

NEC

PART NO. 599910589

SERVICE MANUAL

COLOR MONITOR **MultiSync[®] LCD1550ME**

MODELS LCD1550ME (B) / -BK(B)

NEC-MITSUBISHI ELECTRIC VISUAL SYSTEMS CORPORATION

JUNE 2002

200206
08EK1ABD
08EK2ABD



WARNING

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

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

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

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

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



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



This symbol alerts the personnel that important literature concerning the operation and maintenance of this unit has been included.

Therefore, it should be read carefully in order to avoid any problems.



PRODUCT SAFETY CAUTION

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

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User's Manual

MultiSync LCD1550ME

User's Manual

NEC

	WARNING	
<p>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.</p> <p>REFRAIN FROM OPENING THE CABINET AS THERE ARE HIGH VOLTAGE COMPONENTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.</p>		

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

Caution:

When operating the MultiSync LCD1550ME (L15XA231-BN and L15XA231-BNBK) with a 220-240V AC power source in Europe, use the power cord provided with the monitor.

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

When operating the MultiSync LCD1550ME with a 220-240V AC power source in Australia, use the power cord provided with the monitor.

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.

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As an ENERGYSTAR® Partner, NEC-Mitsubishi Electronics Display of America, Inc. has determined that this product meets the ENERGYSTAR guidelines for energy efficiency. The ENERGYSTAR emblem does not represent EPA endorsement of any product or service.
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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.

English-1

Declaration

Declaration of the Manufacturer

We hereby certify that the colour monitor
MultiSync LCD1550ME (L15XA231-BN)
MultiSync LCD1550ME (L15XA231-BNBK)
is in compliance with

Council Directive 73/23/EEC:

– EN 60950

Council Directive 89/336/EEC:

– EN 55022

– EN 61000-3-2

– EN 61000-3-3

– EN 55024

and marked with



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

English-2

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 #950.
Ce produit porte la marque 'C-UL' et se conforme aux règlements de sûreté Canadiens selon CAN/CSA C22.2 No. 950.

FCC Information

1. Use the attached specified cables with the MultiSync LCD1550ME colour monitor so as not to interfere with radio and television reception.
(1) The power supply cord you use must have been approved by and comply with the safety standards of U.S.A., and meet the following condition.

Power supply cord	Non shield type, 3-conductor
Length	2.0 m
Plug shape	

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

2. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
- Reorient or relocate the receiving antenna.
 - Increase the separation between the equipment and receiver.
 - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
 - Consult your dealer or an experienced radio/TV technician for help.
- If necessary, the user should contact the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet, prepared by the Federal Communications Commission, helpful: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington, D.C., 20402, Stock No. 004-000-00345-4.

Declaration of Conformity

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

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

Type of Product:	Computer Monitor
Equipment Classification:	Class B Peripheral
Models:	MultiSync LCD1550ME



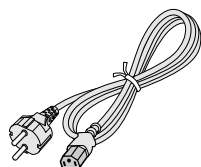
We hereby declare that the equipment specified above conforms to the technical standards as specified in the FCC Rules.

English-4

Contents

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

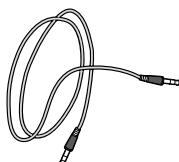
- MultiSync LCD1550ME monitor with tilt base
- Power Cord
- Video Signal Cable
- Audio Cable
- User's Manual
- CD ROM (includes complete User's Manual in PDF format). To see the User's Manual, Acrobat Reader 4.0 must be installed on your PC.



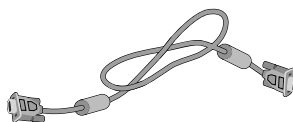
Power Cord



User's Manual



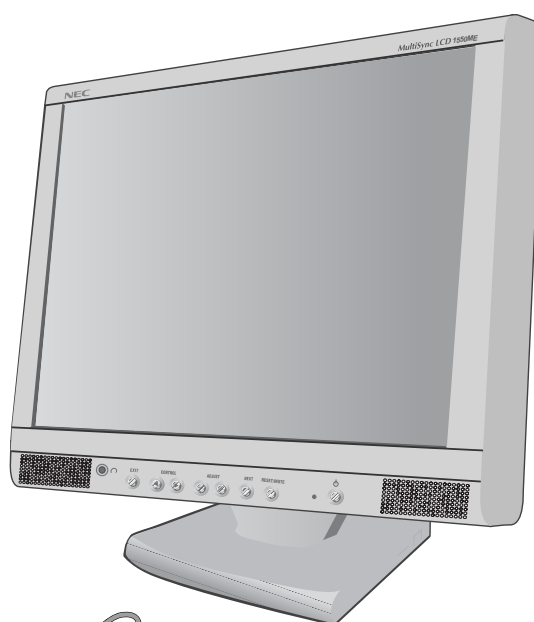
Audio Cable



Video Signal Cable




CD ROM



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

Quick Start

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

1. Turn off the power to your computer.
2. Remove connector cover and cable cover. Connect the audio cable to “AUDIO INPUT” on the back of the monitor and the other end to the “Audio out” terminal of the computer. Place the Audio cable under Clip B (**Figure A.1**).
3. **For PC:** Connect the 15-pin mini D-SUB of the appropriate signal cable to the connector for the display card in your system (**Figure B.1**). Tighten all screws.
For Mac: Connect the MultiSync LCD1550ME Macintosh cable adapter to the computer (**Figure C.1**). Attach the 15-pin mini D-SUB end of the appropriate signal cable to the MultiSync LCD1550ME Macintosh cable adapter (**Figure C.1**). Tighten all screws.
4. Connect the 15-pin mini D-SUB of the video signal cable to the appropriate connector on the back of the monitor (**Figure D.1**). Place the Video Signal Cable under Clip B.
5. Headphones may be connected to the “Headphones” output on the front of the monitor’s bezel marked “” (**Figure E.1**). While the headphones are connected, the sound from the speakers will be disabled. Headphones can be purchased from your local electronics store.
6. Connect one end of the power cord to the MultiSync LCD Series monitor and the other end to the power outlet. Place the video signal cable and AC power cord under the clips (**Figure D.1**). Replace connector cover and cable cover.
NOTE: Adjust the position of the cable under the clips to avoid damage for cable or monitor.
NOTE: Please refer to Caution section of this manual for proper selection of AC power cord.
7. The Vacation Switch on the left side of the monitor must be turned on (**Figure F.1**). Turn on the monitor with the Power Button and the computer.

English-6

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

8. 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 problems, please refer to the **Troubleshooting** section of this User's Manual.

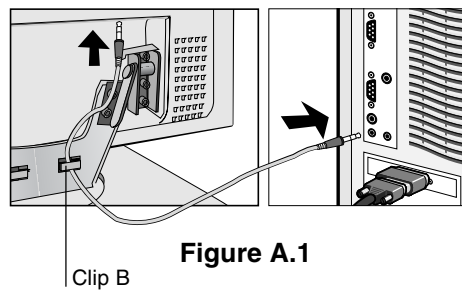


Figure A.1

Clip B



Figure B.1

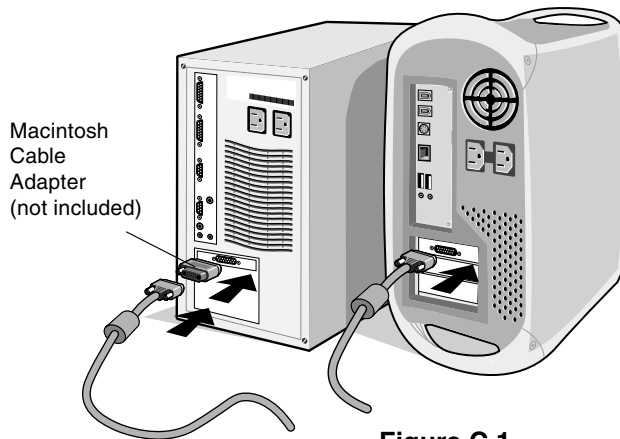
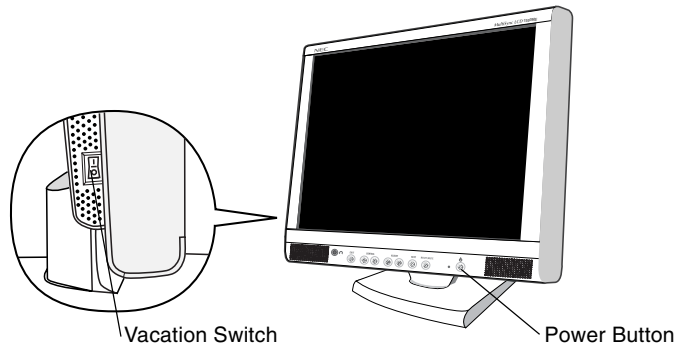
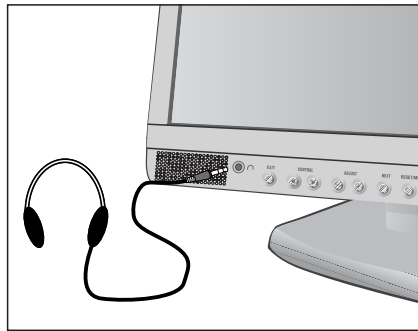
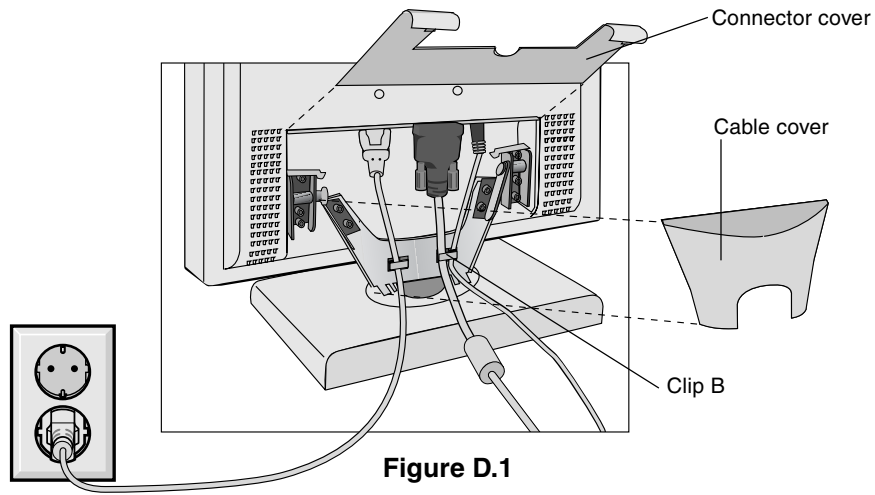


Figure C.1

Macintosh
Cable
Adapter
(not included)

Macintosh G3 and
G4 do not need a
Macintosh cable
adapter



English-8

Tilt

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

Remove Monitor Stand for Mounting

To prepare the monitor for alternate mounting purposes:

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

NOTE: Use only VESA-compatible alternative mounting method.

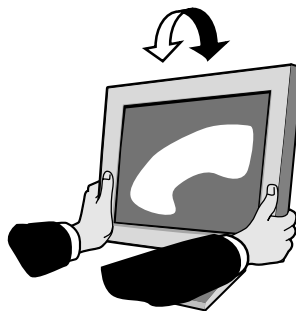


Figure TS.1

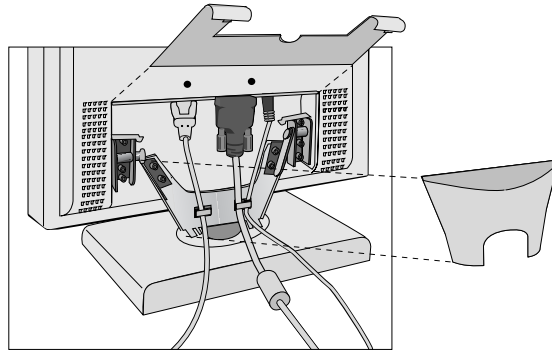
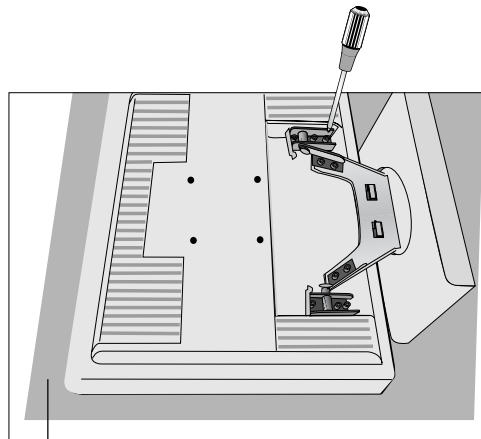


Figure R.1



Non-abrasive
surface

Figure R.2

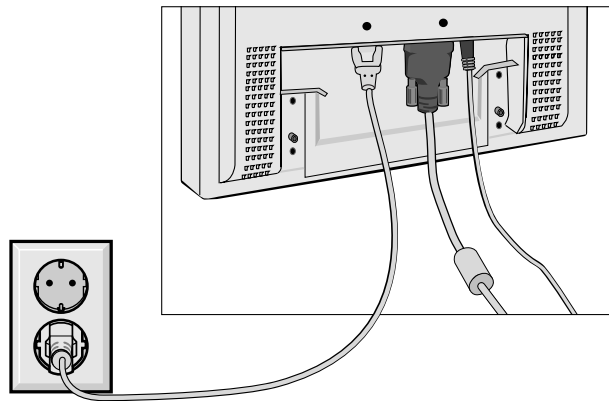
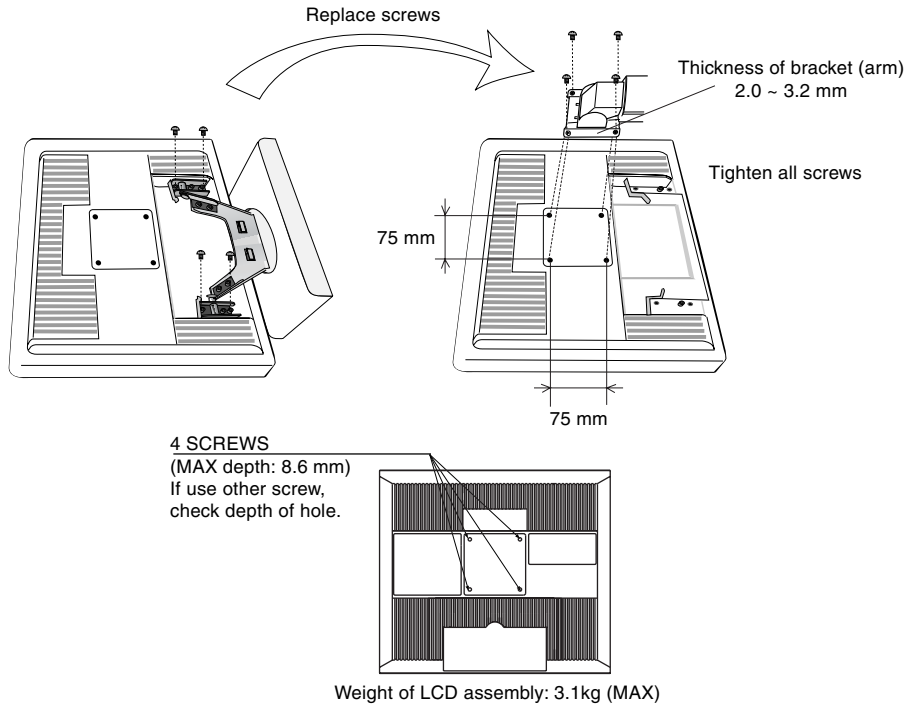


Figure R.3

English-10

7. This LCD monitor is designed for use with a flexible arm. Please use the attached screws (4pcs) when mounting. 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).



