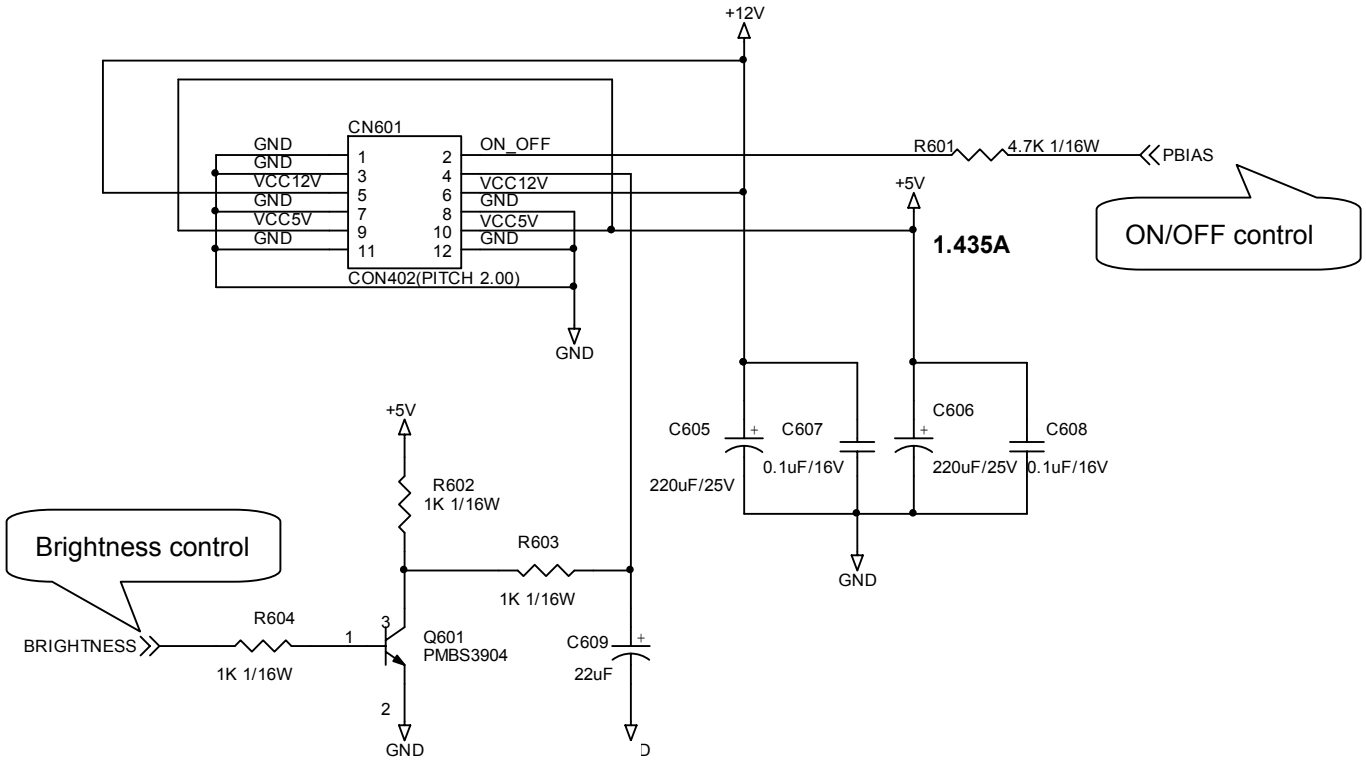
Output from PIN127 of U401 goes high making Q603, Q602 turn on and provides 5V to LCD panel. When the output level is low it is in the energy saving energy mode and Q603, Q602 cause the panel to turn off.



2.5 On/Off /Brightness control circuit

ON/OFF control: When it works well, the outputs are high level, and low in saving energy state.

Brightness control: When it works well, the output PWM pulse from PIN50 of U401 adjusts the brightness, the smaller the duty, the higher the brightness.



3. PWPC

PWPC board combines to adapter and inverter, this design has the merits in predigesting constructions, reducing cost and improving product's capability.

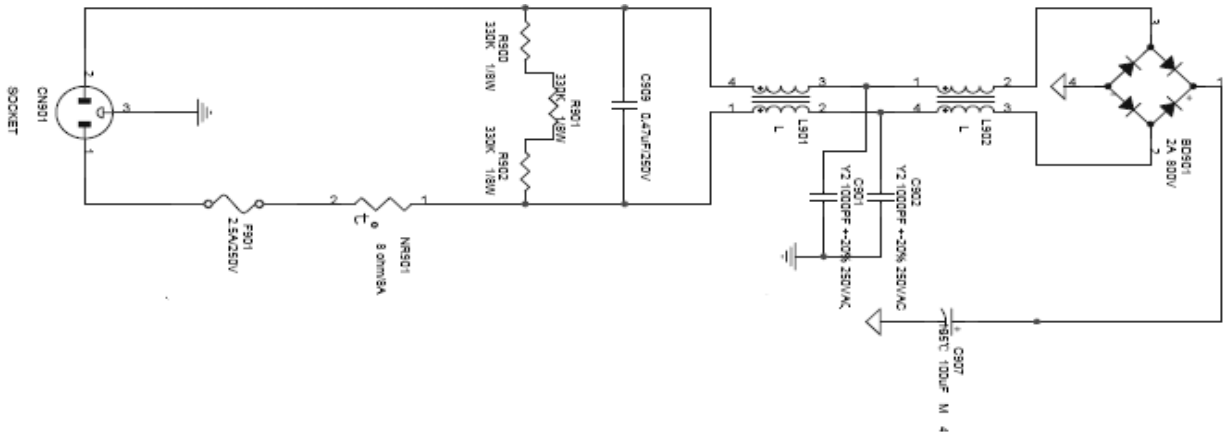
Adapter which commonly consists of bridge rectifier and filter, start circuit, PWM control circuit (LD7575), protection circuits and convert to 12V, 5V DC voltage by input 90V-240V AC voltage that provide power supply for each chips in the main board and inverter.

Inverter is DC TO AC circuit. It changes the 12V DC of power supply to about 600-800V AC that drives the backlight. It mostly consists of starting circuit, PWM controller, output circuit and protection circuit etc.

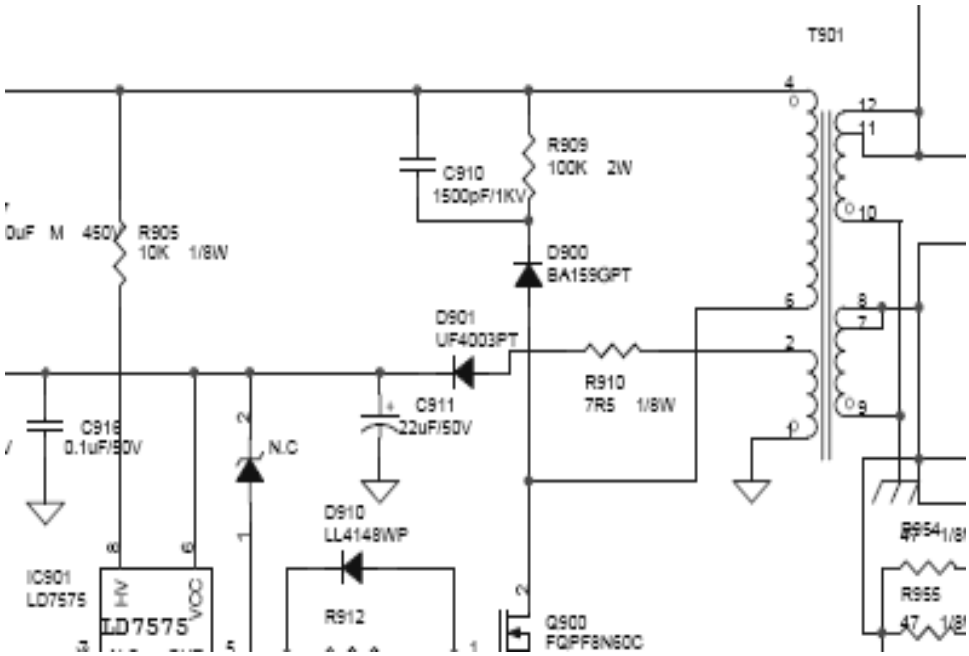
3.1 Adapter

EMI filter circuit: It is commonly used to get rid of the disturbance existing in the electric net or coming from outside. L901, L902 is used to reduce the symmetry disturbance and filter the high frequency noise; C901, C904 can restrain the symmetry and filter the low frequency noise; R900, R901, R902 is used for discharging the capacitance when power is cut off. NR901 is used to prevent the impulse of surge current when the monitor starts up, which possesses minus temperature modulus.

Rectifier and filter circuit: The AC input is changed to a high DC voltage, this magnitude is the product of 1.414 to AC after it is commuted by bridge rectifier (BD901) and filtered by the capacitance (C907).

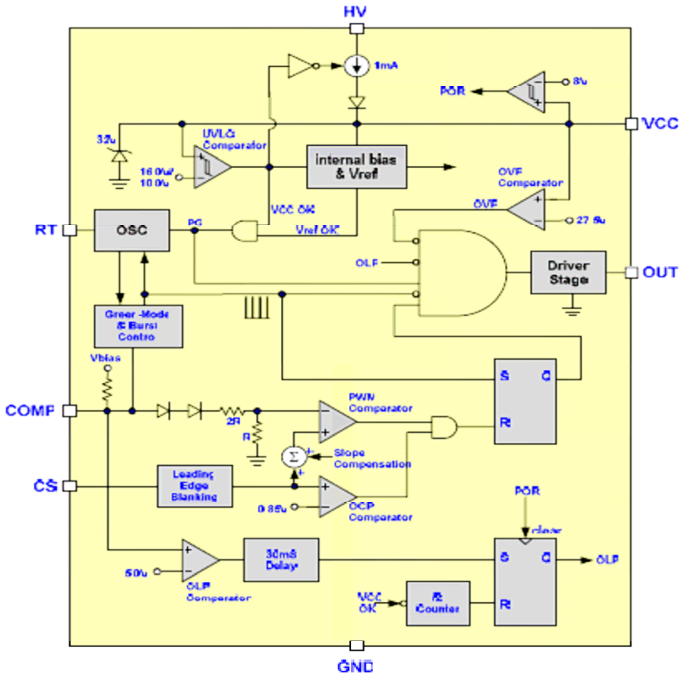


Start-up circuit: After being commuted and filtered, the high DC voltage is distributed through R905. The start-up is carried out when the lowered voltage is supplied to IC901 (LD7575) with current 30uA. The output pulse makes the switch-power pipe operate. The voltage produced at the two terminals of T901 is offered to PIN6 of IC901 after being commuted by D901 and filtered by C911, which concludes the process.



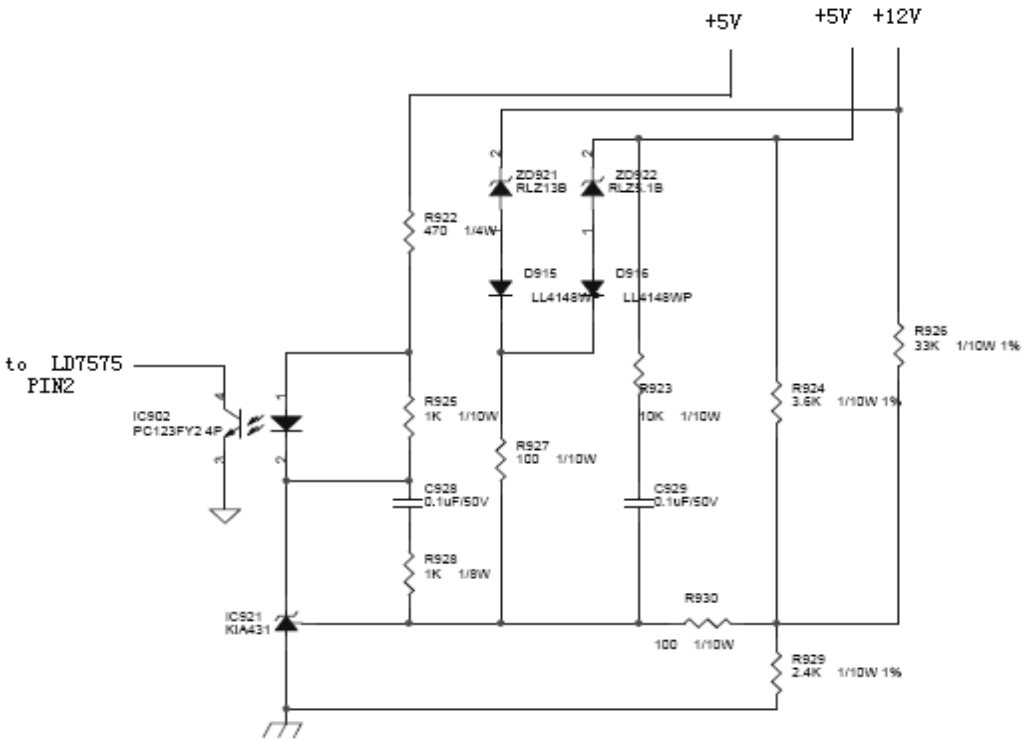
LD7575: LD7575 is a current-mode PWM controller with excellent power-saving operation. It features a high voltage current source to directly supply the startup current from bulk capacitor and further to provide a lossless startup circuit. The integrated functions such as the leading-edge blanking of the small package provide the users a high efficiency, minimum external component counts, and low cost solution for AC/DC power, The function of each pin and the inside circuit diagram are as follows:

PIN	NAME	FUNCTION
1	RT	This pin is to program the switching frequency. By connecting a resistor to ground to set the switching frequency.
2	COMP	Voltage feedback pin (same as the COMP pin in UC384X), By connecting a photo-coupler to close the control loop and achieve the regulation.
3	CS	Current sense pin, connect to sense the MOSFET current
4	GND	Ground
5	OUT	Gate drive output to drive the external MOSFET
6	VCC	Supply voltage pin
7	NC	Unconnected Pin
8	HV	Connect this pin to positive terminal of bulk capacitor to provide the startup current for the controller. When Vcc voltage trips the UVLO(on), this HV loop will be off to save the power loss on the startup circuit.