Controls


OSM (On-Screen-Manager) Controls

The OSM controls on the front of the monitor function as follows:
To access OSM press any of the control buttons (◀, ▶, -, +, **NEXT**).


Control	Menu
EXIT	Exits the OSM controls. Exits to the OSM main menu.
CONTROL ◀▶	Moves the highlighted area left/right to select control menus. Moves the highlighted area up/down to select one of the controls.
ADJUST -/+	Moves the bar left/right to increase or decrease the adjustment. Activates Auto Adjust function. Enter the sub menu.
NEXT	Moves the highlighted area of main menu right to select one of the controls.
RESET/MUTE	Resets the highlighted control to the factory setting. When no OSM menu is shown, the speaker sound will be muted.

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


Sound

 **VOLUME**
Control the sound volume of speakers and headphones.

Brightness/Contrast Controls

 **BRIGHTNESS**
Adjusts the overall image and background screen brightness.


English-12


 **CONTRAST**
Adjusts the image brightness in relation to the background.


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


AUTO **Auto Adjust**
Automatically adjusts the Image Position, the H. Size and Fine setting.

Position Controls

 **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 select the desired colour setting. Each colour setting is adjusted at the factory.

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



Tools



OSM POSITION

You can choose where you would like the OSM control image to appear on your screen. Selecting OSM Location allows you to manually adjust the position of the OSM control menu left, right, down or up.



OSM TURN OFF

The OSM control menu will stay on as long as it is 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, 20, 30, 45, 60 and 120 seconds.



OSM LOCK OUT

This control completely locks out access to all OSM control functions. When attempting to activate OSM controls while in the Lock Out mode, a screen will appear indicating the OSM controls are locked out. To activate the OSM Lock Out function, press ◀, then ▶ and hold down simultaneously. To de-activate the OSM Lock Out, press ◀, then ▶ and hold down simultaneously.



RESOLUTION NOTIFIER

This optimal resolution is 1024 x 768. If ON is selected, a message will appear on the screen after 30 seconds, notifying you that the resolution is not at 1024 x 768.



FACTORY PRESET

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



Information



DISPLAY MODE

Indicates the current display resolution and frequency setting of the monitor.



MONITOR INFO.

Indicates the model and serial numbers of your monitor.

OSM Warning

OSM Warning menus disappear with Exit button.

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

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

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

CHECK CABLE: This function will advise you to check all Video Inputs on the monitor and computer to make sure they are properly connected.

Recommended Use

Safety Precautions and Maintenance



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



- **DO NOT OPEN THE MONITOR.** There are no user serviceable parts inside and opening or removing covers may expose you to dangerous shock hazards or other risks. Refer all servicing to qualified service personnel.
- Do not spill any liquids into the cabinet or use your monitor near water.
- Do not insert objects of any kind into the cabinet slots, as they may touch dangerous voltage points, which can be harmful or fatal or may cause electric shock, fire or equipment failure.
- Do not place any heavy objects on the power cord. Damage to the cord may cause shock or fire.
- Do not place this product on a sloping or unstable cart, stand or table, as the monitor may fall, causing serious damage to the monitor.
- Do not place any objects onto the monitor and do not use the monitor outdoors.
- The inside of the fluorescent tube located within the LCD monitor contains mercury. Please follow the bylaws or rules of your municipality to dispose of the tube properly.

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

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

English-16



CAUTION

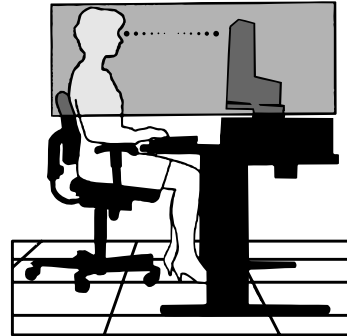
- Allow adequate ventilation around the monitor so that heat can properly dissipate. Do not block ventilated openings or place the monitor near a radiator or other heat sources. Do not put anything on top of monitor.
- The power cable connector is the primary means of detaching the system from the power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



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 53 cm.
- Rest your eyes periodically by focusing on an object at least 6 m away. Blink often.
- Position the monitor at a 90° angle to windows and other light sources to minimize glare and reflections. Adjust the monitor tilt so that ceiling lights do not reflect on your screen.
- If reflected light makes it hard for you to see your screen, use an antiglare filter.
- Clean the LCD monitor surface with a lint-free, non-abrasive cloth. Avoid using any cleaning solution or glass cleaner!
- Adjust the monitor's brightness and contrast controls to enhance readability.
- Use a document holder placed close to the screen.
- Position whatever you are looking at most of the time (the screen or reference material) directly in front of you to minimize turning your head while you are typing.



- Avoid displaying fixed patterns on the monitor for long periods of time to avoid image persistence (after-image effects).
- Get regular eye checkups.

Ergonomics

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

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

Specifications

Monitor Specifications		MultiSync LCD1550ME Monitor	Notes
LCD Module	Diagonal: Viewable Image Size: Native Resolution (Pixel Count):	38 cm/15 inches 38 cm/15 inches 1024 x 768	Active matrix; thin film transistor (TFT) liquid crystal display (LCD); 0.30 mm dot pitch; 250cd/m ² white luminance, typical; 400:1 contrast ratio, typical.
Input Signal	Video: Sync:	ANALOG 0.7 Vp-p/75 Ohms Separate sync.TTL Level Horizontal sync. Positive/Negative Vertical sync. Positive/Negative	
Display Colours	Analog input:	16,777,216	Depends on display card used.
Synchronization Range	Horizontal: Vertical:	31.5 kHz to 60.0 kHz 56.2 Hz to 75.1 Hz	Automatically Automatically
Viewing Angle	Left/Right: Up/Down:	± 60° + 45°/- 55°	
Resolutions Supported		720 x 400*1 :VGA text 640 x 480*1 at 60 Hz to 75 Hz 800 x 600*1 at 56 Hz to 75 Hz 832 x 624*1 at 75 Hz 1024 x 768*2 at 60 Hz to 75 Hz	Some systems may not support all modes listed.
Active Display Area	Horizontal: Vertical:	304 mm/12 inches 228 mm/9.0 inches	Dependent upon signal timing.
Power Supply		AC 100-120 V/220-240 V 50/60 Hz	
Current Rating		0.7 A @ 100-120 V, 0.35 A @ 220-240 V	
Dimensions		345.2 mm (W) x 362.6 mm (H) x 162.0 mm (D) 13.6 inches (W) x 14.3 inches (H) x 6.4 inches (D)	
Weight		3.9 kg (8.6 lbs)	
Environmental Considerations	Operating Temperature: Humidity: Altitude: Storage Temperature: Humidity: Altitude:	5 °C to 35 °C 30% to 80% 0 to 3,000 m -10 °C to +60 °C 10% to 85% 0 to 9,500 m	
Speakers Practical Audio Output		1.0W + 1.0W	

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

*2 NEC-Mitsubishi Electronics Display cites recommended resolutions at 75 Hz for optimal display performance.

NOTE: Technical specifications are subject to change without notice.

English-20

Features

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

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

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 MultiSync monitor to any VESA standard (75 mm pitch) 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.

English-22

Troubleshooting

No picture

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

Power Button does not respond

- Unplug the power cord of the monitor from the AC outlet to turn off and reset the monitor.
- Check the Vacation Switch on the left hand side of 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. To alleviate image persistence, turn the monitor off for as long as an image was displayed. If an image was on the monitor for one hour and a “ghost” of that image remains, the monitor should be turned off for one hour to erase the image.

NOTE: As with all personal display devices, NEC-Mitsubishi Electronic Displays recommends using a screen saver at regular intervals whenever the screen is idle.

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 readjusted.
- Check the monitor and your display card with respect to compatibility and recommended signal timings.
- If your text is garbled, change the video mode to non-interlace and use 60 Hz refresh rate.

Message “OUT OF RANGE” is displayed (screen is either blank or shows rough images only)

- OSM warning “OUT OF RANGE” is displayed on a blank screen: Signal frequency is out of range. Choose one of the supported modes.

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.
- Make certain the computer is not in a power-saving mode (touch the keyboard or mouse).

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.)

Selected resolution is not displayed properly

- Use OSM Display Mode to enter Information menu and confirm that the appropriate resolution has been selected. If not, select corresponding option.

No Sound

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

TCO'99

MultiSync LCD1550ME White Model (L15XA231-BN)

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



Why do we have environmentally labelled computers?

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

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

What does labelling involve?

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

English-26

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

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

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

Environmental Requirements

Flame retardants

Flame retardants are present in printed circuit boards, cables, wires, casings and housings. In turn, they delay the spread of fire. Up to thirty percent of the plastic in a computer casing can consist of flame retardant substances. Most flame retardants contain bromine or chloride and these are related to another group of environmental toxins, PCBs, which are suspected to give rise to severe health effects, including reproductive damage in fish-eating birds and mammals, due to the bioaccumulative* processes. Flame retardants have been found in human blood and researchers fear that disturbances in foetus development may occur.

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

Lead**

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

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

Cadmium**

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

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

Mercury**

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

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

CFCs (freons)

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

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

* Bio-accumulative is defined as substances which accumulate within living organisms.

** Lead, Cadmium and Mercury are heavy metals which are Bioaccumulative.

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

TCO Development Unit

SE-114 94 Stockholm

SWEDEN

FAX Number: +46 8 782 92 07

E-mail (Internet): development@tco.se

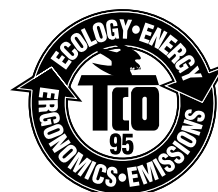
You may also obtain current information on TCO'99 approved and labelled products by visiting their website at:

<http://www.tco-info.com/>

English-28

MultiSync LCD1550ME Black Model (L15XA231-BNBK)

Congratulations! You have just purchased a TCO'95 approved and labeled product! Your choice has provided you with a product developed for professional use. Your purchase has also contributed to reducing the burden on the environment and also, to the further development of environmentally adapted electronics products.



Why do we have environmentally labelled computers?

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

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

What does labelling involve?

This product meets the requirements for the TCO'95 scheme which provides for international and environmental labelling of personal computers. The labelling scheme was developed as a joint effort by the TCO (The Swedish Confederation of Professional Employees), Naturskyddsforeningen (The Swedish Society for Nature Conservation) and NUTEK (The National Board for Industrial and Technical Development in Sweden).

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

English-29

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

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

TCO'95 is a co-operative project between TCO (The Swedish Confederation of Professional Employees), Naturskyddsforeningen (The Swedish Society for Nature Conservation) and NUTEK (The National Board for Industrial and Technical Development in Sweden).

Environmental Requirements

Brominated flame retardants

Brominated flame retardants are present in printed circuit boards, cables, wires, casings and housings. In turn, they delay the spread of fire. Up to thirty percent of the plastic in a computer casing can consist of flame retardant substances. These are related to another group of environmental toxins, PCBs, which are suspected to give rise to similar harm, including reproductive damage in fish-eating birds and mammals, due to the bio-accumulative* processes. Flame retardants have been found in human blood and researchers fear that disturbances in foetus development may occur.

TCO'95 demand requires that plastic components weighing more than 25 grams must not contain organically bound chlorine and bromine.

Lead**

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

TCO'95 requirement permits the inclusion of lead since no replacement has yet been developed.

Cadmium**

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

TCO'95 requirement states that batteries may not contain more than 25 ppm (parts per million) of cadmium. The colourgenerating layers of display screens must not contain any cadmium.

Mercury**

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

TCO'95 requirement states that batteries may not contain more than 25 ppm (parts per million) of mercury. It also demands that no mercury is present in any of the electrical or electronics components concerned with the display unit, except the back-light system.

CFCs (freons)

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

The relevant TCO'95 requirement; Neither CFCs nor HCFCs may be used during the manufacturing of the product or its packaging.

* Bio-accumulative is defined as substances which accumulate within living organisms.

** Lead, Cadmium and Mercury are heavy metals which are Bioaccumulative.

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You may also obtain current information on TCO'95 approved and labelled products by visiting their website at:

<http://www.tco-info.com/>

Serial Number Information

Refer to the serial number information shown below.