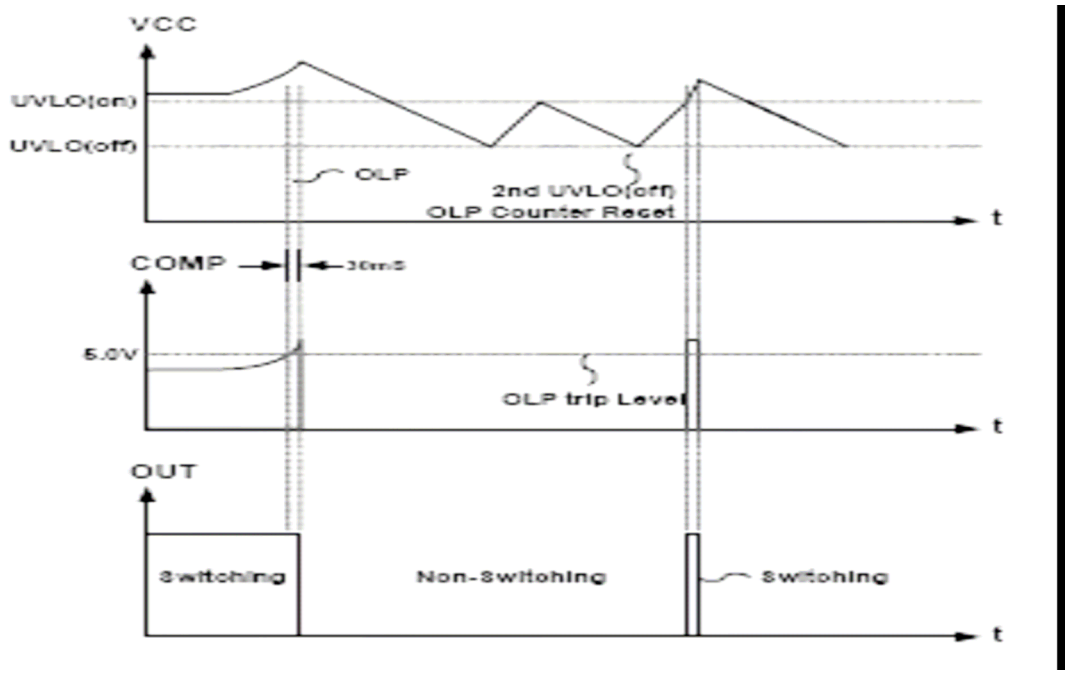


Protection circuit: over-voltage protection: ZD921 or ZD922 can be broken down when12V or 5V DC voltage increases, which leads to the light inside the photo electricity coupling component gets brighter abnormally, and PIN2 connects to grounding through photosensitive transistor, then it cuts off the pulse output. That is also effective way for over-voltage protection. Temperature protection: When the temperatures of the components in the working circuit exceed the maximum, the temperature-protection unit inside IC connects a resistor from PIN5 to ground to test the temperature. The pulse output is cut off instantly when the voltage of pin5 is lower than 0.65V, and it protects the important components in the circuit. Over-current protection: use fuse F902 and F903 also can achieve it like the Over load protection.

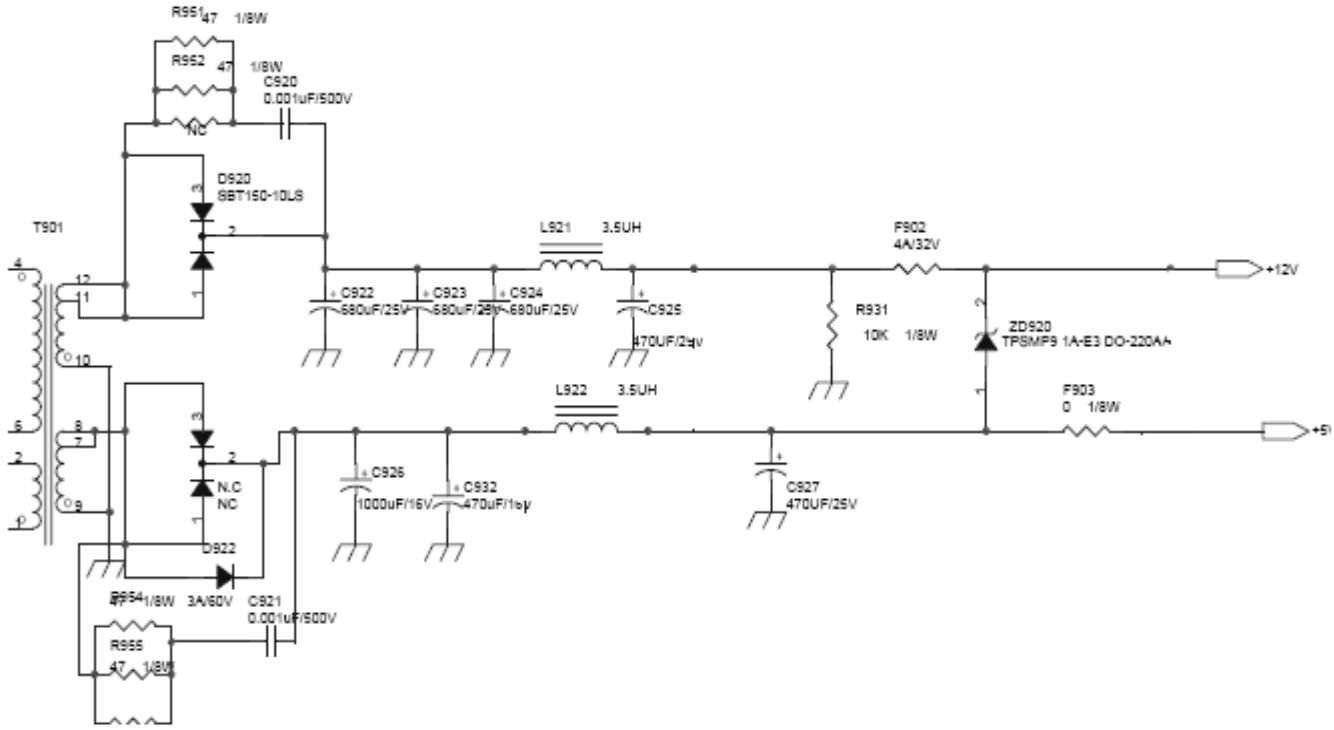
Over load protection: when load is so high, and under the fault condition, the feedback system will force the voltage loop towards the saturation and thus pull the voltage on COMP pin (VCOM) to high. Whenever the VCOMP trips the OLP threshold 5.0V and keeps longer than 30ms, the protection is activated and then turn off the gate output to stop the switching of power circuit



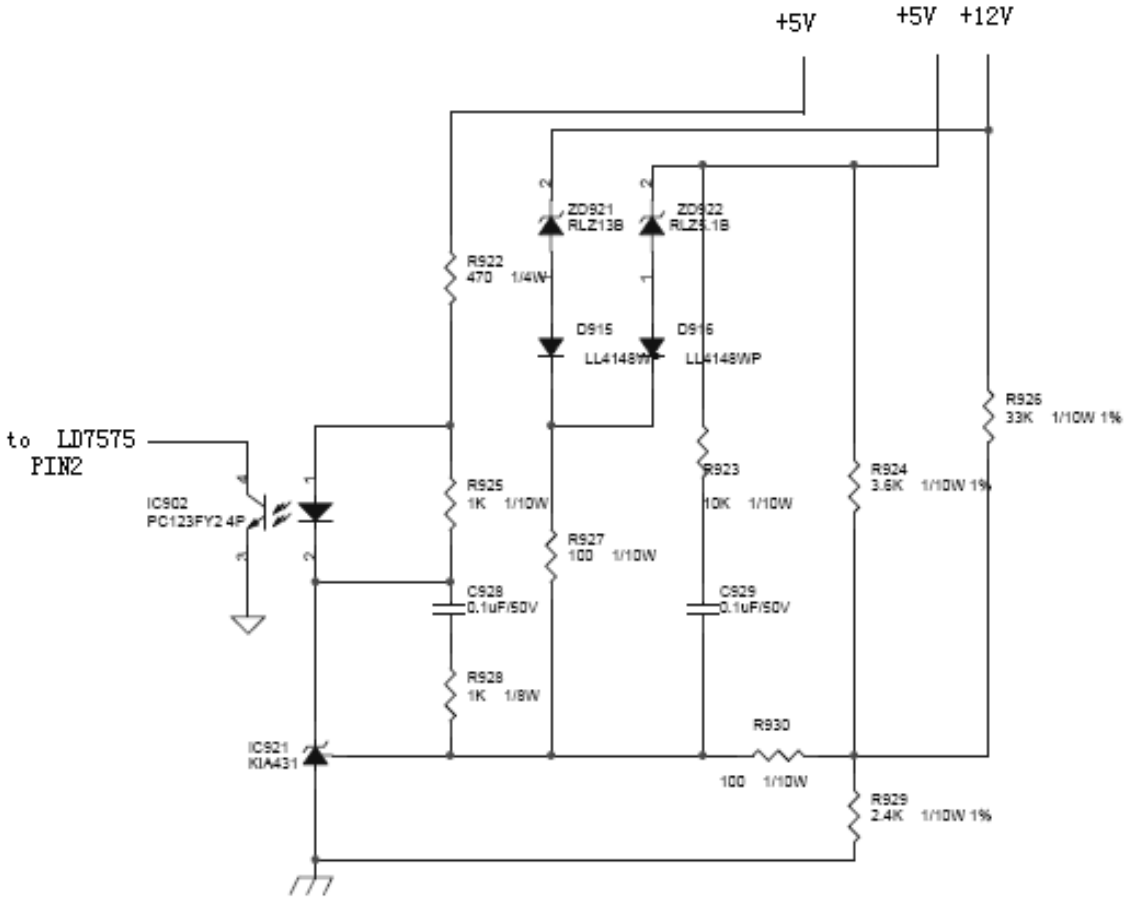
Over-voltage protection circuit



Commute and filter output circuit: When PIN5 of IC901 has pulse output, Q901 gets through while being given a high level, and there is a current in the primary coil of T901 with a voltage up terminal positive and down negative, so the secondary coil produces a reverse electromotive force. It is the stage of storing energy in the coil because D920, D922 are closed. But, while being given a low level, the transistor closes. The primary coil produces a EMF with its down terminal positive and up negative, and the secondary coil appears a reverse EMF at the same time, then D920 get through accompanied with a voltage output of 12V through C922, C923, C924, C925 which are used to filter. And D922 get through accompanied with a voltage output of 5V through C926, C932, C927 which are used to filter. R951and R952 and C920 contained in the RC circuit are used to absorb the surge voltage produced by D920 R954 and R955 and C921 contained in the RC circuit is used to absorb the surge voltage produced by D922.



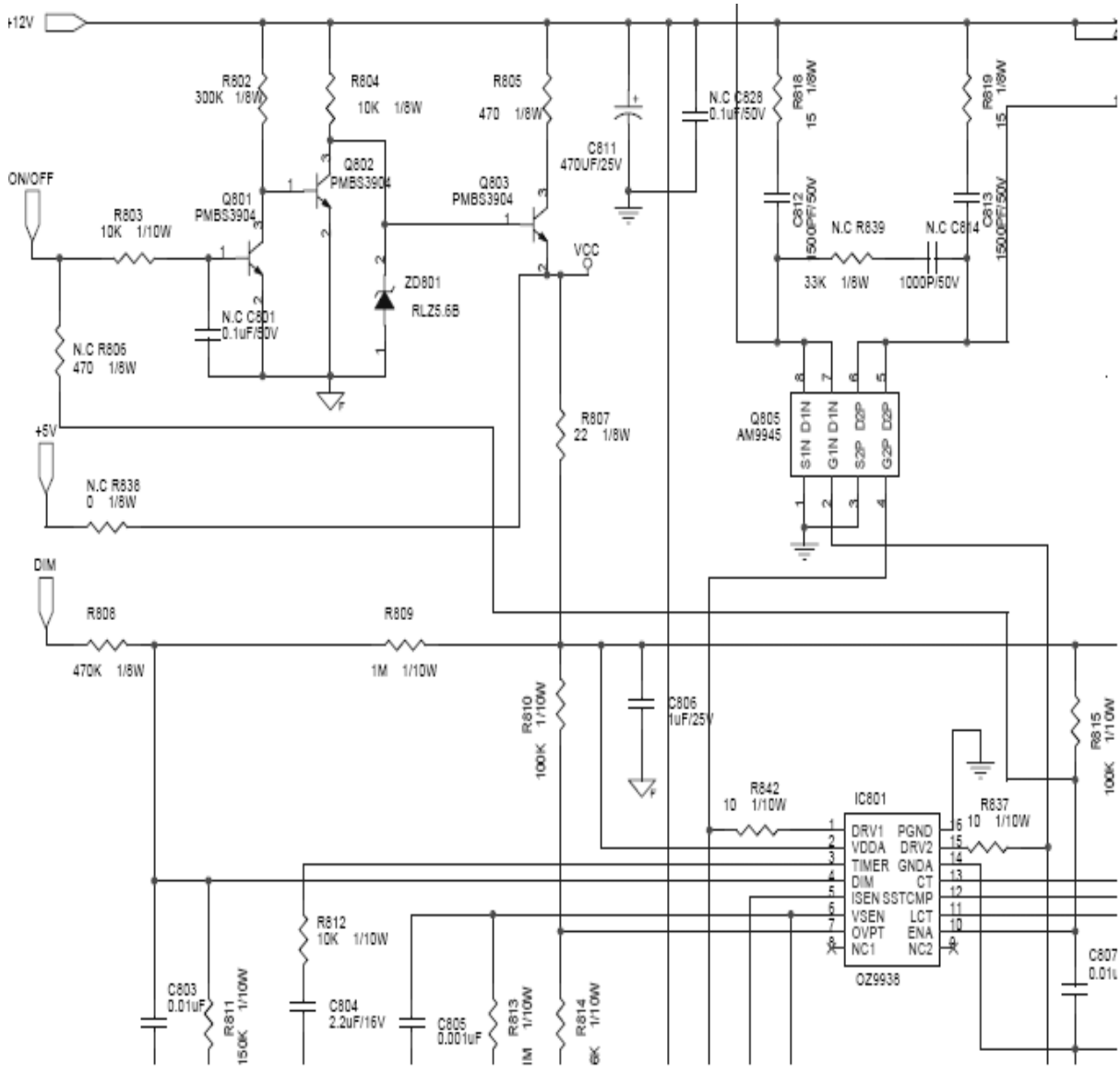
Circuit for steadying voltage: The rising of electric net voltage can result in the increase of output voltage, which leads to the increase of the current that flows through photoelectric coupling unit. The brighter the light produced inside the photoelectric coupling unit, the more easily the current can get through the photosensitive, thus the smaller the resistance. That is the reason for the decrease of voltage of PIN2. When the voltage is applied to the reverse-phase terminal of error amplifier inside LD7575, it controls the duty pulse output and decline the voltage output. The whole process acts stable for the output. When the voltage decreases, the same principle applies for steadying the output.



3.2 Inverter

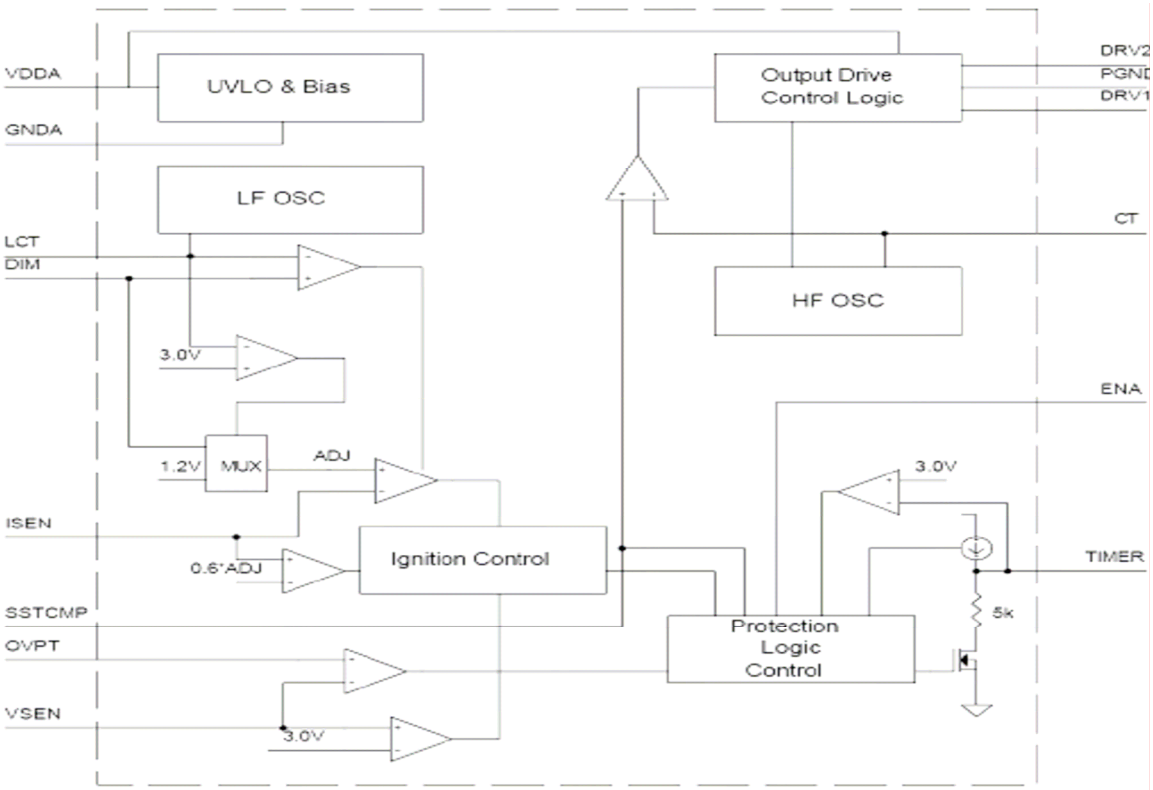
Input interface section: 1. 12V DC input, offered by power section. 2. ON/OFF enable signal, offered by GMZAN3SL in the main board with its value of 0Vor 5V. When OFF=0V, the inverter will not work. When OFF=3V, the inverter will work under normal situation. 3. DIM signal for luminance modulation, offered by GMZAN3SL in the main board with its range of 0~5V. The Inverter offers different currents to the loads because of the different feedback of voltage to the feedback-terminal of PWM. The smaller the value of DIM, the smaller the current output of Inverter, the darker the brightness.

Voltage start-up circuit: It consists of a PNP and two NPN transistors with two working stages. The first stage: When the ON/OFF enable voltage is 0V, the Q801, Q802 and Q803 are closed. The DC voltage at emitter of Q206 can not be applied to PIN2 and PIN10 of IC801, and there are no pulse output at PIN1 and PIN15. Therefore, the inverter will not work. ON/OFF is high level, which passes through Q801, Q802 and Q803, then 12V is applied to PIN32 and PIN10 of IC801 resulting in the operation of the IC. Therefore, IC801 produces a pulse output to control the switch transistor, and the inverter which applied high voltage across the backlight.



OZT9938: It is a unique, high-efficiency, Cold Cathode Fluorescent Lamp (CCFL) backlight inverter controller that is designed for wide input voltage inverter applications. Additionally, the 0Z9938 performs the lamp dimming function with an analog voltage or low frequency Pulse Width Modulation (PWM) control. It's designed for driving large-size LCD, and it has two driver signals for most power conversion topologies while maintaining high-efficiency operation. The function of each pin and the circuit diagram inside are as follows:

Pin No.	Names	Description
1	DRV1	Drive output
2	VDDA	Supply voltage input
3	TIMER	Timing capacitor to set striking time and shutdown delay time
4	DIM	Analog dimming or Internal LPWM dimming or external PWM pulse input for dimming function
5	ISEN	Current sense feedback
6	VSEN	Voltage sense feedback
7	OVPT	Over-voltage/ over-current protection threshold setting pin
8	NC	No connection
9	NC	No connection
10	ENA	ON/OFF control of IC
11	LCT	Timing capacitor to set internal PWM dimming frequency and also a pin for analog dimming selection
12	SSTCMP	Capacitor for soft start time and loop compensation
13	CT	Timing resistor and capacitor for operation and striking frequency
14	GNDA	Ground for analog signals
15	DRV2	Drive output
16	PGND	Ground for power paths

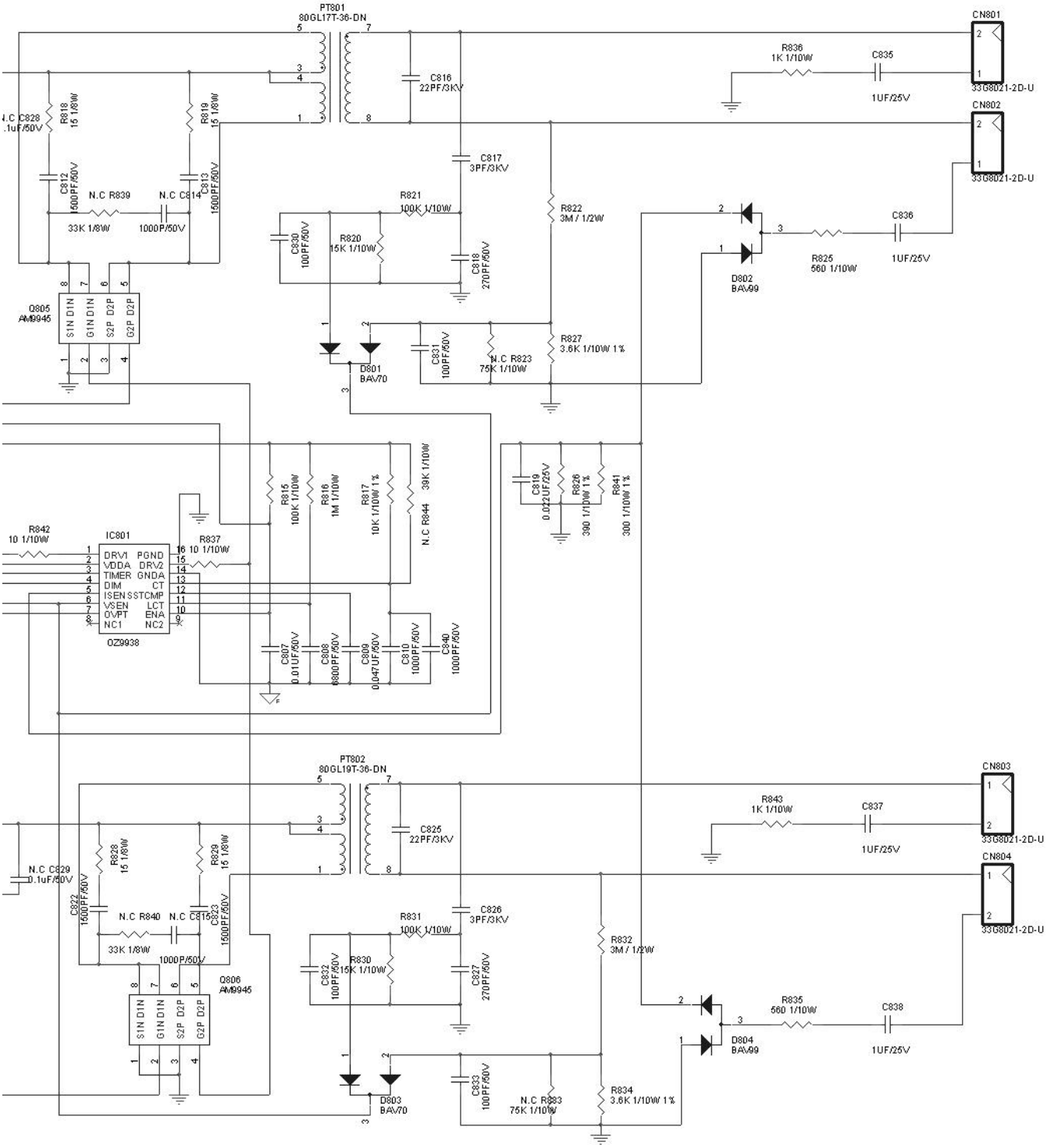


Protection circuit: Over-voltage protection and Over-current protection are monitored by the voltage on VSEN (pin6). During normal operation, if a CCFL is open, the voltage at VSEN increases, Once it exceeds the voltage we defined, preset voltage set by OVPT (pin7), the driver output duty cycle is regulated and the shutdown delay timer is activated. Once the TIMER pin reaches 3V, the IC will shut down and latch. OVPT voltage setting is determined by R814 and R810 connected to OVPT.