EX.) SERIAL NUMBER LABEL

Model Name : LCD1550ME LCD1550ME-BK SERIAL NO. : <input type="text"/>



Manufactured Year : _____
(Last digit)

Manufactured Month : _____

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

Serial Number(5-digit)
(sequential number
at production month,
00001-99999)

Factory Code: _____

LITE-ON Taiwan factory "U"
LITE-ON China factory "G"

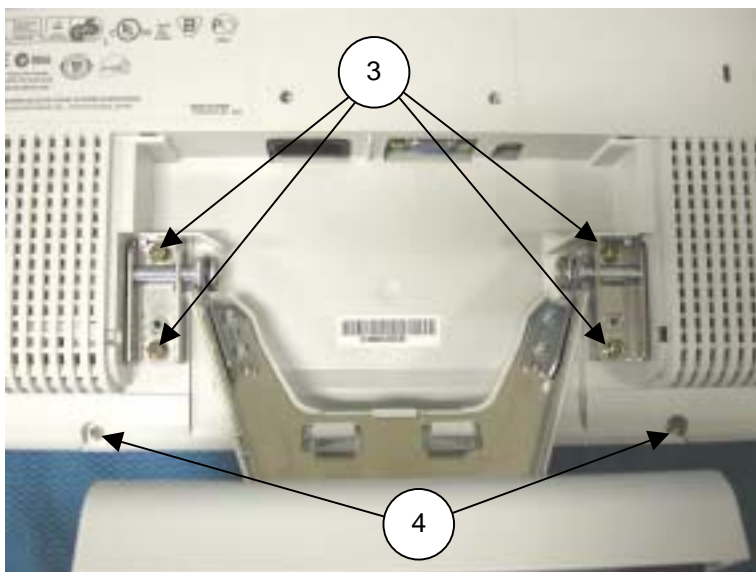
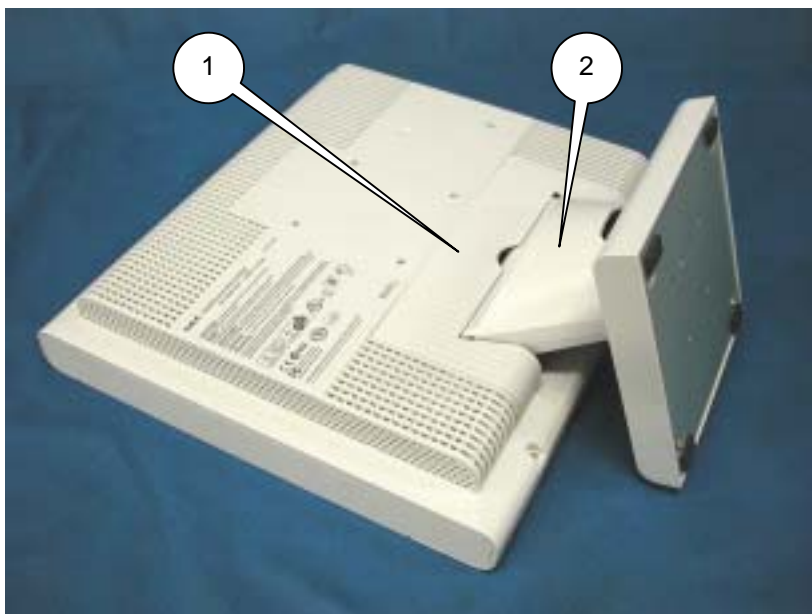
Control Code: _____

A: A ver. (for U.S.A.)
B: B ver. (for Europe, Asia and Pacific)
C: C ver. (for China)

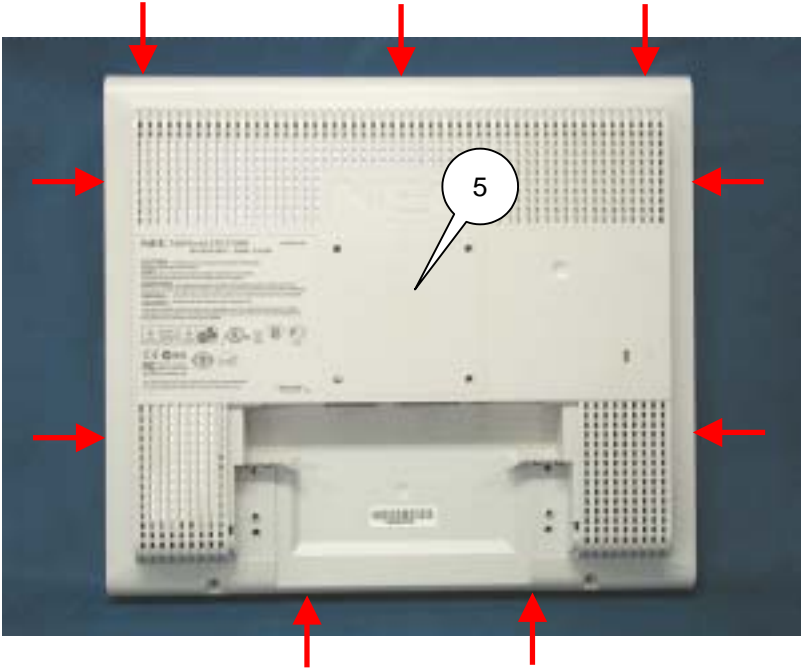
DISASSEMBLY

- Before you disassemble the set, turn off power and pull out the power plug.
- Use the proper screwdriver. If oversize or undersize screwdriver is used, screws may be damaged.
- Assembly is the opposite process of disassembly.

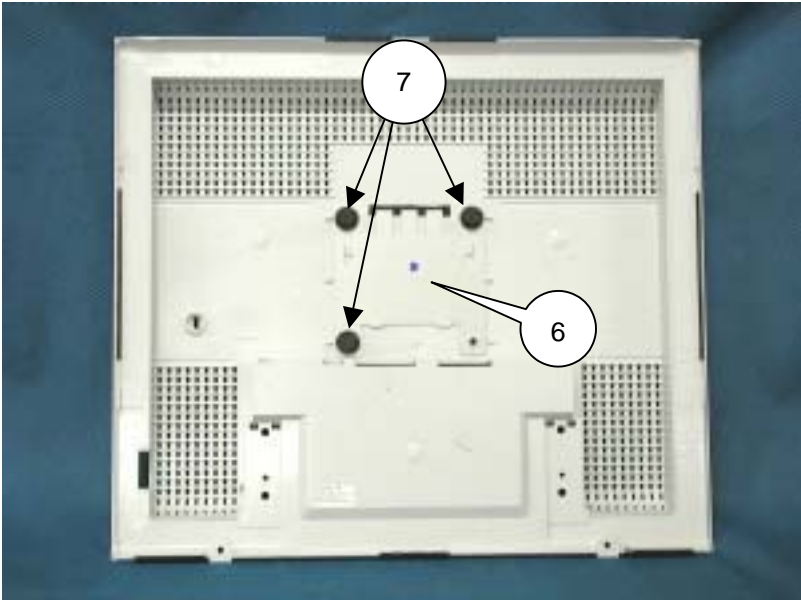
SYMBOL	CODE	DESCRIPTION	CABINET COLOR
1	79PL1836	COVER(CONNECTOR)	White
1	79PL1844	COVER-CONNECTOR-NMV(NEC)-	Black
2	79PL1825	COVER CABLE	White
2	79PL1833	COVER CABLE(LCD1550MBK B)	Black
3	---	SCREW-M4*12	
4	---	SCREW-T3*12	



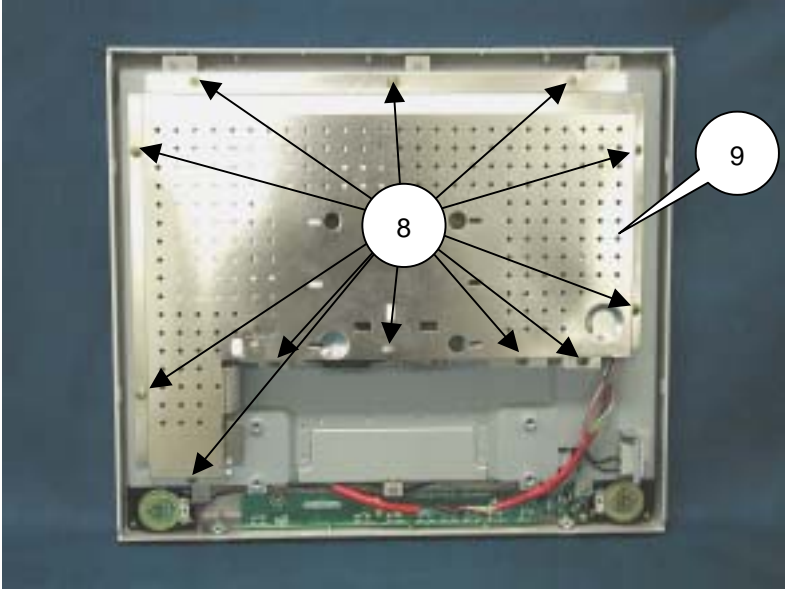
SYMBOL	CODE	DESCRIPTION	CABINET COLOR
5	79PL1897	REAR COVER ASS'Y-NMV-NEC	White
5	79PL2043	REAR COVER ASS'Y-NEC-NEC-	Black



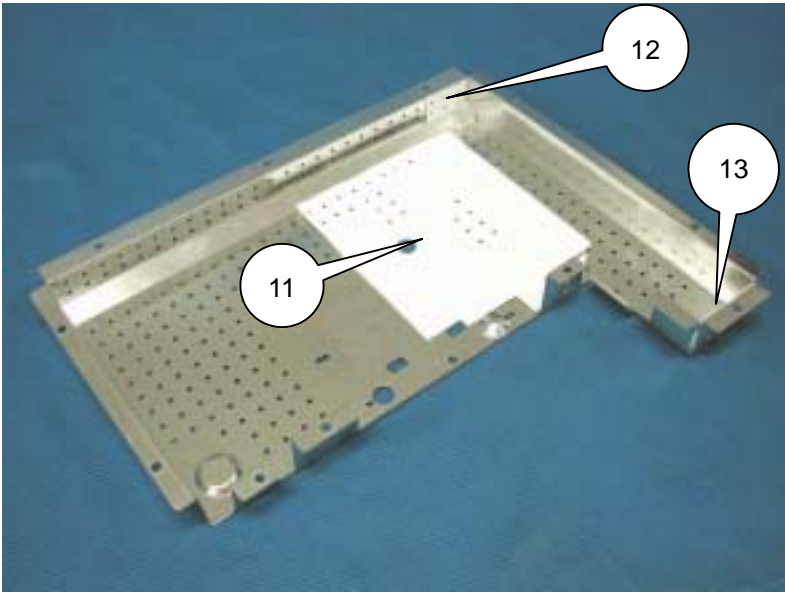
SYMBOL	CODE	DESCRIPTION
6	---	BRACKET VESA ASS'Y
7	79PL1915	RUBBER CUSHION(REAR COVER)



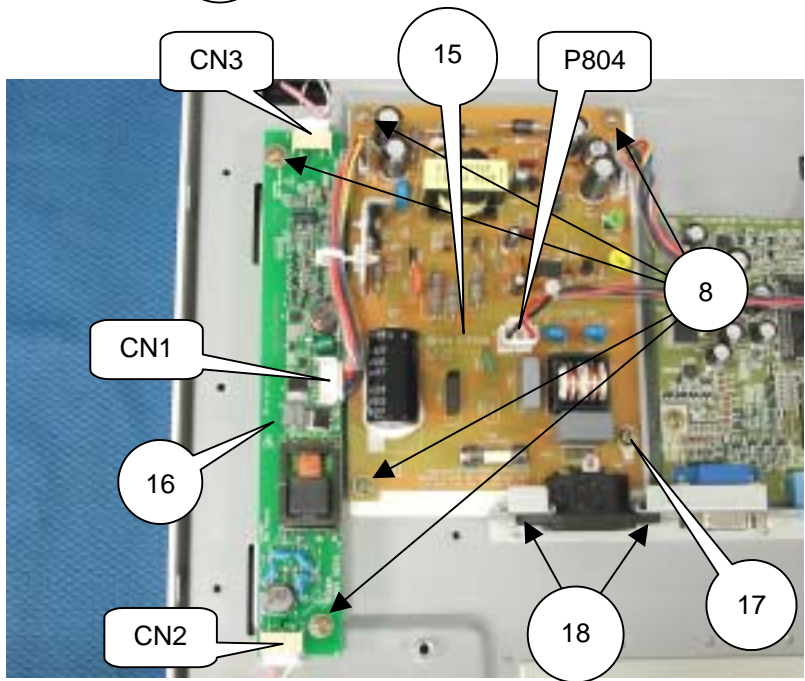
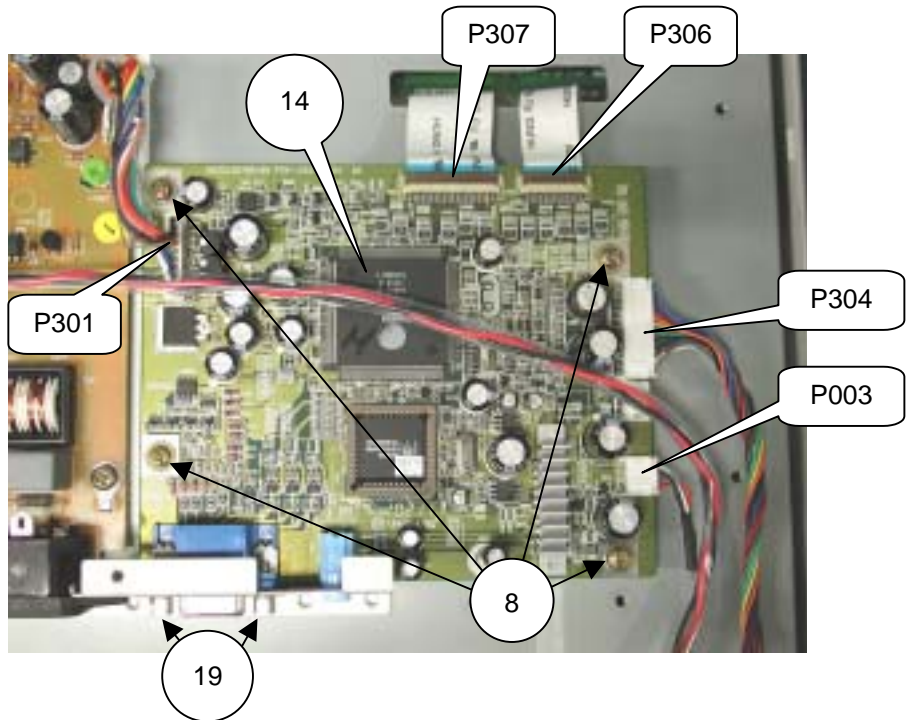
SYMBOL	CODE	DESCRIPTION
8	---	SCREW-M3*6
9	79PL1910	SHIELD-ASS'Y-NEC-FA150ATU