The approximate shutdown delay time is calculated by the following equation:

$T(sec)=0.33xC_{timer}(uF)$

To resum operation, toggle the PWM signal or restart VDDA.



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Recommended Spare Parts List (For Europe)

RoHS Model

Model LCD190V-BK (B)

*** LCD PANEL and PWB ASSYS ***

For Europe (TPV Part Number)	Description	Remark
750GLU90N4532M000N	PANEL LCD 19" EN04 V5C NDS AUO	
CBPC6AGDN2QP	CONVERSION BOARD	
PWPC1942HDN1P	POWER BOARD	
KEPC986KADP	KEY BOARD	

*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***

For Europe (TPV Part Number)	Description	Remark
095G8014 16670	WIRE HARNESS	
095G8018 3X503	LVDS CABLE	
089G1738LAA553	SIGNAL CABLE D-SUB GOLDFULL	

*** APPEARANCE PARTS ***

For U.S. (TPV Part Number)	Description	Remark
011G6054 1	FRAME	
052G 1207 A	ALUMINIUM TAPE	
A34G0170 TXA1T 30	BEZEL	Have including the KEY PAD and LENS
705GQ9K0P34021	STAND-BASE ASS'Y	
A15G0027 3	MAIN FRAME	
A34G0050 TW 1T	REAR COVER	Have including the GATE COVER
A15G0028 1	VESA BKT	
A33G0030 TW 1T 32	CABLE COVER	
0M1G 330 4120	SCREW	
0M1G 330 5120	SCREW	
0M1G 330 6 47	SCREW	
0M1G 340 10225	SCREW	
0M1G1140 6120	SCREW	
0M1G1730 6120	SCREW	
0M1G3030 6125	SCREW	
AM1G1740 8 47	SCREW	
AM1G1740 12225	SCREW	
0Q1G 130 6120	SCREW (T3X6)	
0M1G1730 10128	SCREW	
Q40G 19N84225B	RATING LABEL	

***** PRINTED & PACKING MATERIALS *****

For Europe (TPV Part Number)	Description	Remark
045G 76 28NV2	PE BAG FOR CLAMP	
Q44G394484210A	CARTON	
Q44G9038 1	EPS(L)	
Q44G9038 2	EPS(R)	
044GH600 1	HANDLE 2	
050G 600 4	HANDLE 1	
045G 88606NV1	PE BAG FOR BASE	
045G 88626NV1	PE BAG FOR MONITOR	
045G 88609 C	EPE COVER	
089G404A18NISN	POWER CORD	
Q41G7800842A76	SETUP SHEET 170V/190V EU	
Q41G7800842A75	MANUAL	
045G 76 28V9A	PE BAG FOR MANUAL	
041G7800842 8A	CAUTION SHEET	
041G780084218B	OFFICE LIST	
041G780084225B	NAVISET	
070G2000530NMV	CD-ROM	
041G780084294A	PAPER SHEET	

Recommended Spare Parts List (For Asia/Australia)

RoHS Model

Model LCD190V-BK (B)

*** LCD PANEL and PWB ASSYS ***

For Asia/Australia (NECDS Part Number)	Description	Remark
79FD1897	<G>M190EN04 V5C AUO	
79FD2343	<G>CONVERSION BOARD	
79FD2278	<G>POWER BOARD	
79FD2252	<G>KEY BOARD	

*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***

For Asia/Australia (NECDS Part Number)	Description	Remark
79FD2267	<G>WIRE HARNESS	
79FD2288	<G>LVDS CABLE	
79FD2318	<G>SIGNAL CABLE D-SUB GOL	

*** APPEARANCE PARTS ***

For Asia/Australia (NECDS Part Number)	Description	Remark
79FD1180	<G>FRAME	
79FD3731	<G>ALUMINIUM TAPE	
79FD2373	<G>BEZEL	Have including the KEY PAD and LENS
79FD2372	<G>STAND-BASE ASS'Y	
79FD2340	<G>MAIN FRAME	
79FD2249	<G>REAR COVER	Have including the GATE COVER
79FD2319	<G>VESA BKT	
79FD2245	<G>CABLE COVER	
79FD1540	<G>SCREW	
79FD1559	<G>SCREW M3X5	
79FD2358	<G>SCREW	
79FD2277	<G>SCREW	
79FD1538	<G>SCREW	
79FD1539	<G>SCREW	
79FD2276	<G>SCREW	
79FD2171	<G>SCREW	
79FD2331	<G>SCREW	
79FD1730	<G>SCREW (T3X6)	
79FD2375	<G>SCREW	
79FD2377	<G>RATING LABEL	

***** PRINTED & PACKING MATERIALS *****

For Asia/Australia (NECDS Part Number)	Description	Remark
79FD1524	<G>PE BAG FOR CLAMP	
79FD2378	<G>CARTON	
79FD2379	<G>EPS(L)	
79FD2380	<G>EPS(R)	
79FD1205	<G>HANDLE2	
79FD1207	<G>HANDLE 1	
79FD1803	<G>PE BAG FOR BASE	
79FD1452	<G>PE BAG FOR MONITOR	
79FD1643	<G>EPE COVER	
79FD1666	<G>POWER CORD	
79FD2368	<G>SETUP SHEET 170V/190V	
79FD2367	<G>MANUAL	
79FD1291	<G>PE BAG FOR MANUAL	
79FD1661	<G>CAUTION SHEET	
79FD1658	<G>OFFICE LIST	
79FD3741	<G>NAVISET	
79FD2361	<G>CD ROM	
79FD1887	<G>PAPER SHEET	

Recommended Spare Parts List (For Europe)

RoHS Model

Model LCD190V-BK-1 (B) (Vista Model)

AUO Panel (M190EG02 V4)

*** LCD PANEL and PWB ASSYS ***

For Europe (TPV Part Number)	Description	Remark
750GLU90G2412M000N	<G>LCD M190EG02 V40 AUO	
PWPC1942HDG2P	<G>POWER G1994-1-X-X-1-06	
CBPC6AGDNMQP	<G>CONVERSION G1642-1-NE-	
KEPC986KADP	<G>KEY BOARD	

*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***

For Europe (TPV Part Number)	Description	Remark
095G8014 16670	<G>WIRE HARNESS	
095G8018B3X508	<G>LVDS CABLE 30P-24P 110	
089G1738LAA553	<G>SIGNAL CABLE D-SUB CAB	

*** APPEARANCE PARTS ***

For Europe (TPV Part Number)	Description	Remark
A34G0170 TXA1T 30	<G>BEZEL	
705GQ9K0P34021	<G>BASE	
A34G0044 TW 1T	<G>REAR COVER	
A15G0027 5	<G>MAIN FRAME	
0M1G 330 4120	<G>SCREW	
0M1G3030 5125	<G>SCREW	
0M1G1140 6120	<G>SCREW	
0M1G 340 10225 CR3	<G>SCREW	
0M1G1730 6120	<G>SCREW	
0M1G 330 6 47 CR3	<G>SCREW	
AM1G1740 8 47 CR3	<G>SCREW	
AM1G1740 12225 CR3	<G>SCREW	
0Q1G 330 8120	<G>SCREW 3X8MM	
011G6054 1	<G>FRAME	
052G 1150 C	<G>TAPE(BLACK)	
052G6019 1	<G>YELLOW TAPE	
052G 1207 A	<G>ALUMINIUM TAPE	
A33G0030 TW 1T 32	<G>CABLE COVER	
Q40G 19N84225C	<G>RATING LABEL	

***** PRINTED & PACKING MATERIALS *****

For Europe (TPV Part Number)	Description	Remark
Q45G 88607 33	<G>PE BAG FOR CLAMP	
Q45G 88607 34	<G>PE BAG FOR BASE	
Q45G 88609 98	<G>EPE BAG	
Q44G394484217A	<G>CARTON	
Q44G9038 1	<G>EPS(L)	
Q44G9038 2	<G>EPS(R)	
050G 600 4	<G>HANDLE 1	
044GH600 1	<G>HANDLE2	
089G404A18NISY	<G>POWER CORD I-SHENG	
Q41G780A842 7A	<G>LCD93V/LCD73V MANUAL E	
Q45G 76 28A29	<G>PE BAG FOR MANUAL	
Q41G780A842 8A	<G>LCD93V/LCD73V SETUP SH	
041G780084225B	<G>NAVISET	
041G780084294A	<G>PAPER SHEET	
041G7800842 8A	<G>CAUTION SHEET	
Q41G780084218C	<G>SALES OFFICE LIST	
070G2000537NMV	<G>CD-ROM	

Recommended Spare Parts List (For Asia/Australia)

RoHS Model

Model LCD190V-BK-1 (B) (Vista Model)

AUO Panel (M190EG02 V4)

***** LCD PANEL and PWB ASSYS *****

For Asia/Australia (NECDS Part Number)	Description	Remark
79FD2706	<G>LCD M190EG02 V40 AUO	
79FD2710	<G>POWER G1994-1-X-X-1-06	
79FD2709	<G>CONVERSION G1642-1-NE-	
79FD2252	<G>KEY BOARD	

***** ELECTRICAL PARTS & MISCELLANEOUS PARTS *****

For Asia/Australia (NECDS Part Number)	Description	Remark
79FD2267	<G>WIRE HARNESS	
79FD2707	<G>LVDS CABLE 30P-24P 110	
79FD2239	<G>SIGNAL CABLE D-SUB CAB	

***** APPEARANCE PARTS *****

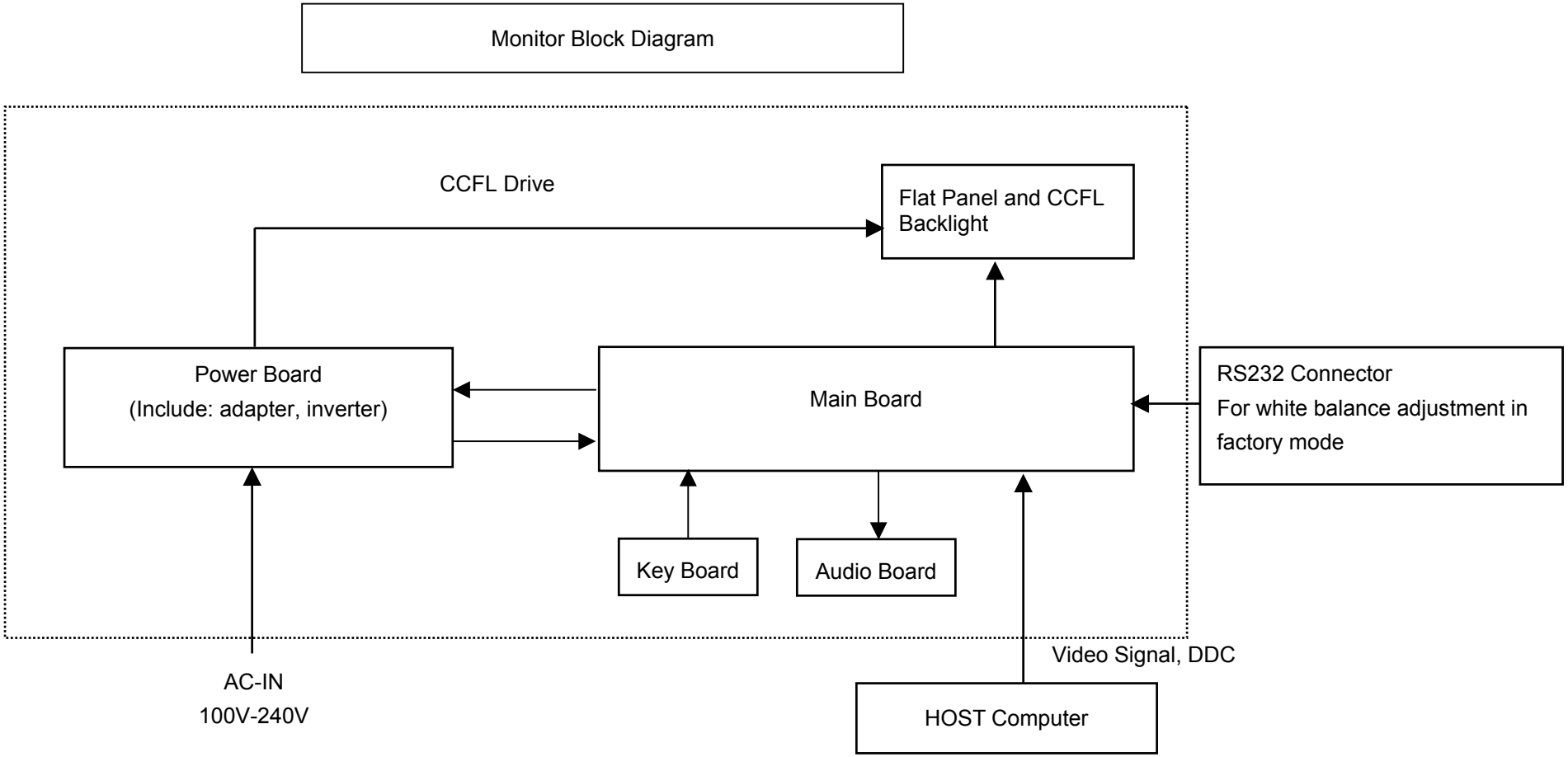
For Asia/Australia (NECDS Part Number)	Description	Remark
79FD2373	<G>BEZEL	
79FD2717	<G>BASE	
79FD2271	<G>REAR COVER	
79FD2708	<G>MAIN FRAME	
79FD1540	<G>SCREW	
79FD2502	<G>SCREW	
79FD1538	<G>SCREW	
79FD2376	<G>SCREW	
79FD1539	<G>SCREW	
79FD2358	<G>SCREW	
79FD2363	<G>SCREW	
79FD2374	<G>SCREW	
79FD1543	<G>SCREW 3X8MM	
79FD1180	<G>FRAME	
79FD2467	<G>TAPE(BLACK)	
79FD2469	<G>YELLOW TAPE	
79FD3731	<G>ALUMINIUM TAPE	
79FD2245	<G>CABLE COVER	
79FD2718	<G>RATING LABEL	

***** PRINTED & PACKING MATERIALS *****

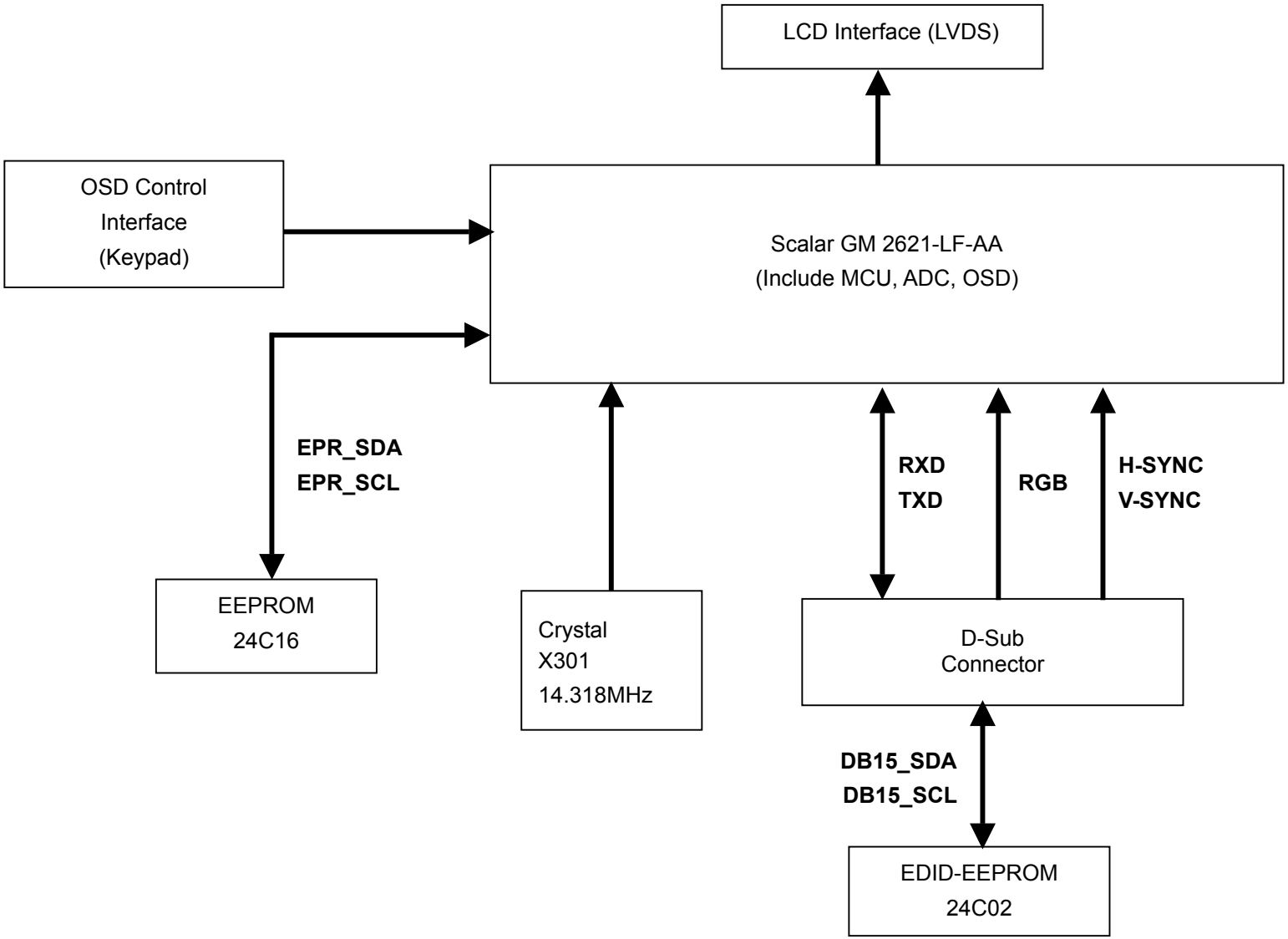
For Asia/Australia (NECDS Part Number)	Description	Remark
79FD2511	<G>PE BAG FOR CLAMP	
79FD2720	<G>PE BAG FOR BASE	
79FD2608	<G>EPE BAG	
79FD2719	<G>CARTON	
79FD2379	<G>EPS(L)	
79FD2380	<G>EPS(R)	
79FD1207	<G>HANDLE 1	
79FD1205	<G>HANDLE2	
79FD2664	<G>POWER CORD I-SHENG	
79FD2667	<G>LCD93V/LCD73V MANUAL E	
79FD2621	<G>PE BAG FOR MANUAL	
79FD2668	<G>LCD93V/LCD73V SETUP SH	
79FD3741	<G>NAVISET	
79FD1887	<G>PAPER SHEET	
79FD1661	<G>CAUTION SHEET	
79FD2482	<G>SALES OFFICE LIST	
79FD2663	<G>CD-ROM	

BLOCK DIAGRAM

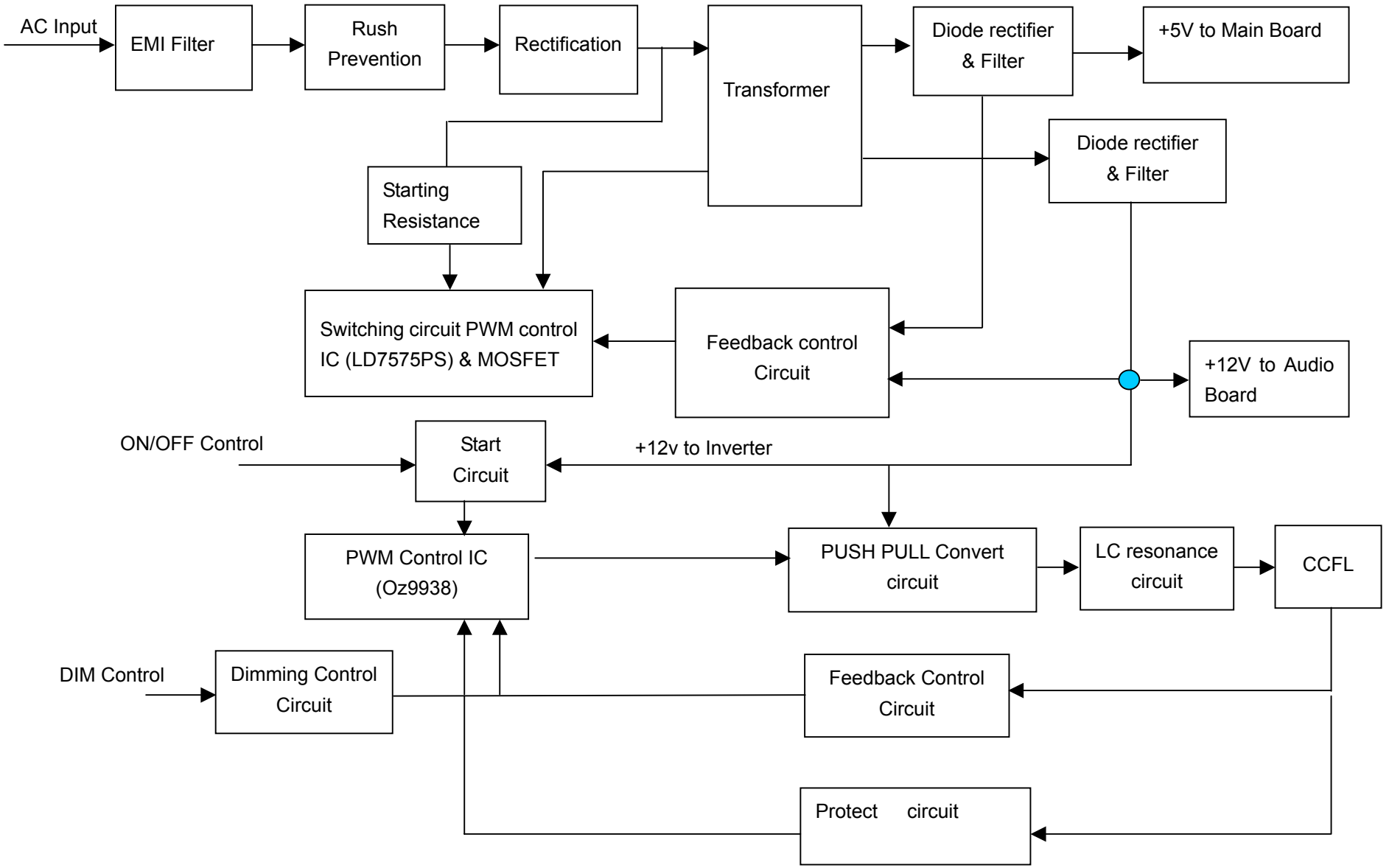
1. THE MONITOR BLOCK DIAGRAM (MODEL: LCD190V-BK)