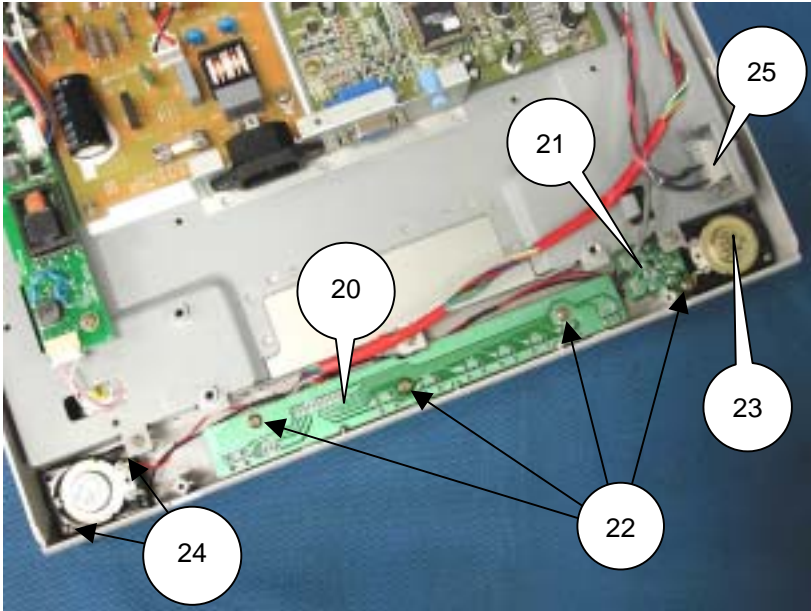
SYMBOL	CODE	DESCRIPTION
11	79PL1912	INSULATOR-NEC-FA150ATUA-B
12	79PL1913	INSULATOR-NEC-FA150ATUA-P
13	79PL1911	INSULATOR-NEC-FA150ATUA-P



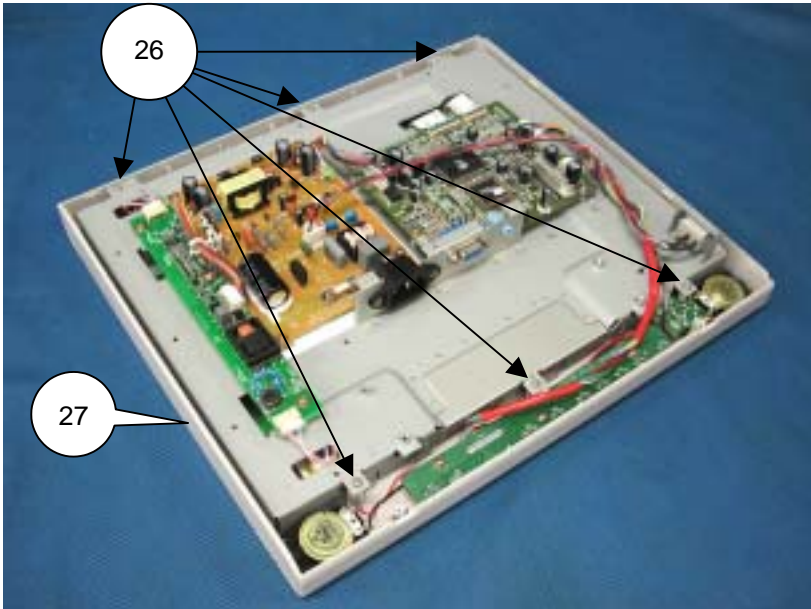
SYMBOL	CODE	DESCRIPTION
14	79PL2044	INTERFACE BD
15	79PL2047	POWER BD
16	79PL1982	INVERTER-DC-AC-AMBIT:T15I
8	---	SCREW-M3*6
17	---	SCREW-M4*8
18	---	SCREW-M3*6(Flat)
19	---	SPECIAL(HEX)



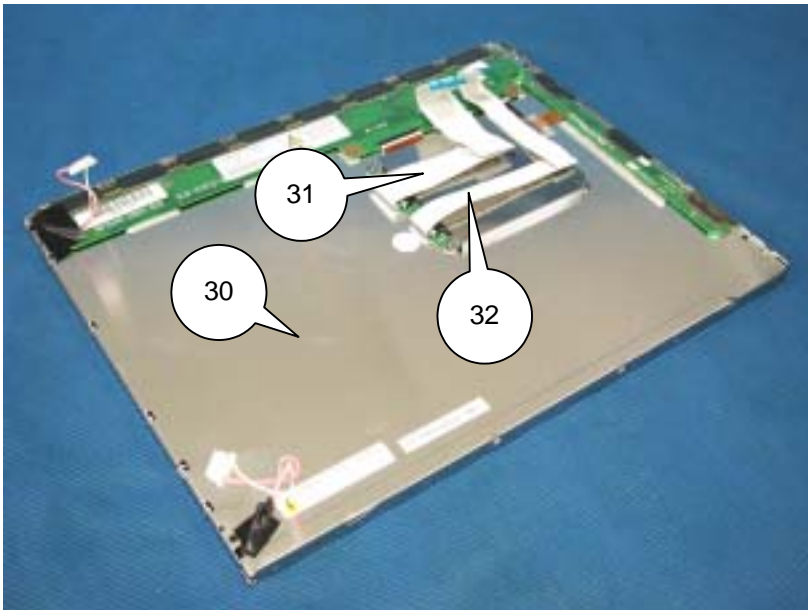
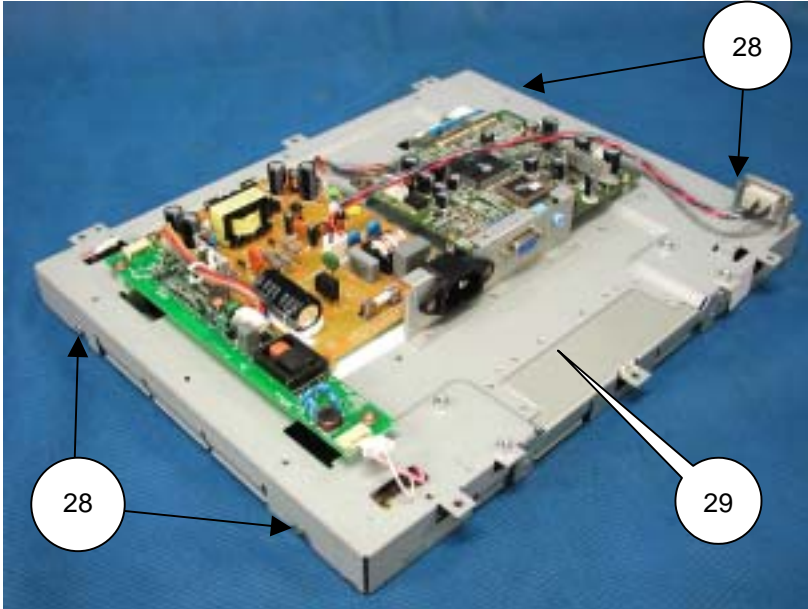
SYMBOL	CODE	DESCRIPTION
20	79PL1819	FUNCTION KEY BD-NEC-FA150
21	79PL1901	HEAD PHONE BD-NEC-FA15AA
22	---	SCREW-M3*8
23	79PL1464	SPEAKER 4P N13AA12PCH22 J
24	---	SCREW-M2.6*10
25	79PL1462	SW POWER HF606A1GGATA HUA



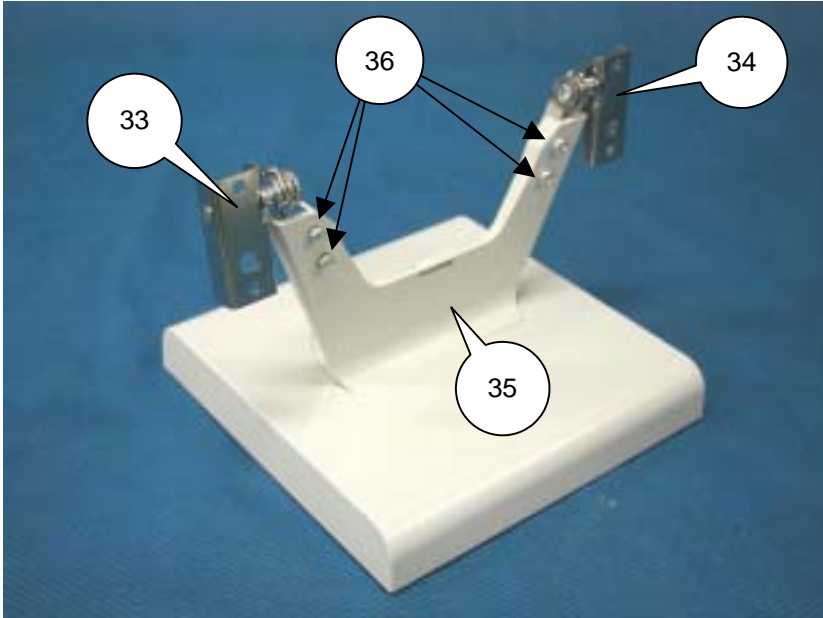
SYMBOL	CODE	DESCRIPTION	CABINET COLOR
26	---	SCREW-M3*12	
27	79PL2041	FRONT COVER ASS'Y-NMV-NEC	White
27	79PL2042	FRONT COVER ASS'Y-NEC-NEC	Black



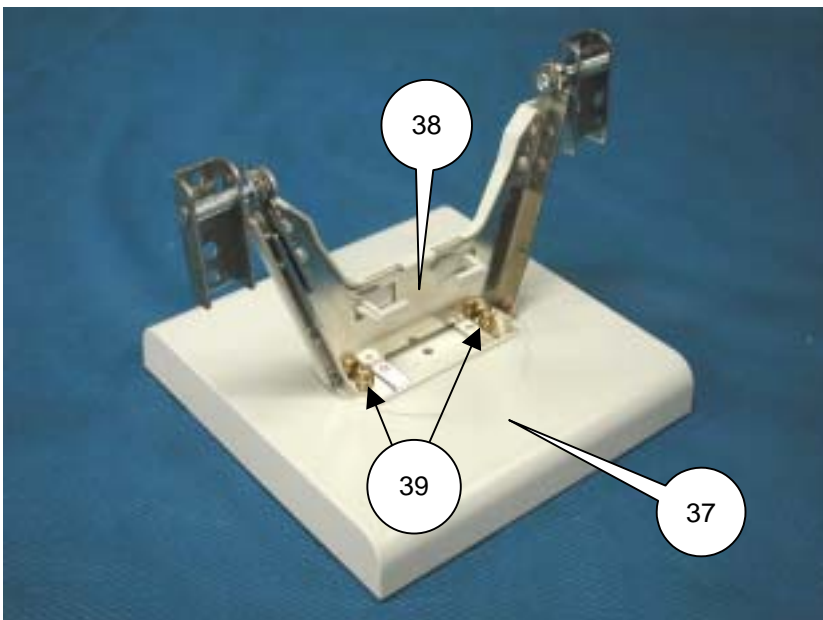
SYMBOL	CODE	DESCRIPTION
28	---	SCREW-M3*5
29	---	BRACKET CHASSIS BASE ASS'Y
30	79PL2039	LCD-15-CLAA150XG01-CPT"
31	79PL2036	HARNESS-FFC-45P(0.5)-95/1
32	79PL2037	HARNESS-FFC-30P(0.5)-115/



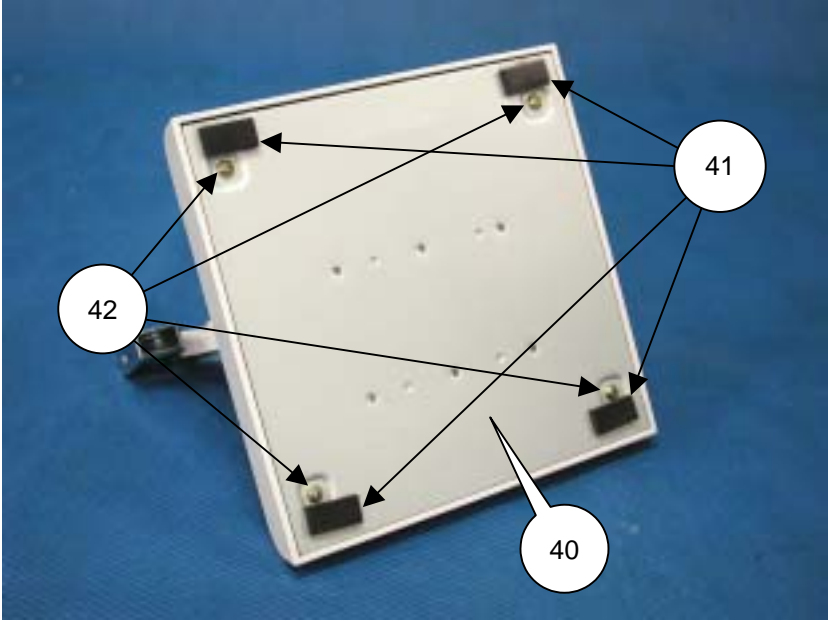
SYMBOL	CODE	DESCRIPTION	CABINET COLOR
33	79PL1905	HINGE-L-NEC-NEC-FA150ATUA	
34	79PL1906	HINGE-R-NEC-NEC-FA150ATUA	
35	79PL1835	STAND FRONT	White
35	79PL1845	COVER-STAND FRONT-NMV(NEC	Black
36	---	SCREW-M4*8(SPECIAL)	



SYMBOL	CODE	DESCRIPTION	CABINET COLOR
37	79PL1898	STAND-BASE-NMV-NEC-FA15AA	White
37	79PL2040	BASE ASS'Y-NEC-NEC-FA15AA	Black
38	79PL1907	BRACKET-HINGE-NEC-FA150AT	
39	---	SCREW-M4*16(DOUBLE WASHER)	



SYMBOL	CODE	DESCRIPTION
40	79PL1875	BRACKET-STAND PLATE-NEC-
41	79PL1869	FOOT RUBBER
42	---	SCREW-M3*10



ADJUSTMENT PROCEDURES

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1. Application

This specification shall be applied to the adjustment of the LCD1550ME set.