2. SCALER BOARD BLOCK DIAGRAM (MODEL: LCD190V-BK)



3. POWER BOARD BLOCK DIAGRAM (MODEL: LCD190V-BK)



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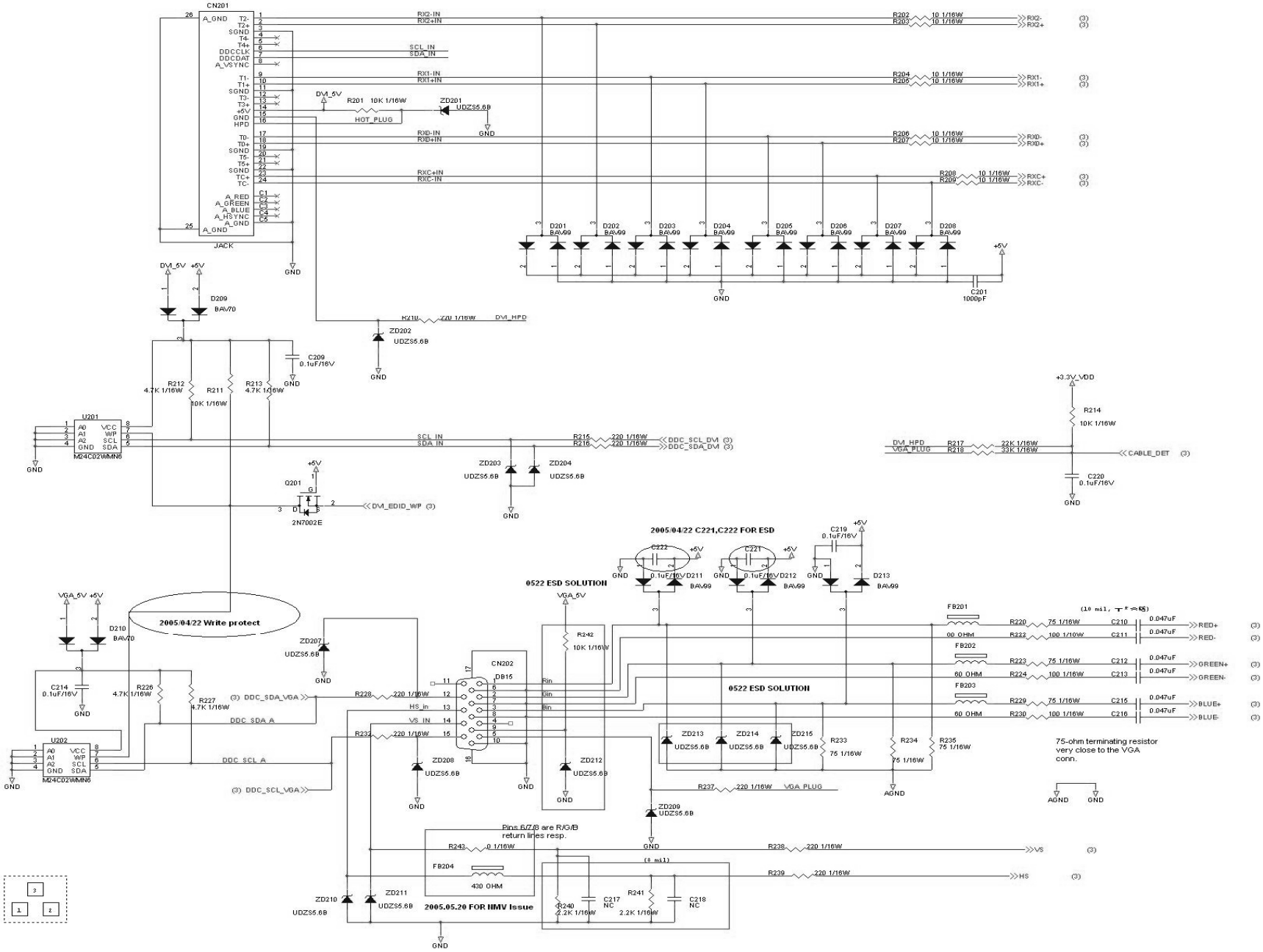
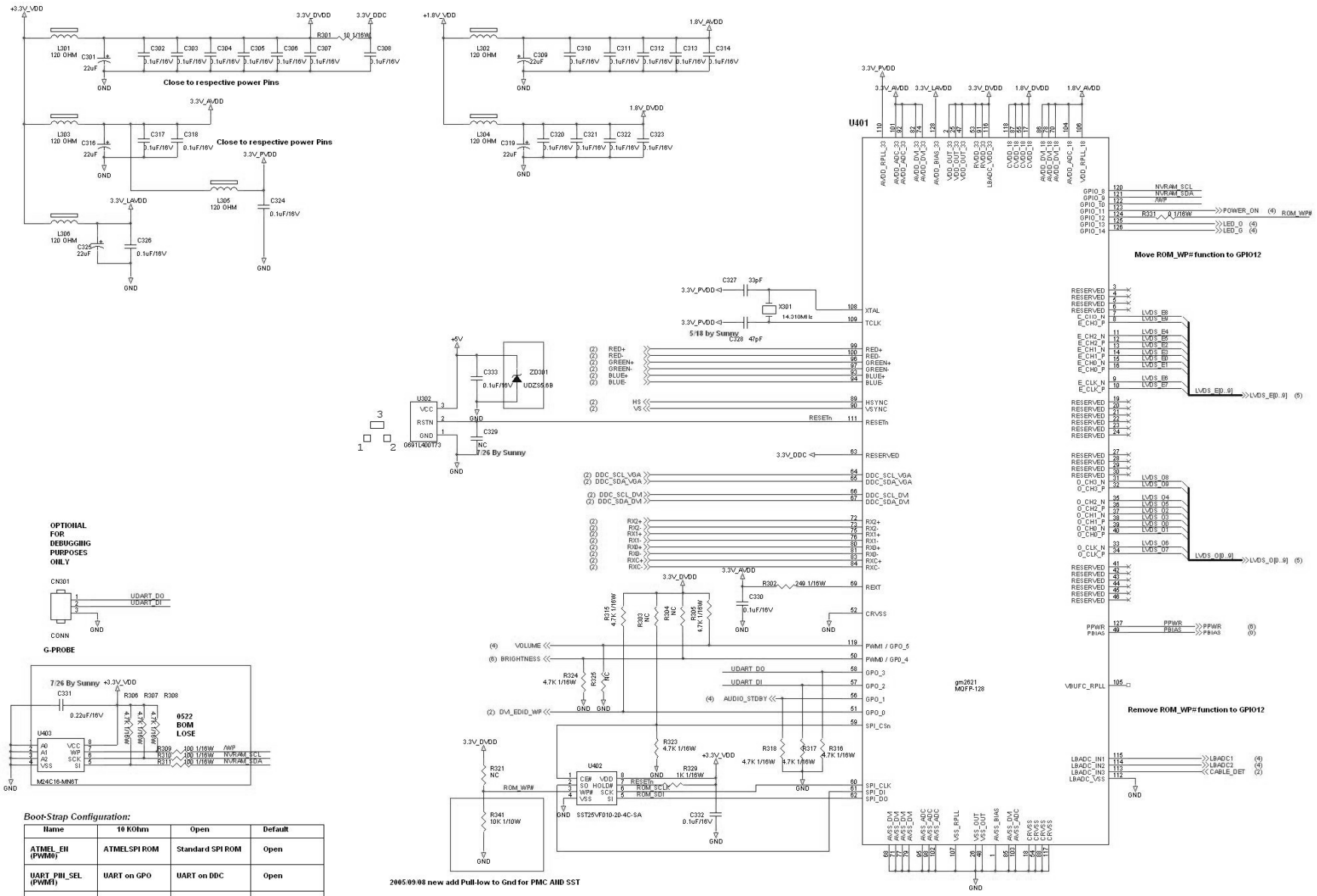


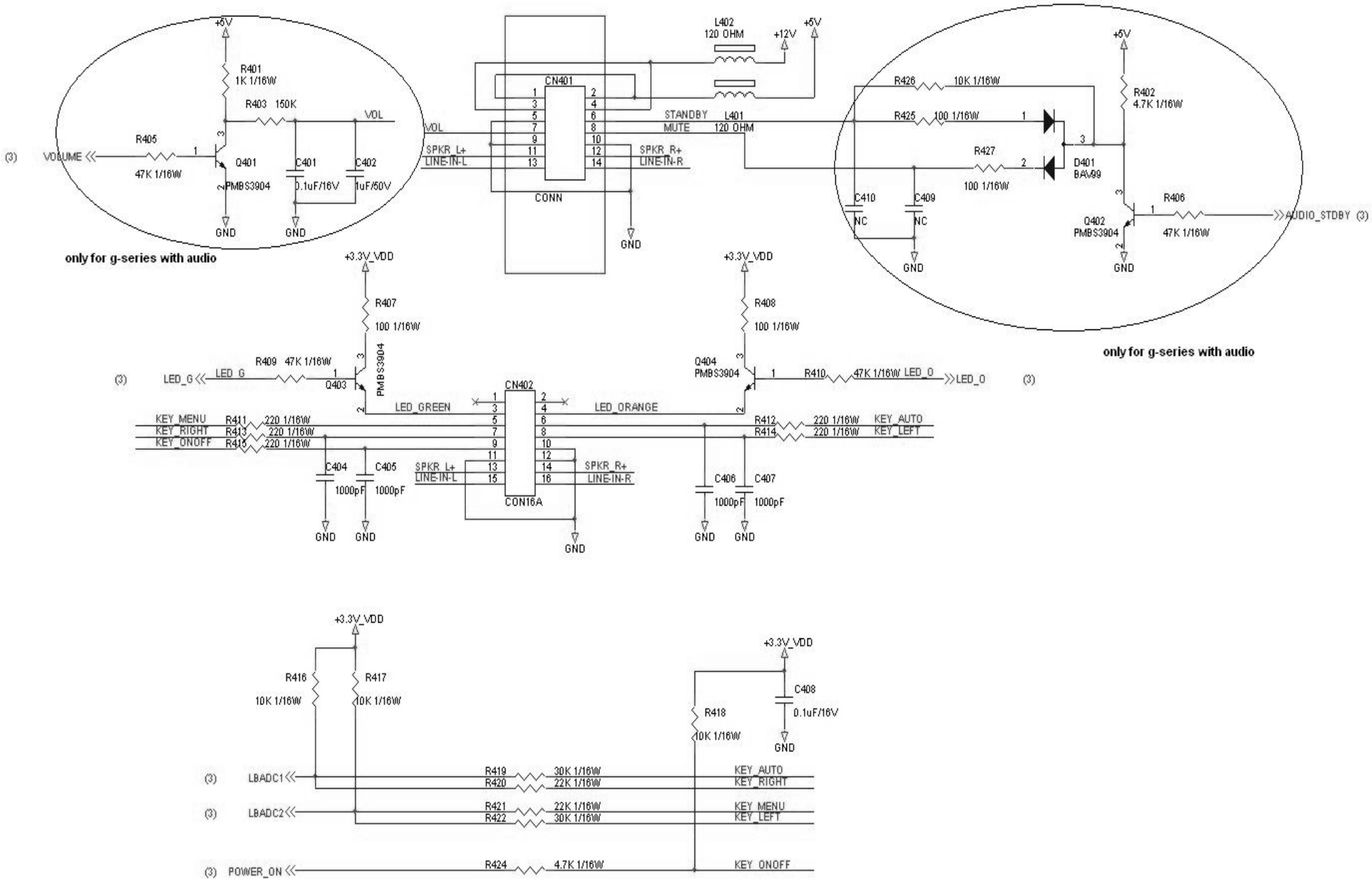
MODEL LCD190V-BK SCHEMATIC DIAGRAM MAIN BOARD (GM2621) (2/8)



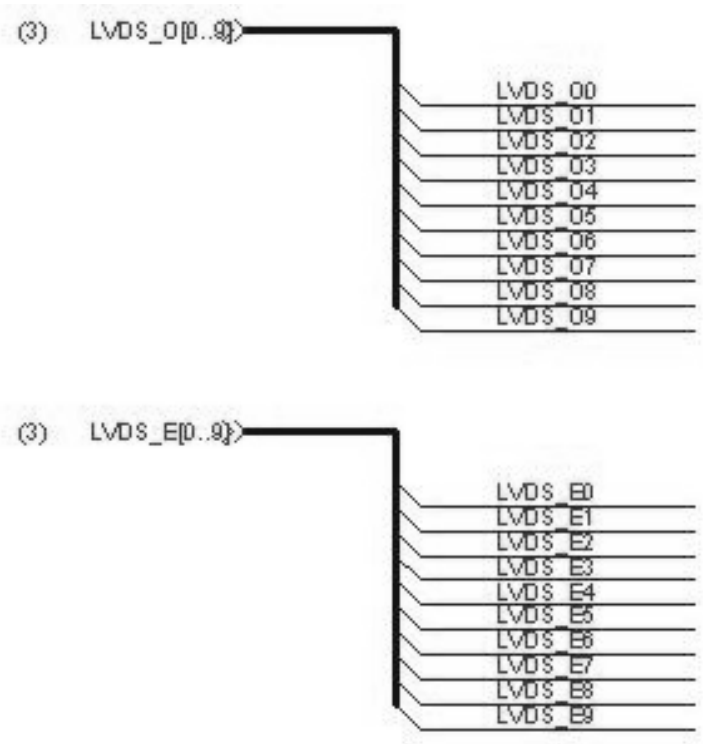
Boot-Strap Configuration:

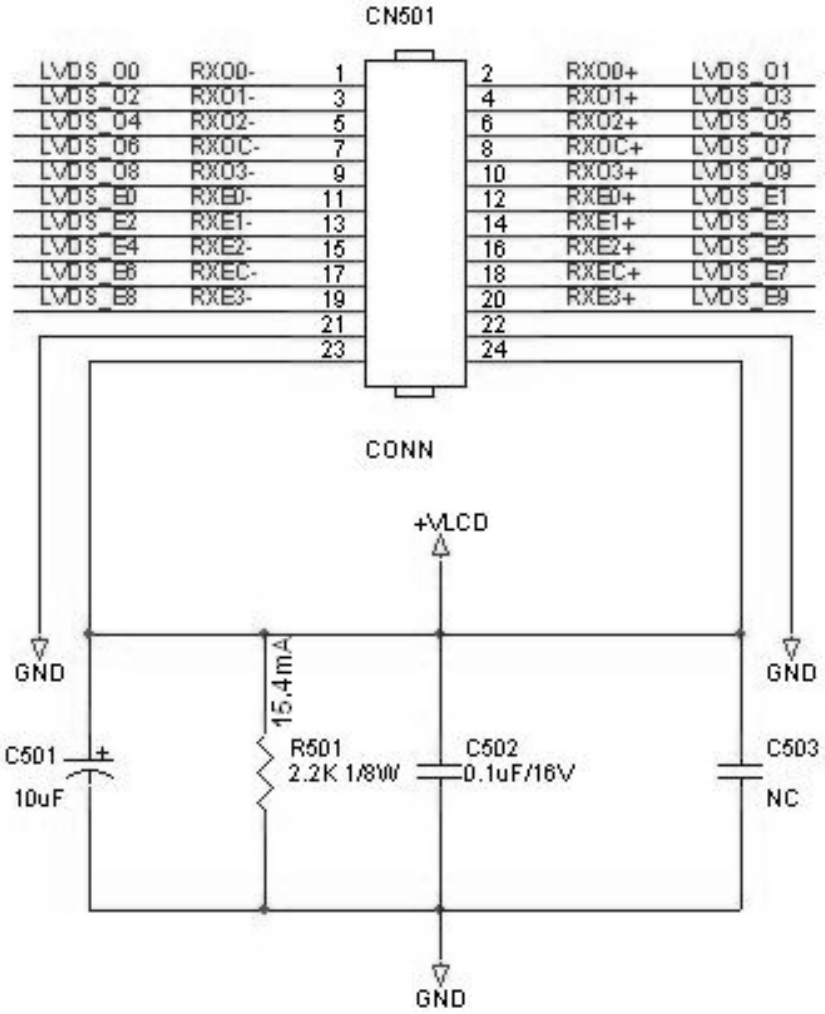
Name	10 KOhm	Open	Default
ATMEL_EN (PWM0)	ATMELSPI ROM	Standard SPI ROM	Open
UART_PIN_SEL (PWM1)	UART on GPO	UART on DDC	Open
V_EDID_ATMEL (SPI_CSn)	ATMELSPI ROM	Standard SPI ROM	Open
GPO_0	Ext. ROM JTAG Off		

MODEL LCD190V-BK SCHEMATIC DIAGRAM MAIN BOARD (KEYPAD) (3/8)

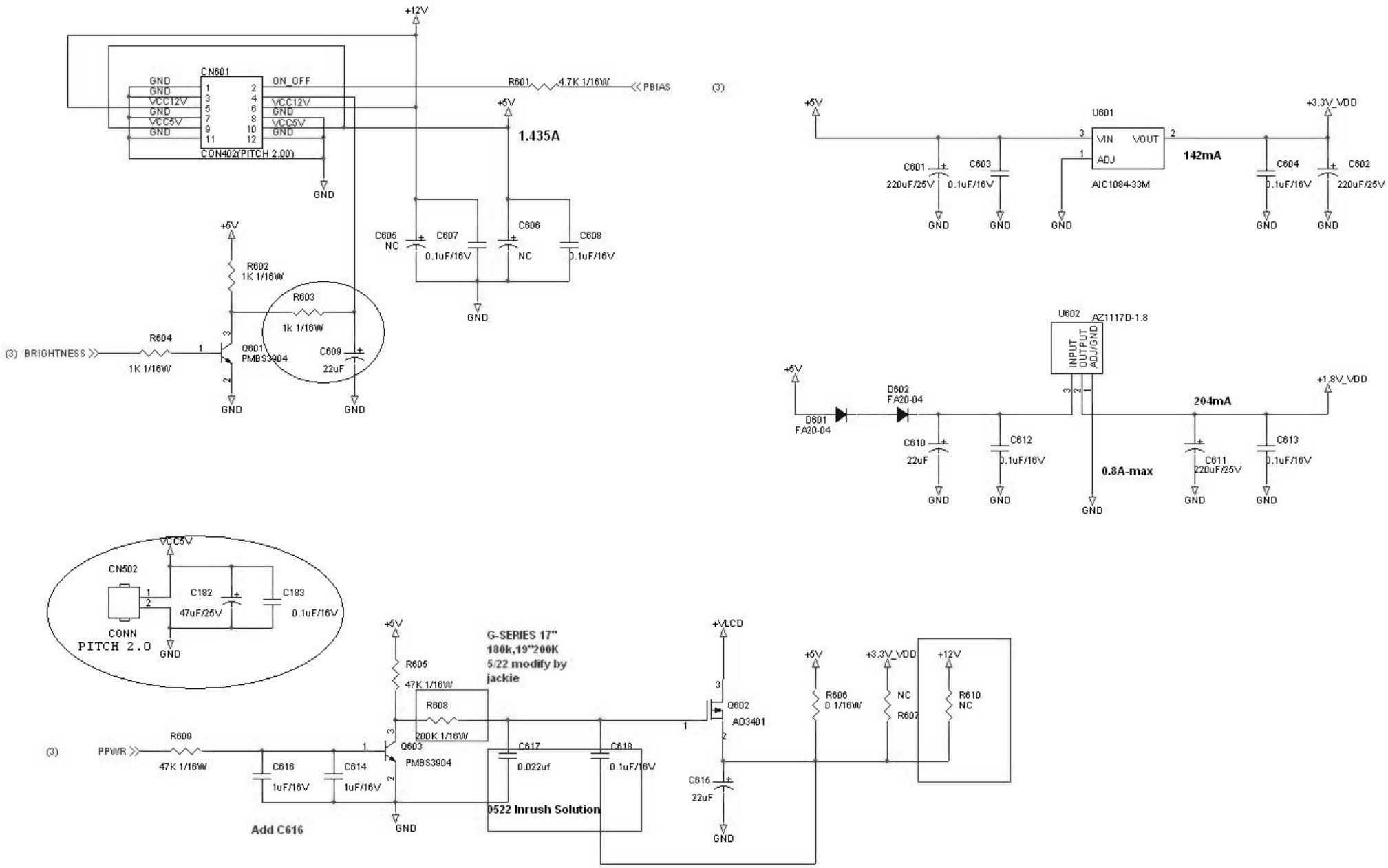


MODEL LCD190V-BK SCHEMATIC DIAGRAM MAIN BOARD (PANEL INTERFACE) (4/8)

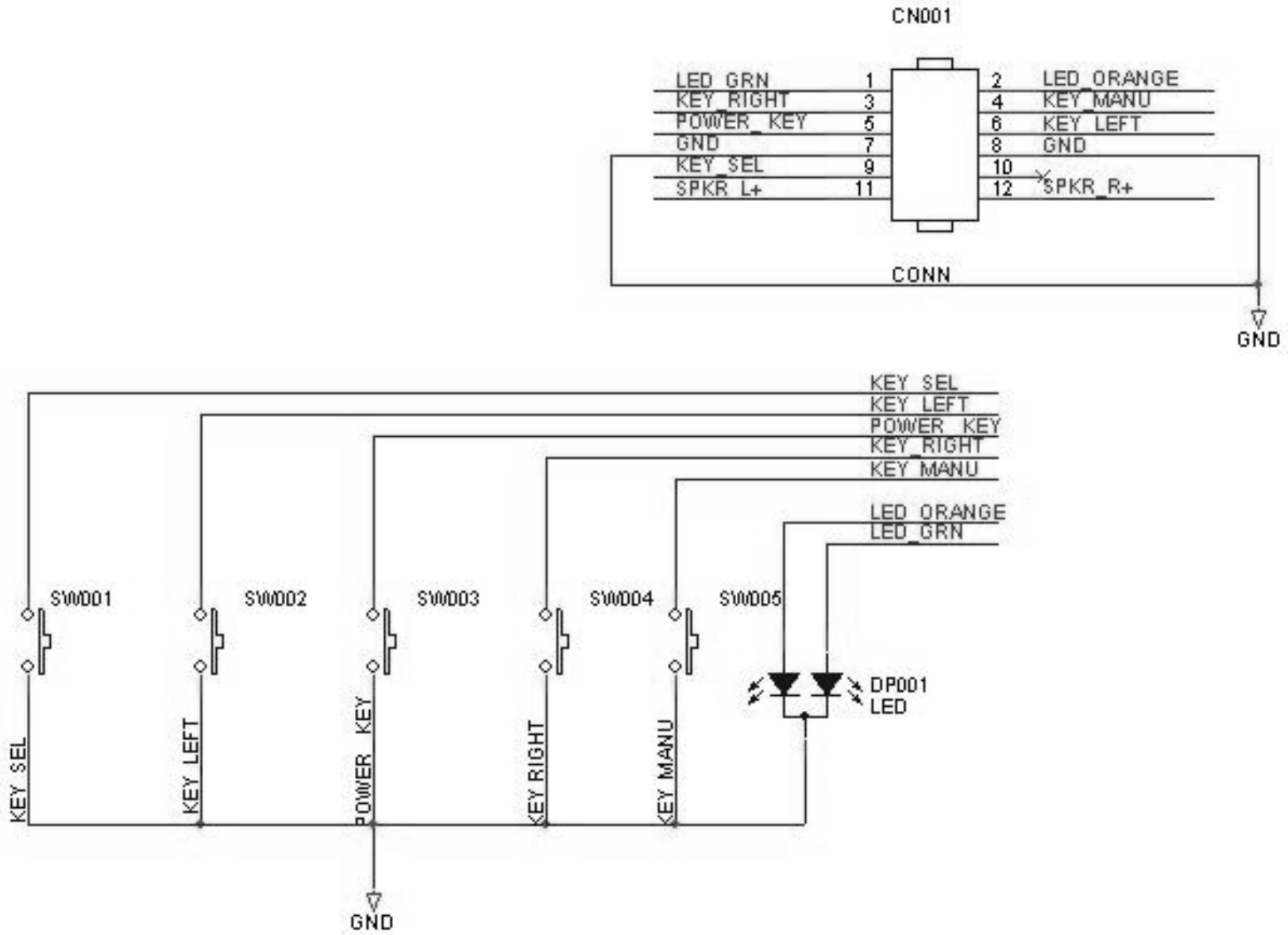




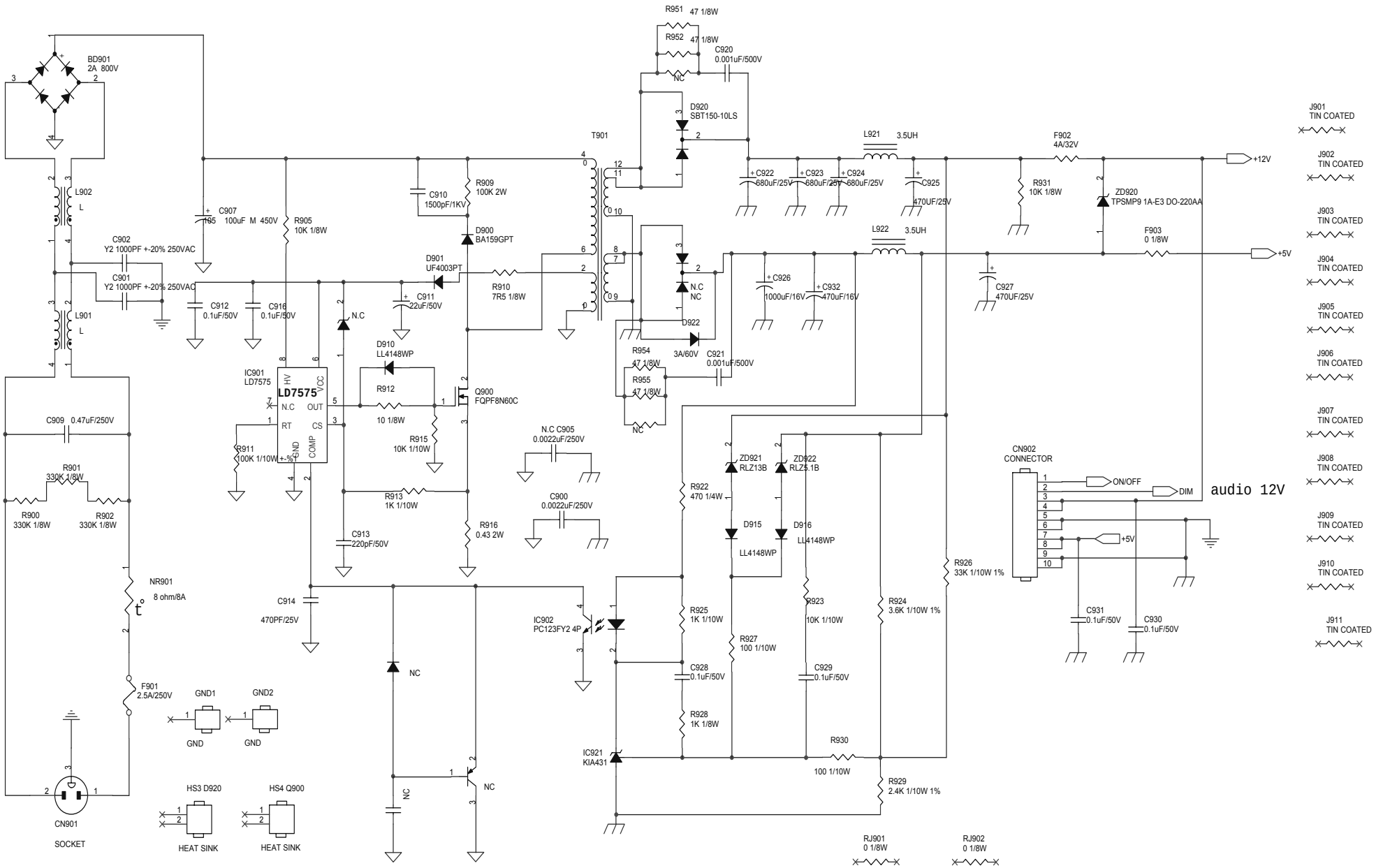
MODEL LCD190V-BK SCHEMATIC DIAGRAM MAIN BOARD (POWER) (5/8)