2. Basic operation

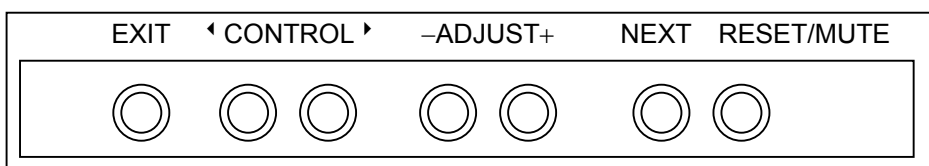
2.1. General conditions

Unless otherwise specified, adjustments shall be carried out under the following conditions:

- 1) Power source voltage: AC 100 - 120V/ 220 - 240V \pm 5%, 50/60Hz
- 2) Equipment to be used: Equipment that can generate an output of the adjusted VG-819 unit or equivalent
- 3) Connections: Connections are made to the D-Sub connector of the unit under inspection by means of the connector that can carry each output of the VG-819.

2.2. Basic function

2.2.1. Key layout

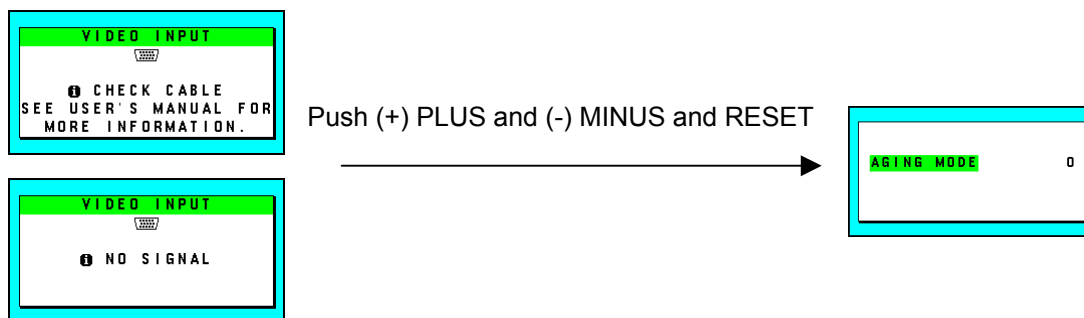


- | | |
|---------|---|
| Exit | : Menu Close, Sub menu exit |
| Control | : Menu Open, Cursor Move, Item Select |
| Adjust | : Menu Open, Adjust select item, Enter Sub menu |
| Next | : Menu Open, Tag Select, Function execute |
| Reset | : Open reset menu, Sound Mute |

2.2.2. Aging

Prior to the adjustment of this model, 30 minutes of aging shall be carried out. The method of aging mode setting shall conform to the following:

- 1) Turn the POWER switch on while there are no inputs of the VIDEO and SYNC signals.
- 2) Press the (\blacktriangleright) RIGHT or (\blacktriangleleft) LEFT or (+) PLUS or (-) MINUS key to display the information OSM.
- 3) Then, Press the (+) PLUS and (-) MINUS keys simultaneously with the RESET key kept pressed. Then the mode moves to the aging mode.



- 4) If there is no particular operation, an all white screen (255/255 gradation) is displayed.
- 5) Operate the (▶) RIGHT and (◀)LEFT keys in this state. Then, operation for the gradation becomes possible. It is also possible to change the pattern by operating the (▶)RIGHT and (◀)LEFT keys.
- 6) When withdrawing from the aging mode, press the EXIT key.

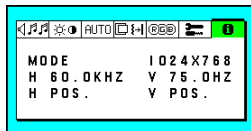
During operation in the aging mode, the power save mode is not assumed. The LED maintains the green display.

2.2.3. Service mode

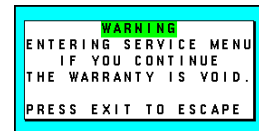
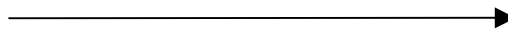
At the time of adjustment of this model, a suggestion may be given to enter the service (factory) mode. This will be explained below.

(1) Service mode:

- 1) In the “display mode” menu, press the (+) and (-) LEFT keys at the same time while pressing the RESET key.
- 2) When the NEXT key is pressed under the condition that the WARNING screen is displayed, the mode moves to the SERVICE mode. At that time, the LED is kept lit in green. The OSM AUTO-OFF function is disabled.
- 3) When withdrawing from the SERVICE mode, press the EXIT key in the highest hierarchy of the SERVICE menu, or make a signal changeover, or take an action of POWER OFF.



Push (+) PLUS and (-) MINUS and RESET



(2) Service menu:

This is an OSM menu to be displayed when the mode is changed over to the SERVICE mode. The conditions differ in each mode, in regard to entering and withdrawal, and whether the data are recorded in the EEPROM. Items of the service menu are used in common.

3. Set adjustments

3.1. Measuring instruments to be used

The measuring instruments considered necessary for the adjustment of the LCD1550ME set are specified below.

- 1) Equipment that can generate an output of the adjusted VG-819 unit or equivalent

3.2. Power source voltage

100 - 120V/ 220 - 240V \pm 5%, 50/60Hz

3.3. Electrification

- 1) Make connections according to the mode intended for VG-819 cable setting.
- 2) Turn on the POWER switch of the VG-819 unit.
- 3) Connect an AC power cable to the unit under inspection.
- 4) Confirm that the vacation switch (seesaw switch) at the left side of the unit being inspected has been moved to the "I" side, and turn the POWER switch ON at the right side of the front.
- 5) The LED of the unit under inspection is lit in amber. (In the middle of signal discrimination)
- 6) After the completion of signal discrimination, the LED is lit in green.

Note 1: When the POWER source switch is turned on for the first time, the initialization of EEPROM is effected regardless of the ON/OFF position of the POWER switch. In this period (about 1 minutes), the POWER switch must not be moved to the ON or OFF position. Upon the completion of the initialization, a normal screen is displayed. (If no signal input is entered, the information OSM is displayed.) If the screen is not displayed for more than 5 minutes after the electrification, however, this seems to have resulted from failure in the initialization of EEPROM. Such a condition is regarded as NG.

Note 2: Connections for the connectors should be carried out always under the condition that the AC POWER cord plug has been pulled out.

3.4. Input signals

Refer to Paragraph 3.6.1 for each adjustment item.

3.5. POWER ON and signal input

- 1) Turn on the vacation switch located on the side of the main unit (the power supply for the signal generator turned off) and turn on the power circuit by pressing the POWER key on the front panel. Confirm in this case that the LED is lit in amber. When the power supply is turned on for the first time after the completion of PWB assembly, do not turn off the power supply for at least 10 seconds because initialization is required to be performed.
- 2) Turn on the power supply of the signal generator and enter an input of Signal 1. Confirm that the LED is turned from amber to green.
* If this LED is not lit in green at that time, it is regarded as a defective LED.
- 3) Prior to adjustments, execute the factory reset procedure without fail. The method of this action is described below.
 - a) Display the SERVICE menu and adjust the cursor to the item of [FACTORY RESET].
 - b) Enter a signal 2 input of VGA 640x480(Solid all white pattern).
 - c) Press the (+) PLUS or (-) MINUS keys to execute the factory reset procedure.

3.6. Manual adjustments

3.6.1. Input video signal

VG-819 setting values

MODE			Signal 1 VESA 1024x768@75Hz	Signal 2 VGA 640x480
H	DOT CLOCK	[MHz]	78.75	25.18
	TOTAL	[DOT]	1312	800
	DISP	[DOT]	1024	640
	SYNC PULSE	[DOT]	96	96
	BACK	[DOT]	176	48
	HDstrat	[DOT]	0	0
	Hdwidth	[DOT]	0	0
	V	INTERLACE		NON
	TOTAL	[H]	800	525
	DISP	[H]	768	480
	SYNC PULSE	[H]	3	2
	BACK PORCH	[H]	28	33
	EQPfp	[H]	0	0
	EQPbp	[H]	0	0
	SERRATION	[H]	OFF	OFF
	EDP	[H]	OFF	OFF
	VDs	[H]	0	0
	VBf	[H]	0	0
OUTPUT	OUTPUT MODE		ANALOG	ANALOG
	NRZ/RZ		NRZ	NRZ
	CV			
	HS		POS	NEG
	VS		POS	NEG
	CS		NEG	NEG
	HD		NEG	NEG
	VD		NEG	NEG
	RGB		POS	POS
	HT		POS	POS
	C		POS	POS
	VIDEO		0.70	0.70
	Set-up		OFF	OFF
	Sync		0.3	0.3
	Display setting		Gray scale + External frame (16 gradations) 0 ~ 100%	Solid all white

3.6.2. VIDEO gain adjustments

Use the signal source for which the analog output (R/G/B) has been adjusted to 0.7V.

- 1) Enter a signal 1 input of SXGA 1024x768(75Hz).
- 2) Turn off the display pattern completely and obtain an all black screen.
- 3) Assume the FACTORY mode in the procedures of Paragraph 2.2.3 and display the SERVICE menu.
- 4) Press the NEXT key once and advance to the tag [2].

1	2	3	4	5	6	
AUTO OFFSET						
R OFFSET						80
G OFFSET						80
B OFFSET						80
AUTO CONT MAX						
R CONT						255
G CONT						255
B CONT						255

- 5) Adjust the display pattern to Gray Scale (0 to 100%: in 16 gradations) + External Frame.
- 6) Use the (▶) RIGHT or (◀) LEFT keys and adjust the cursor to [AUTO OFFSET]. Make adjustments by pressing the (+) PLUS or (-) MINUS keys.
- 7) When adjustments are over and the original screen has been recovered, confirm that all the 16 gradations of black to white are displayed.
- 8) Use the (▶) RIGHT or (◀) LEFT keys and adjust the cursor to [AUTO CONT MAX].
- 9) Press the EXIT key and withdraw from the SERVICE mode.

3.6.3. Factory setting

- 1) Enter a signal input. (no prescribe)
- 2) Assume the FACTORY mode in the procedures of Paragraph 2.2.3 and display the SERVICE menu.
- 3) Press the NEXT key three times and advance to the tag |4|.

1	2	3	4	5	6	
OSD	DESIGN					0
OSM	SELECT					1
URL						1

- 4) Use the (▸) RIGHT or (◀) LEFT keys and adjust the cursor to [OSD DESIGN],[OSM SELECT] and [URL]. Set by pressing the (+) PLUS or (-) MINUS keys.

OSD DESIGN	0
OSM SELECT	0
URL	1

- 5) Press the EXIT key and withdraw from the SERVICE mode.

INSPECTION

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1. Set Inspection

1.1.1. Application

The inspection procedures specified in this item shall be applied to the inspection of the LCD1550ME unit.

1.2. Inspection conditions

Unless otherwise specified, inspection shall be carried out under the following conditions.

1.2.1. Power source voltage

AC voltage: AC 100 - 120V/ 220 - 240V \pm 5%, 50/60Hz

1.2.2. Equipment to be used

Equipment that can generate an output of the adjusted VG-819 unit or equivalent.

The signal timing for the inspection ROM shall conform to the table provided in Paragraph 1.2.8 herein.

1.2.3. Inspection cables/connections

1) Connections between the unit under inspection and the VG-819 shall be made through D-SUB connector of the unit under inspection and the cable that can carry each output of the VG-819, as specified below.

BNC-DSUB (female) connector

2) For connections to the power supply, an AC cable for LCD1550VM shall be used.

1.2.4. Brightness setting

Unless otherwise specified, inspection shall be carried out under the condition that the LCD brightness is set at the highest level.

1.2.5. Inspection mode

Each inspection shall be carried out in the inspection mode specified in each relevant inspection item.

The detailed setting for each mode shall be specified in Paragraph 1.2.8 herein.

1.2.6. OSM functions

If checking and operation by OSM are specified in each inspection item, display and operation of the OSM shall be carried out by operating the push switches of the unit under inspection, according to the instructions.

Outline operation is described in Item 1.3, "Operation of OSM control."

1.2.7. Configuration of inspection jigs

Signal source

1) A video signal generator shall be used, which can generate an output of the VG-819 unit or equivalent.

1.2.8. Inspection mode setting

The respective setting data shall be the data for the VG-819.