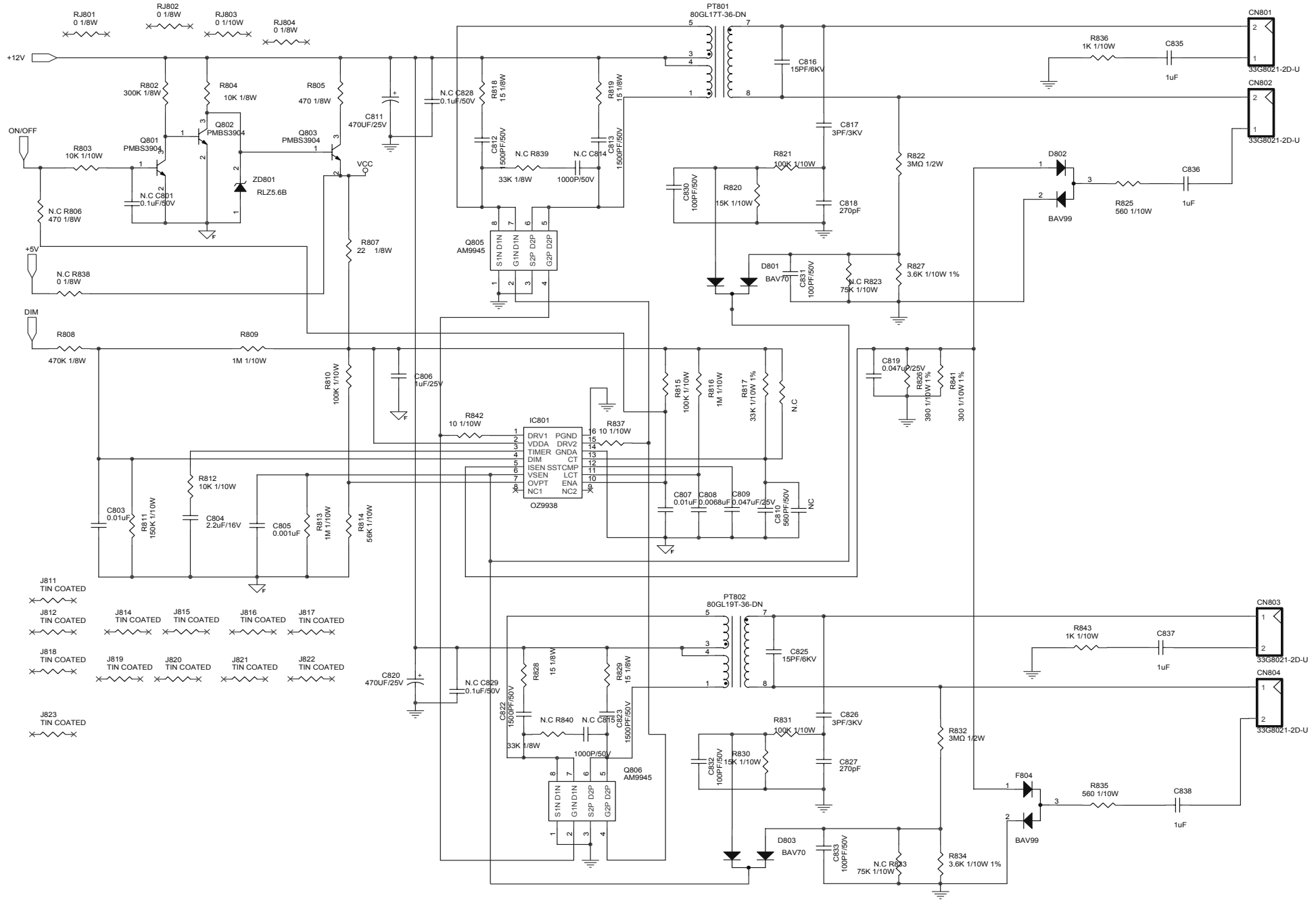
MODEL LCD190V-BK SCHEMATIC DIAGRAM KEYPAD BAORD (KEPC986KADP) (6/8)



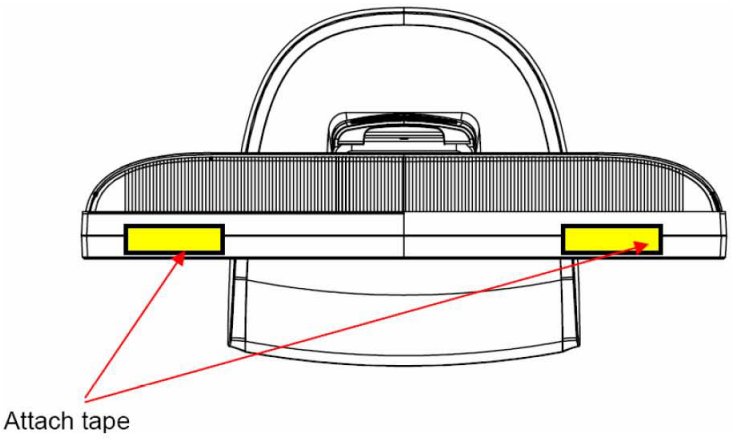
MODEL LCD190V-BK SCHEMATIC DIAGRAM POWER BAORD (PWPC1942HDN1P) (7/8)

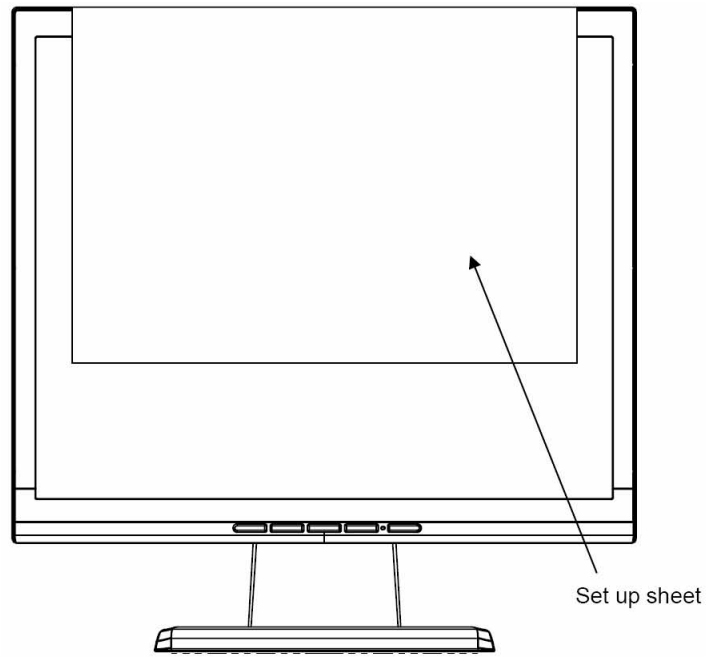


MODEL LCD190V-BK SCHEMATIC DIAGRAM POWER BAORD (INVERTER) (8/8)



Packing Specification





Non Vista Model

LCD190V-BK(B): AUO Panel (M190EN04 V5C / V5D): Classification Code[5] [B]

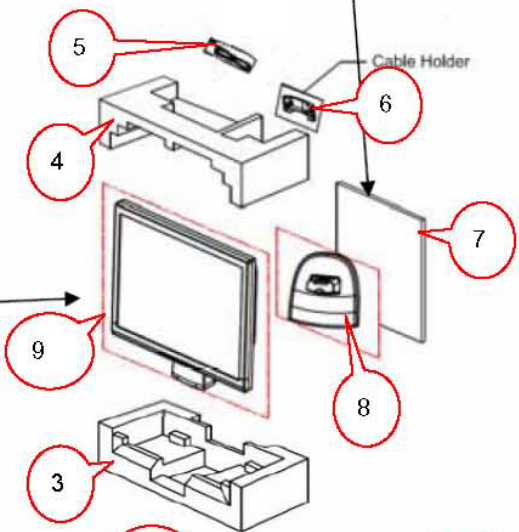
Item	(For EU) TPV Part Number	(For Asia/Australia) NECDS Part Number	Description
1	Q41G7800842A76	79FD2368	SETUP SHEET FOR 170V/190V

Vista Model

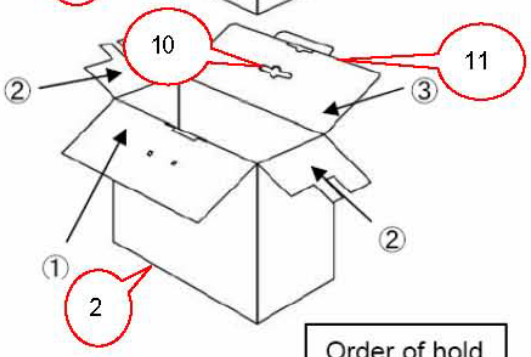
LCD190V-BK-1(B): AUO Panel (M190EN04 V4): Classification Code[H]

Item	(For EU) TPV Part Number	(For Asia/Australia) NECDS Part Number	Description
1	Q41G780A842 8A	79FD2668	<G>LCD93V/LCD73V SETUP SH

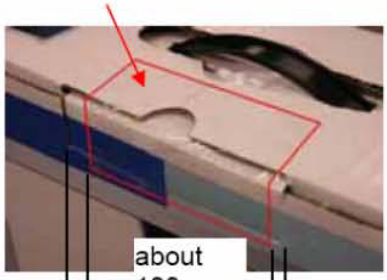
Order of packing
From front side
CDROM -> Sales Office List -> user manual -> Flyer NaviSet



Only Black model:
Cover 2 PE bag.
Inside : EPE bag
Outside : PE bag



Add transparent tape



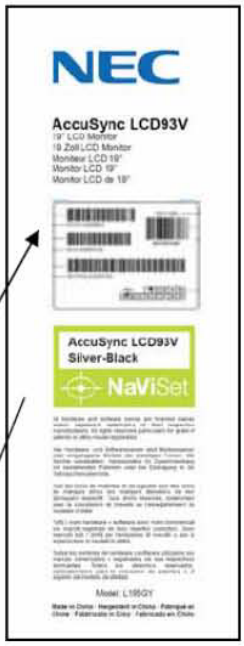
Please add transparent tape within insertable flap area

Order of hold

Add tape
(Don't cover the contents of the Caution Sheet.

Barcode Label

Left side



Put Caution sheet on cushion like above drawing.
(Fold by 2 pcs(Letter is out))

Non Vista Model
LCD190V-BK(B): AUO Panel (M190EN04 V5C / V5D): Classification Code[5] [B]

Item	(For EU) TPV Part Number	(For Asia/Australia) NECDS Part Number	Description
1	041G7800842 8A	79FD1661	CAUTION SHEET
2	Q44G394484210A	79FD2378	CARTON
3	Q44G9038 1	79FD2379	EPS (L)
4	Q44G9038 2	79FD2380	EPS (R)
5	089G404A18NISN	79FD1666	POWER CORD
6	A33G0030 TW 1T 32	79FD2245	CABLE COVER
6	045G 76 28NV2	79FD1524	PE BAG FOR CLAMP
7	070G2000530NMV	79FD2361	CD ROM
7	041G780084218B	79FD1658	OFFICE LIST
7	Q41G7800842A75	79FD2367	MANUAL FOR 170V/190V
7	041G780084225B	79FD3741	NAVISET
7	045G 76 28V9A	79FD1291	PE BAG FOR MANUAL
8	705GQ9K0P34021	79FD2372	BASE(STAND-BASE ASS'Y)
8	045G 88606NV1	79FD1803	PE BAG FOR BASE
9	045G 88626NV1	79FD1452	PE BAG FOR MONITOR
9	045G 88609 C	79FD1643	EPE COVER
10	050G 600 4	79FD1207	HANDLE 1
11	044GH600 1	79FD1205	HANDLE 2

Vista Model
LCD190V-BK-1(B): AUO Panel (M190EN04 V4): Classification Code[H]

Item	(For EU) TPV Part Number	(For Asia/Australia) NECDS Part Number	Description
1	041G7800842 8A	79FD1661	<G>CAUTION SHEET
2	Q44G394484217A	79FD2719	<G>CARTON
3	Q44G9038 1	79FD2379	<G>EPS(L)
4	Q44G9038 2	79FD2380	<G>EPS(R)
5	089G404A18NISY	79FD2664	<G>POWER CORD I-SHENG
6	A33G0030 TW 1T 32	79FD2245	<G>CABLE COVER
6	Q45G 88607 33	79FD2511	<G>PE BAG FOR CLAMP
7	070G2000537NMV	79FD2663	<G>CD-ROM
7	Q41G780084218C	79FD2482	<G>SALES OFFICE LIST
7	Q41G780A842 7A	79FD2667	<G>LCD93V/LCD73V MANUAL E
7	041G780084225B	79FD3741	<G>NAVISET
7	Q45G 76 28A29	79FD2621	<G>PE BAG FOR MANUAL
8	705GQ9K0P34021	79FD2717	<G>BASE
8	Q45G 88607 34	79FD2720	<G>PE BAG FOR BASE
9	045G 88626NV1	79FD1452	PE BAG FOR MONITOR
9	Q45G 88609 98	79FD2608	<G>EPE BAG
10	050G 600 4	79FD1207	<G>HANDLE 1
11	044GH600 1	79FD1205	<G>HANDLE2

REVISION HISTORY

Revision	Revision
New Issue (1st Edition) 2006/10/24	
2nd Edition 2007/1/17 The part list for Asia/Australia was added. Revise following contents 1. Cover Sheet 2. Serial Number Information 3. Disassembly 4. Inspection 5. Replacement Parts List 6. Packing specification	
3rd Edition 2007/06/15 The Vista Model was added. Added LCD Panel: AUO M190EN04 V4 Revise following contents 1. Cover sheet 2. Serial Number Information 3. Disassembly 4. Adjustment Procedures 5. Inspection 6. Replacement Parts List 7. Packing specification	