Signal		VG-819 setting values				
		01	02	03 Not used	04	05
H	CLOCK [MHz]	28.322	35.500	21.053	28.322	35.500
	HPERIOD [DOT]	900	936	848	900	936
	HDISP [DOT]	720	720	640	720	720
	HSYNC [DOT]	108	72	64	108	72
	HBACKP [DOT]	54	108	84	54	108
	HDSTART [DOT]	0	0	0	0	0
	HDWIDTH [DOT]	0	0	0	0	0
V	VTOTAL [H]	449	446	440	449	446
	VDISP [H]	350	350	400	400	400
	VSYNC [H]	2	3	8	2	3
	VBACKP [H]	60	61	25	35	42
	EQP FP [H]	0	0	0	0	0
	EQP BP [H]	0	0	0	0	0
	SERRATION	OFF	OFF	OFF	OFF	OFF
	EQP	OFF	OFF	OFF	OFF	OFF
	VDSTART [H]	0	0	0	0	0
	VDLINE [H]	0	0	0	0	0
	SCAN	Nonint	Nonint	Nonint	Nonint	Nonint
OUTPUT	NRZ/RZ	NRZ	NRZ	NRZ	NRZ	NRZ
	HS	POSI	POSI	NEGA	NEGA	NEGA
	VS	NEGA	NEGA	NEGA	POSI	POSI
	CS	NEGA	NEGA	NEGA	NEGA	NEGA
	HD	NEGA	NEGA	NEGA	NEGA	NEGA
	VD	NEGA	NEGA	NEGA	NEGA	NEGA
	CLOCK	NEGA	NEGA	NEGA	NEGA	NEGA
	SYNC ON					
	RGB	POSI	POSI	POSI	POSI	POSI
	VIDEO	0.70V	0.70V	0.70V	0.70V	0.70V
	SETUP	OFF	OFF	OFF	OFF	OFF
	CLKMODE	1/2	1/2	1/2	1/2	1/2
	CLKOUT	ALL	ALL	ALL	ALL	ALL
	DISP,1CH,2CH	POSI	POSI	POSI	POSI	POSI
	SW0,SW1	OFF	OFF	OFF	OFF	OFF
	RGB	8 bit	8 bit	8 bit	8 bit	8 bit
	R(7-0),G(7-0),B(7-0)	11111111	11111111	11111111	11111111	11111111
DELAY	ON	ON	ON	ON	ON	
CLOCK DELAY	4 nsec	4 nsec	4 nsec	4 nsec	4 nsec	
PAT SEL		OPTION 2	OPTION 2	OPTION 2	OPTION 2	
CHRA PATTERN	Format	1	1	1	1	1
	Code	82	82	82	82	82
	Font	16*16	16*16	16*16	16*16	16*16
	Cell	16*16	16*16	16*16	16*16	16*16
GRAY	Direction : 0	L0: 0 L1: 17 L2: 34 L3: 51 L4: 68 L5: 85 L6: 102 L7: 127 L8: 143 L9: 159 LA: 175 LB: 191 LC: 207 LD: 223 LE: 239 LF: 255				
OPTION 2		(Note 2)				

Signal			VG-819 setting values				
Mode			06	07	08	09	10
H	CLOCK	[MHz]	25.18	30.24	31.5	31.5	36.0
	HPERIOD	[DOT]	800	864	832	840	832
	HDISP	[DOT]	640	640	640	640	640
	HSYNC	[DOT]	96	64	40	64	56
	HBACKP	[DOT]	48	96	128	120	80
	HDSTART	[DOT]	0	0	0	0	0
	HDWIDTH	[DOT]	0	0	0	0	0
V	VTOTAL	[H]	525	525	520	500	509
	VDISP	[H]	480	480	480	480	480
	VSYNC	[H]	2	3	3	3	3
	VBACKP	[H]	33	39	28	16	25
	EQP FP	[H]	0	0	0	0	0
	EQP BP	[H]	0	0	0	0	0
	SERRATION		OFF	OFF	OFF	OFF	OFF
	EQP		OFF	OFF	OFF	OFF	OFF
	VDSTART	[H]	0	0	0	0	0
	VDLINE	[H]	0	0	0	0	0
	SCAN		Nonint	Nonint	Nonint	Nonint	Nonint
OUTPUT	NRZ/RZ		NRZ	NRZ	NRZ	NRZ	NRZ
	HS		NEGA	NEGA	NEGA	NEGA	NEGA
	VS		NEGA	NEGA	NEGA	NEGA	NEGA
	CS		NEGA	NEGA	NEGA	NEGA	NEGA
	HD		NEGA	NEGA	NEGA	NEGA	NEGA
	VD		NEGA	NEGA	NEGA	NEGA	NEGA
	CLOCK		NEGA	NEGA	NEGA	NEGA	NEGA
	SYNC ON		G				
	RGB		POSI	POSI	POSI	POSI	POSI
	VIDEO		0.70V	0.70V	0.70V	0.70V	0.70V
	SETUP		OFF	OFF	OFF	OFF	OFF
	CLKMODE		1/2	1/2	1/2	1/2	1/2
	CLKOUT		ALL	ALL	ALL	ALL	ALL
	DISP,1CH,2CH		POSI	POSI	POSI	POSI	POSI
	SW0,SW1		OFF	OFF	OFF	OFF	OFF
	RGB		8 bit	8 bit	8 bit	8 bit	8 bit
	R(7-0),G(7-0),B(7-0)		11111111	11111111	11111111	11111111	11111111
DELAY		ON	ON	ON	ON	ON	
CLOCK DELAY		4 nsec	4 nsec	4 nsec	4 nsec	4 nsec	
PAT SEL		OPTION 2	OPTION 2	OPTION 2	OPTION 2	OPTION 2	
CHRA PATTERN	Format		1	1	1	1	1
	Code		82	82	82	82	82
	Font		16*16	16*16	16*16	16*16	16*16
	Cell		16*16	16*16	16*16	16*16	16*16
GRAY	Direction : 0	L0: 0 L1: 17 L2: 34 L3: 51 L4: 68 L5: 85 L6: 102 L7: 127 L8: 143 L9: 159 LA: 175 LB: 191 LC: 207 LD: 223 LE: 239 LF: 255					
OPTION 2		(Note 2)					

Signal			VG-819 setting values				
Mode			11	12	13	14	15
H	CLOCK [MHz]		36.0	40.0	49.5	50.0	56.25
	HPERIOD [DOT]		1024	1056	1056	1040	1048
	HDISP [DOT]		800	800	800	800	800
	HSYNC [DOT]		72	128	80	120	64
	HBACKP [DOT]		128	88	160	64	152
	HDSTART [DOT]		0	0	0	0	0
	HDWIDTH [DOT]		0	0	0	0	0
V	VTOTAL [H]		625	628	625	666	631
	VDISP [H]		600	600	600	600	600
	VSYNC [H]		2	4	3	6	3
	VBACKP [H]		22	23	21	23	27
	EQP FP [H]		0	0	0	0	0
	EQP BP [H]		0	0	0	0	0
	SERRATION		OFF	OFF	OFF	OFF	OFF
	EQP		OFF	OFF	OFF	OFF	OFF
	VDSTART [H]		0	0	0	0	0
	VDLINE [H]		0	0	0	0	0
	SCAN		Nonint	Nonint	Nonint	Nonint	Nonint
	OUTPUT	NRZ/RZ		NRZ	NRZ	NRZ	NRZ
HS			POSI	POSI	POSI	POSI	POSI
VS			POSI	POSI	POSI	POSI	POSI
CS			NEGA	NEGA	NEGA	NEGA	NEGA
HD			NEGA	NEGA	NEGA	NEGA	NEGA
VD			NEGA	NEGA	NEGA	NEGA	NEGA
CLOCK			NEGA	NEGA	NEGA	NEGA	NEGA
SYNC ON							
RGB			POSI	POSI	POSI	POSI	POSI
VIDEO			0.70V	0.70V	0.70V	0.70V	0.70V
SETUP			OFF	OFF	OFF	OFF	OFF
CLKMODE			1/2	1/2	1/2	1/2	1/2
CLKOUT			ALL	ALL	ALL	ALL	ALL
DISP,1CH,2CH			POSI	POSI	POSI	POSI	POSI
SW0,SW1			OFF	OFF	OFF	OFF	OFF
RGB			8 bit	8 bit	8 bit	8 bit	8 bit
R(7-0),G(7-0),B(7-0)			11111111	11111111	11111111	11111111	11111111
DELAY		ON	ON	ON	ON	ON	
CLOCK DELAY		4 nsec	4 nsec	4 nsec	4 nsec	4 nsec	
PAT SEL		OPTION 2	OPTION 2	OPTION 2	OPTION 2	OPTION 2	
CHRA PATTERN	Format		1	1	1	1	1
	Code		82	82	82	82	82
	Font		16*16	16*16	16*16	16*16	16*16
	Cell		16*16	16*16	16*16	16*16	16*16
GRAY	Direction : 0	L0:0 L1:17 L2:34 L3:51 L4:68 L5:85 L6:102 L7:127 L8:143 L9:159 LA:175 LB:191 LC:207 LD:223 LE:239 LF:255					
OPTION 2		(Note 2)					

Signal			VG-819 setting values				
Mode			16	17	18	19	20
H	CLOCK [MHz]		57.28	65.0	70.49	75.0	78.75
	HPERIOD [DOT]		1152	1344	1344	1328	1312
	HDISP [DOT]		832	1024	1024	1024	1024
	HSYNC [DOT]		64	136	136	136	96
	HBACKP [DOT]		224	160	160	144	176
	HDSTART [DOT]		0	0	0	0	0
	HDWIDTH [DOT]		0	0	0	0	0
V	VTOTAL [H]		667	806	806	806	800
	VDISP [H]		624	768	768	768	768
	VSYNC [H]		3	6	6	6	3
	VBACKP [H]		39	29	29	29	28
	EQP FP [H]		0	0	0	0	0
	EQP BP [H]		0	0	0	0	0
	SERRATION		OFF	OFF	OFF	OFF	OFF
	EQP		OFF	OFF	OFF	OFF	OFF
	VDSTART [H]		0	0	0	0	0
	VDLINE [H]		0	0	0	0	0
	SCAN		Nonint	Nonint	Nonint	Nonint	Nonint
OUTPUT	NRZ/RZ		NRZ	NRZ	NRZ	NRZ	NRZ
	HS		NEGA	NEGA	NEGA	NEGA	POSI
	VS		NEGA	NEGA	NEGA	NEGA	POSI
	CS		POSI	NEGA	NEGA	NEGA	NEGA
	HD		POSI	NEGA	NEGA	NEGA	NEGA
	VD		POSI	NEGA	NEGA	NEGA	NEGA
	CLOCK		POSI	NEGA	NEGA	NEGA	NEGA
	SYNC ON		G				G
	RGB		POSI	POSI	POSI	POSI	POSI
	VIDEO		0.70V	0.70V	0.70V	0.70V	0.70V
	SETUP		OFF	OFF	OFF	OFF	OFF
	CLKMODE		1/2	1/2	1/2	1/2	1/2
	CLKOUT		ALL	ALL	ALL	ALL	ALL
	DISP,1CH,2CH		POSI	POSI	POSI	POSI	POSI
	SW0,SW1		OFF	OFF	OFF	OFF	OFF
	RGB		8 bit	8 bit	8 bit	8 bit	8 bit
R(7-0),G(7-0),B(7-0)		11111111	11111111	11111111	11111111	11111111	
DELAY		ON	ON	ON	ON	ON	
CLOCK DELAY		4 nsec	4 nsec	4 nsec	4 nsec	4 nsec	
PAT SEL		OPTION 2	OPTION 2	OPTION 2	OPTION 2	OPTION 2	
CHRA PATTERN	Format		1	1	1	1	1
	Code		82	82	82	82	82
	Font		16*16	16*16	16*16	16*16	16*16
	Cell		16*16	16*16	16*16	16*16	16*16
GRAY	Direction : 0	L0:0 L1:17 L2:34 L3:51 L4:68 L5:85 L6:102 L7:127 L8:143 L9:159 LA:175 LB:191 LC:207 LD:223 LE:239 LF:255					
OPTION 2		(Note 2)					

Signal			VG-819 setting values				
Mode			21	22	23	24	25
							Not used
H	CLOCK [MHz]		94.5	94.50	108.00	126.00	107.50
	HPERIOD [DOT]		1376	1528	1800	1680	1664
	HDISP [DOT]		1024	1152	1280	1280	1280
	HSYNC [DOT]		96	128	112	144	192
	HBACKP [DOT]		208	208	312	224	160
	HDSTART [DOT]		0	0	0	0	0
	HDWIDTH [DOT]		0	0	0	0	0
V	VTOTAL [H]		808	937	1000	1000	1078
	VDISP [H]		768	900	960	960	1024
	VSYNC [H]		3	4	3	3	4
	VBACKP [H]		36	31	36	36	43
	EQP FP [H]		0	0	0	0	0
	EQP BP [H]		0	0	0	0	0
	SERRATION		OFF	OFF	OFF	OFF	OFF
	EQP		OFF	OFF	OFF	OFF	OFF
	VDSTART [H]		0	0	0	0	0
	VDLINE [H]		0	0	0	0	0
	SCAN		Nonint	Nonint	Nonint	Nonint	Nonint
	OUTPUT	NRZ/RZ		NRZ	NRZ	NRZ	NRZ
HS			POSI	POSI	POSI	NEGA	POSI
VS			POSI	POSI	POSI	NEGA	POSI
CS			NEGA	NEGA	NEGA	NEGA	NEGA
HD			NEGA	NEGA	NEGA	NEGA	NEGA
VD			NEGA	NEGA	NEGA	NEGA	NEGA
CLOCK			NEGA	NEGA	NEGA	NEGA	NEGA
SYNC ON							
RGB			POSI	POSI	POSI	POSI	POSI
VIDEO			0.70V	0.70V	0.70V	0.70V	0.70V
SETUP			OFF	OFF	OFF	OFF	OFF
CLKMODE			1/2	1/2	1/2	1/2	1/2
CLKOUT			ALL	ALL	ALL	ALL	ALL
DISP,1CH,2CH			POSI	POSI	POSI	POSI	POSI
SW0,SW1			OFF	OFF	OFF	OFF	OFF
RGB			8 bit	8 bit	8 bit	8 bit	8 bit
R(7-0),G(7-0),B(7-0)			11111111	11111111	11111111	11111111	11111111
DELAY		ON	ON	ON	ON	ON	
CLOCK DELAY		4 nsec	4 nsec	4 nsec	4 nsec	4 nsec	
PAT SEL		OPTION 2	OPTION 2	OPTION 2	OPTION 2	OPTION 2	
CHRA PATTERN	Format		1	1	1	1	1
	Code		82	82	82	82	82
	Font		16*16	16*16	16*16	16*16	16*16
	Cell		16*16	16*16	16*16	16*16	16*16
GRAY	Direction : 0		L0:0 L1:17 L2:34 L3:51 L4:68 L5:85 L6:102 L7:127 L8:143 L9:159 LE:239	L1:17 L2:34 L3:51 LA:175 LB:191 LC:207 LF:255	L3:51 L4:68 L5:85 LA:175 LB:191 LC:207 LD:223	L4:68 L5:85 L6:102 LB:191 LC:207 LD:223	L5:85 L6:102 L7:127 LF:255
OPTION 2		(Note 2)					

Signal			VG-819 setting values				
Mode			26	27	28	29	30
H	CLOCK	[MHz]	108.00	117.00	135.00	135.00	94.50
	HPERIOD	[DOT]	1688	1632	1688	1664	1480
	HDISP	[DOT]	1280	1280	1280	1280	1152
	HSYNC	[DOT]	112	112	144	64	96
	HBACKP	[DOT]	248	224	248	288	200
	HDSTART	[DOT]	0	0	0	0	0
	HDWIDTH	[DOT]	0	0	0	0	0
V	VTOTAL	[H]	1066	1067	1066	1066	912
	VDISP	[H]	1024	1024	1024	1024	864
	VSYNC	[H]	3	8	3	8	3
	VBACKP	[H]	38	33	38	32	44
	EQP FP	[H]	0	0	0	0	0
	EQP BP	[H]	0	0	0	0	0
	SERRATION		OFF	OFF	OFF	OFF	OFF
	EQP		OFF	OFF	OFF	OFF	OFF
	VDSTART	[H]	0	0	0	0	0
	VDLINE	[H]	0	0	0	0	0
	SCAN		Nonint	Nonint	Nonint	Nonint	Nonint
OUTPUT	NRZ/RZ		NRZ	NRZ	NRZ	NRZ	NRZ
	HS		POSI	POSI	POSI	POSI	POSI
	VS		POSI	POSI	POSI	POSI	POSI
	CS		NEGA	NEGA	POSI	POSI	POSI
	HD		NEGA	NEGA	NEGA	NEGA	NEGA
	VD		NEGA	NEGA	NEGA	NEGA	NEGA
	CLOCK		NEGA	NEGA	NEGA	NEGA	NEGA
	SYNC ON						
	RGB		POSI	POSI	POSI	POSI	POSI
	VIDEO		0.70V	0.70V	0.70V	0.70V	0.70V
	SETUP		OFF	OFF	OFF	OFF	OFF
	CLKMODE		1/2	1/2	1/2	1/2	1/2
	CLKOUT		ALL	ALL	ALL	ALL	ALL
	DISP,1CH,2CH		POSI	POSI	POSI	POSI	POSI
	SW0,SW1		OFF	OFF	OFF	OFF	OFF
	RGB		8 bit	8 bit	8 bit	8 bit	8 bit
	R(7-0),G(7-0),B(7-0)		11111111	11111111	11111111	11111111	11111111
DELAY		ON	ON	ON	ON	ON	
CLOCK DELAY		4 nsec	4 nsec	4 nsec	4 nsec	4 nsec	
PAT SEL		OPTION 2	OPTION 2	OPTION 2	OPTION 2	OPTION 2	
CHRA PATTERN	Format		1	1	1	1	1
	Code		82	82	82	82	82
	Font		16*16	16*16	16*16	16*16	16*16
	Cell		16*16	16*16	16*16	16*16	16*16
GRAY	Direction : 0	L0:0 L1:17 L2:34 L3:51 L4:68 L5:85 L6:102 L7:127 L8:143 L9:159 LA:175 LB:191 LC:207 LD:223 LE:239 LF:255					
OPTION 2		(Note 2)					

Signal			VG-819 setting values														
Mode			31	32	33	34	35										
H	CLOCK	[MHz]	108.00	162.00	108.00												
	HPERIOD	[DOT]	1600	2160	1688												
	HDISP	[DOT]	1152	1600	1280												
	HSYNC	[DOT]	128	192	112												
	HBACKP	[DOT]	256	304	248												
	HDSTART	[DOT]	0	0	0												
	HDWIDTH	[DOT]	0	0	0												
V	VTOTAL	[H]	900	1250	1066												
	VDISP	[H]	864	1200	1024												
	VSYNC	[H]	3	3	3												
	VBACKP	[H]	32	46	6380												
	EQP FP	[H]	0	0	0												
	EQP BP	[H]	0	0	0												
	SERRATION		OFF	OFF	OFF												
	EQP		OFF	OFF	OFF												
	VDSTART	[H]	0	0	0												
	VDLINE	[H]	0	0	0												
	SCAN		Nonint	Nonint	Nonint												
	OUTPUT	NRZ/RZ		NRZ	NRZ	NRZ											
HS			POSI	POSI	POSI												
VS			POSI	POSI	POSI												
CS			POSI	POSI	NEGA												
HD			NEGA	NEGA	NEGA												
VD			NEGA	NEGA	NEGA												
CLOCK			NEGA	NEGA	NEGA												
SYNC ON																	
RGB			POSI	POSI	POSI												
VIDEO			0.70V	0.70V	0.70V												
SETUP			OFF	OFF	OFF												
CLKMODE			1/2	1/2	1/2												
CLKOUT			ALL	ALL	ALL												
DISP,1CH,2CH			POSI	POSI	POSI												
SW0,SW1			OFF	OFF	OFF												
RGB			8 bit	8 bit	8 bit												
R(7-0),G(7-0),B(7-0)			11111111	11111111	11111111												
DELAY		ON	ON	ON													
CLOCK DELAY		4 nsec	4 nsec	4 nsec													
PAT SEL		OPTION 2	OPTION 2	OPTION 2													
CHRA PATTERN	Format		1	1	1												
	Code		82	82	82												
	Font		16*16	16*16	16*16												
	Cell		16*16	16*16	16*16												
GRAY	Direction : 0	L0:0	L1:17	L2:34	L3:51	L4:68	L5:85	L6:102	L7:127	L8:143	L9:159	LA:175	LB:191	LC:207	LD:223	LE:239	LF:255
OPTION 2		(Note 2)															

Signal			VG-819 setting values					
Mode			36	37	38	39	40	
H	CLOCK	[MHz]				34.40	34.40	
	HPERIOD	[DOT]				800	800	
	HDISP	[DOT]				640	640	
	HSYNC	[DOT]				96	96	
	HBACKP	[DOT]				48	48	
	HDSTART	[DOT]				0	0	
	HDWIDTH	[DOT]				0	0	
V	VTOTAL	[H]				1024	1024	
	VDISP	[H]				480	480	
	VSYNC	[H]				2	2	
	VBACKP	[H]				33	33	
	EQP FP	[H]				0	0	
	EQP BP	[H]				0	0	
	SERRATION					OFF	OFF	
	EQP					OFF	OFF	
	VDSTART	[H]				0	0	
	VDLINE	[H]				0	0	
	SCAN					Nonint	Nonint	
OUTPUT	NRZ/RZ					NRZ	NRZ	
	HS					NEGA	NEGA	
	VS					POSI	NEGA	
	CS					NEGA	NEGA	
	HD					NEGA	NEGA	
	VD					POSI	POSI	
	CLOCK					NEGA	NEGA	
	SYNC ON							
	RGB					POSI	POSI	
	VIDEO					0.70V	0.70V	
	SETUP					OFF	OFF	
	CLKMODE					1/2	1/2	
	CLKOUT					ALL	ALL	
	DISP,1CH,2CH					POSI	POSI	
	SW0,SW1					OFF	OFF	
	RGB					8 bit	8 bit	
	R(7-0),G(7-0),B(7-0)					11111111	11111111	
DELAY					ON	ON		
CLOCK DELAY					4 nsec	4 nsec		
PAT SEL					CHARA <input type="checkbox"/>	CHARA <input type="checkbox"/>		
CHRA PATTERN	Format					1	1	
	Code					82	82	
	Font					16*16	16*16	
	Cell					16*16	16*16	
GRAY	Direction : 0							
		L0:0	L1:17	L2:34	L3:51	L4:68	L5:85	L6:102
		L7:127	L8:143	L9:159	LA:175	LB:191	LC:207	LD:223
		LE:239	LF:255					

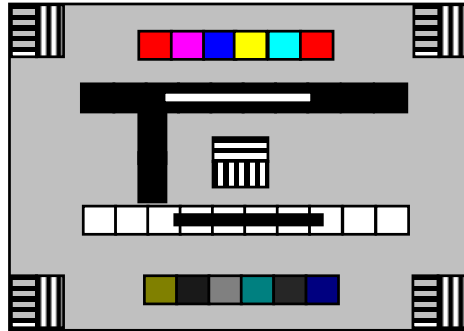
Note 1:

According to the designation of sync signals and the setting of each inspection mode, the analog outputs (BNC) of the signal generator shall be connected as specified below. (Except the cases when otherwise specified)

1) SEPARATE: R/G/B CONNECTION, HS \leftrightarrow H, VS \leftrightarrow V, CS not connected

Note 2:

Screen of Option 2



1.3. OSM control operation

Each OSM function is available by pressing the push-button switches (EXIT, ◀, ▶, -, +, NEXT, RESET) allocated in the lower section of the front bezel (or the control PWB when a PWB unit only is furnished).

1.3.1. Switch functions

The basic functions of the respective push-button switches (or called the keys, but in the same meaning) are described below.

In a mode where no OSM display is presented, the main menu of the OSM menu can be displayed when any key out of UP, DOWN, -, and + is pressed.

Exit:	Menu Close, Sub menu exit
Control (◀, ▶):	Menu Open, Cursor Move, Item Select
Adjust (+, -):	Menu Open, Adjust select item, Enter Sub menu
Next	Menu Open, Tag Select, Function execute
Reset:	Open reset menu, Sound Mute

1.3.2. Basic operational procedures

1) Press any key out of ◀ or ▶ or + or -, and confirm that a menu as shown below is displayed.



2) When the NEXT key is used, the selective tag moves to the right and the adjusting screen changes. With the adjusting screen selected, use the keys ◀ and ▶ to select the adjusting item (simply "item" hereafter) and set the adjusting value by the use of the keys - and +. To execute an automatic adjustment function (CONTRAST AUTO ADJUST, AUTO ADJUST), press the key + or - in the state of item highlight. Then, auto adjust are carried out.

When the adjusting item is present in TOOL or INFO., move to the selecting item with the NEXT key and select the wanted item with the keys ◀ and ▶. In the state that the wanted item is highlighted in green, press the key + or - in order to get the adjusting screen displayed for each item.

3) When inspection is finished, press the EXIT key to withdraw from the OSM menu.

1.4. Power ON

- 1) Connect an AC power cable to the unit being inspected.
- 2) Connect the VG-819 cable to the unit being inspected. Any input connector is acceptable.
- 3) Turn on the POWER switch of the VG-819 to generate an output of Signal 17.
- 4) There is a vacation switch (a seesaw switch) at the left side of the unit being inspected. Confirm that this switch is set at the “|” side. Press the POWER key at the right end of the front to turn on the unit being inspected.
- 5) The LED is then lit in green and a screen is displayed.

1.5. Inspection

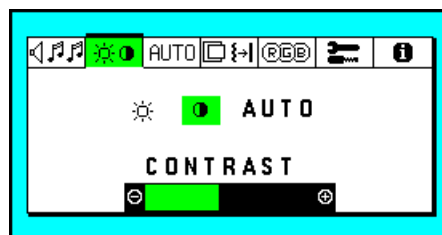
1.5.1. Inspection on LCD brightness and contrast

- 1) Enter Signal 17 through INPUT. The screen display is made in all white.
- 2) Display the BRIGHTNESS/CONTRAST tag of the OSM menu.
- 3) Get BRIGHTNESS highlighted with the ◀ and ▶ keys.



Brightness adjust menu

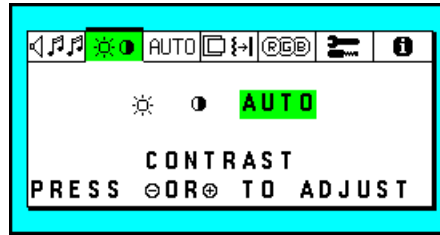
- 4) Confirm that the green bar is changed by the operation of the (-) and (+) keys, and that the screen brightness is changed.
- 5) Confirm that the highlight display is for BRIGHTNESS. Press the RESET key. Then, the confirmation screen is displayed. Press the NEXT key to make resetting. (The BRIGHTNESS bar is returned fully to the right.)
- 6) Use the ◀ and ▶ keys to obtain CONTRAST displayed in the highlight mode.



Contrast adjust menu

- 7) Confirm that the green bar is changed and the screen contrast is also changed when the (-) and (+) keys are operated.

8) Get AUTO ADJUST highlighted with the (-) and (+) keys.



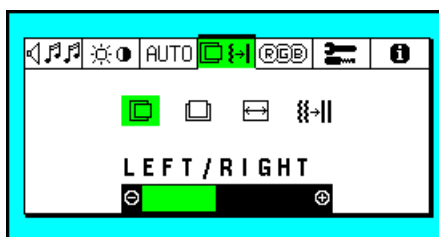
Contrast Auto Adjust menu

9) Press the (-) and (+) keys and wait until the OSM display is restored to the former display. At that time, confirm that the screen is normally displayed.

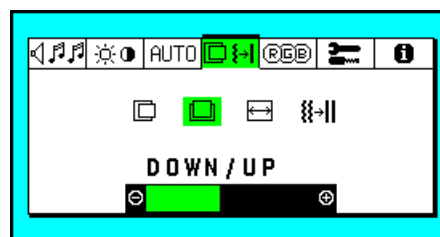
1.5.2. Inspection on automatic adjustment function

1) Enter Signal 17 through INPUT. (1-dot loss + External frame screen)

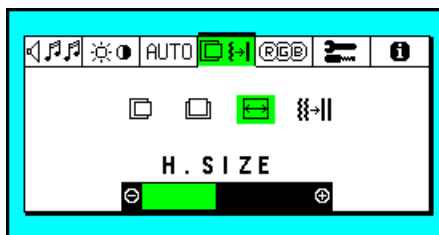
2) Display the OSM menu. Use the NEXT key to move as far as to the POSITION tag.



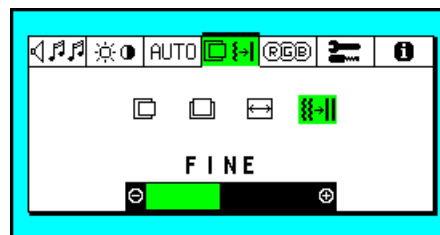
Horizontal Position adjust menu



Vertical Position adjust menu



H.SIZE adjust menu

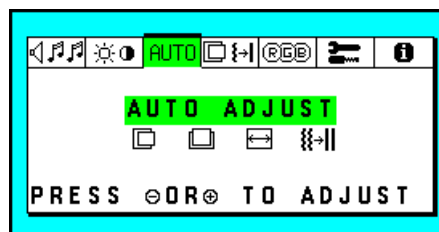


FINE adjust menu

3) Move the cursor to the HORIZONTAL POSITION, using the ◀ and ▶ keys. Operate the (-) and (+) keys to shift the POSITION to an extent so that the caused difference can be visually perceived.

4) In the same manner, shift the VERTICAL POSITION, H. SIZE, and FINE from their initial levels.

5) Use the NEXT key to move as far as to the AUTO ADJUST adjusting tag.



Auto Adjust menu

6) Execute automatic adjustments by the use of the (+) or (-) key.

Confirm that the screen (POSITION/SIZE/PHASE) is normally adjusted.

1.5.3. Inspection on input signal identification

Purpose of inspection: Confirming that a normal display is obtainable for each signal input.

Unless otherwise specified, the display pattern is as shown in the initial screen, conforming to 1.2.8 [Inspection mode setting].

--- Inspection of signal input ---

- 1) According to the table below, make setting of the input connector and the signal, and enter a signal input.

Item No.	Inspection signal No.	SYNC
1	<u>1</u>	SEPARATE
2	<u>4</u>	SEPARATE
3	<u>6</u>	SEPARATE
4	<u>8</u>	SEPARATE
5	9	SEPARATE
6	<u>11</u>	SEPARATE
7	<u>12</u>	SEPARATE
8	13	SEPARATE
9	14	SEPARATE
10	<u>17</u>	SEPARATE
11	<u>19</u>	SEPARATE
12	20	SEPARATE

- 2) When a screen is displayed, visually check whether the display is free from abnormality.
(Freedom from any extreme displacement in position, size, and phase, flickering in the screen, and extreme color deterioration)
- 3) Check the OSM menu for the signals that have signal numbers underlined. Display the OSM information screen (the rightmost tag). Get the [DISPLAY MODE] highlighted with the (◀) LEFT or (▶) RIGHT keys. Then, display the [DISPLAY MODE] screen with the (+) PLUS or (-) MINUS key. Confirm that the displayed definition coincides with the definition of the input signal.

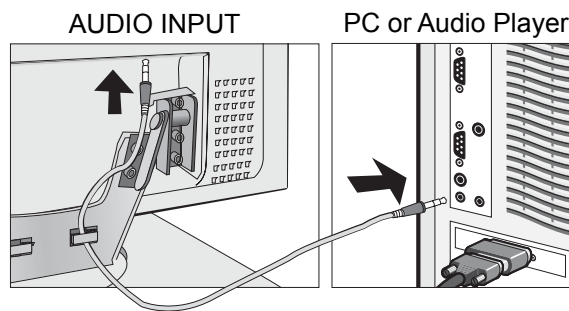
--- Inspection of POWER SAVE ---

- 4) Remove the output signal of the VG-819 from H.sync and V.sync connector. Confirm that the screen disappears and the OSM menu of the [NO SIGNAL] is displayed. Wait in this state for about 5 seconds, and confirm that the LED display is turned into amber and the POWER SAVE mode is assumed.

1.5.4. Inspection on Audio function

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

1) It connects audio-in with the PC or the audio player and it enters a sound.



2) Enter Signal 17 through INPUT.

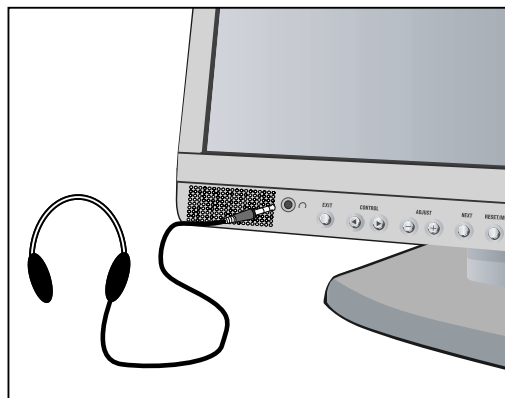
3) Display the OSM menu. Use the NEXT key to move as far as to the Volume tag.



Sound Volume menu

4) Confirm that the green bar is changed and the audio volume is also changed when the (-) and (+) keys are operated.

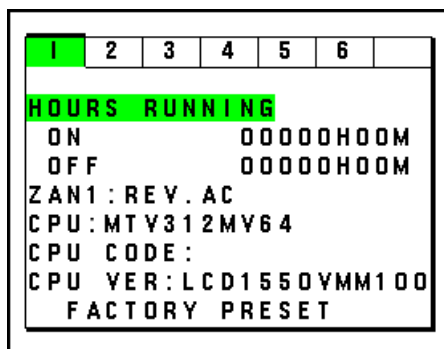
5) It confirms that sound is outputted from the left-right speakers and headphones.



1.6. Setting before shipment

In order to recover the initial conditions of all settings, the contents of the memory are reset before shipment. This reset process involves actions in regard to the memory of signal modes. Therefore, these actions should be taken after the completion of all electrical inspection and display inspection.

- 1) Enter an input of Signal 4 through INPUT. Operate the OSM to enter the service mode, and display a service menu.
- 2) Adjust the cursor to [FACTORY PRESET] by the use of the(◀) LEFT or (▶) RIGHT keys, and press the (+) PLUS, (-) MINUS keys.



Service menu

- 3) When the OSM is displayed again, the resetting process has been finished. Press the EXIT key to withdraw from the service mode.

Note 1: After the completion of this process, confirm, without fail, that the present condition is surely after the withdrawal from the service mode.

1.7. Safety test

- Destination : All over the world
- Applicable standards : UL1950/C-UL/EN60950
- Unit class : Class I units (the units protected against electric shocks by protective earthing, or those equipped with 3-core power cords)
- Ratings : AC100-120/220-240V 50/60Hz 0.7 / 0.35A

1.7.1. Input current measurements

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

(1) Measuring conditions

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

(2) Judgment standard

- The input current shall be kept below 0.7A +10%.

1.7.2. Power source/earth connections

a. Checks on the power source/earth connections

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

1) The earth wire color shall be spiral of green and yellow.

[Units applicable to UL1950 or IEC60950 (EN60950)]

2) The earth wire shall be firmly connected to the chassis block by the use of a screw (See Note) of 3.5mm \varnothing in diameter.

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

b. Earth resistance testing

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

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

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

1.7.3. Dielectric strength test

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

1) Measuring conditions

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

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

2) Judgment standard

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

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

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

1.7.4. Leakage current test

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

1) Measuring conditions

- Measuring instrument : Leakage current meter (A 1500Ω resistor shall be incorporated, together with a bypass capacitor of $0.15\mu\text{F}$.)
- Testing point : Between the exposed metallic block (D-SUB connector) and Phases A and B of the power source.
- Condition of the set : A power cable shall be connected without connecting a signal generator. The see-saw switch on the set side shall be turned ON and OFF.

2) Judgment standard

The leakage current measured shall be 1.5mA or less with an input of 240V AC \times 1.06 \pm 0V (60Hz).

1.7.5. Insulation resistance test

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

(1) Measuring conditions

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

(2) Judgment standard : $10\text{M}\Omega$ or more

2. External inspection on the LCD module

2.1. External inspection of the display surface

The display surface shall be visually inspected according to the inspection items specified below. In cases of the discovery of extreme defects or doubtful judgment, final judgment should be made on the basis of relevant detailed standards for inspection.

Unless otherwise specified, the inspection signals shall be used at the timing of Signal 17 specified in Paragraph 1.2.8 herein.

2.1.1. Inspection items

- 1) Examination of the missing of lines (horizontal or vertical lines failing to be displayed).
- 2) Presence of extreme missing of dots (bright dots and black dots), or conspicuous ones.
- 3) Presence of extreme flaws, wrinkles, air bubble, dents, lint, foreign matter, and conspicuous abnormality on the display surface.

2.1.2. Inspection standards

Inspection standards for external appearance and display conditions

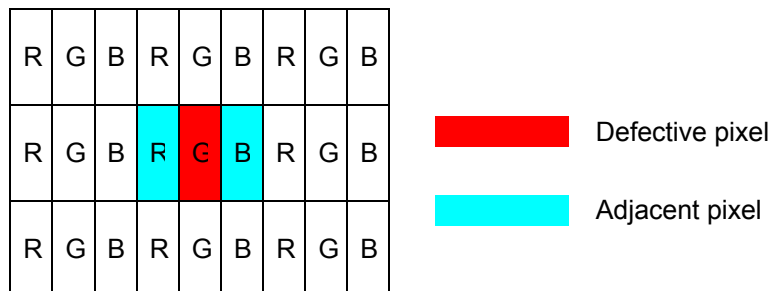
(1) Inspection condition

- a) Viewing distance is approximately 385cm.
- b) Ambient illuminant is from 300 to 500lux.
- c) Viewing angle is +/- 10 deg.
- d) Ambient temperature is approximately 25deg C.
- e) Input signal clock frequency: 40MHz.

Defect type		Limit	
Visual Defect	Scratch	$0.01\text{mm} \leq W \leq 0.05\text{mm}$ $L \leq 10\text{mm}$	$N \leq 4$
		$0.01\text{mm} \leq W$ $10\text{mm} < L$	$N = 0$
		$0.05\text{mm} < W$	$N = 0$
	Dent	$0.15\text{mm} \leq \Phi \leq 0.4\text{mm}$	$N \leq 4$
		$0.4\text{mm} < \Phi$	$N = 0$
	Block spot	$0.15\text{mm} \leq \Phi \leq 0.5\text{mm}$	$N \leq 4$
		$0.5\text{mm} < \Phi$	$N = 0$
	Lint	$L \leq 3\text{mm}$	$N \leq 4$
$3\text{mm} < L$		$N = 0$	
Newton rings		Not allowed	
Electrical defect	Bright dot		$N \leq 4$ (Green:4)
	Dark dot		$N \leq 4$
	Total dot		$N \leq 4$
	Two adjacent dot		
	Bright dot		≤ 2 pairs
	Dark dot		≤ 2 pairs
	Three or more adjacent dot		No allowed
	Distance between defects		
Bright dot		$\geq 15\text{mm}$	
Dark dot		$\geq 15\text{mm}$	
Line defect		No allowed	

*1) W: Width, L: Length, N: Number

*2) Definition of Adjacent



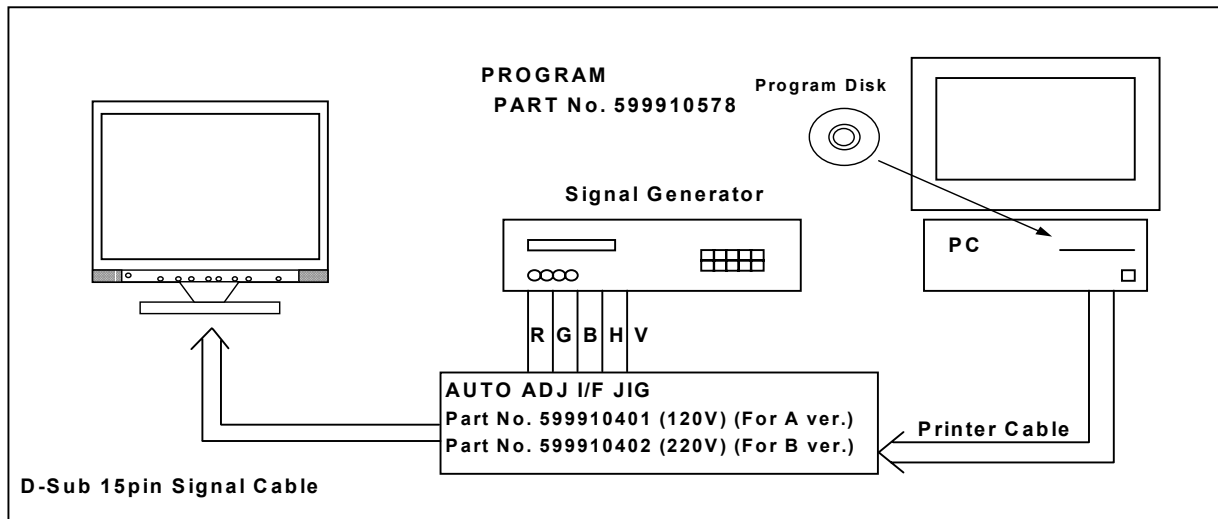
*3) Bright dot is defined as follows: $\geq 1/3$ area of sub-pixel

Dark dot is defined as follows: $\geq 1/3$ area of sub-pixel

3. Inspection of PLUG & PLAY communication and OSM "MONITOR INFORMATION" for model name/ serial number

3.1. A construction of System

This system should be connected as shown below.



3.2. Input Signal

Horizontal synchronization frequency : 43kHz(Negative)

Vertical synchronization frequency : 42Hz(Negative)

3.3. Operational procedures

1. Start PNP.EXE from DOS mode or DOS pronto of Windows.

2. Operation key assignment

- Determine the operation mode with the F1 ~ F9 and ESC keys.

F1 (Select Model) : Setting file changeover for respective models

F4 (Read) : EDID data for reading

F5 (Write Input 1) : It is not used in this model.

F8 (Write Input 2) : It is not used in this model.

F9 (Write ALL) : EDID data and OSM data of the writing and inspection.

ESC (EXIT) : End of program

3. Press the F1 key and enter an input of setting file for the related model. Press the Enter key.

File name	Model
08EK1ABD	LCD1550ME

4. Writing and inspection procedures

a. Press the F9 key (Write ALL).

b. Since the screen is changed over to the one that waits for an input of serial number, examine the serial number of the set, enter it from the keyboard, and press the Enter key.

The message of the screen:

Model Name "LCD1550ME "

Input serial number (Enter only: Use previous number)

c. Model name and serial number writing for the OSM "MONITOR INFO."

According to the screen commands, change over the signals, and make OSM menu setting for the writing set.

Signal: fH 43kHz (Negative)

fV 42Hz (Negative)

When the Enter key is pressed, the model name and serial number of the OSM "MONITOR INFORMATION" are written.

d. EDID data writing

When the Enter key is pressed, the EDID data of the D-SUB INPUT are written.

The message of the screen:

Input 1 File 1 set V 42Hz N (Hit any key)

e. Upon normal completion, a screen display is presented "OK".

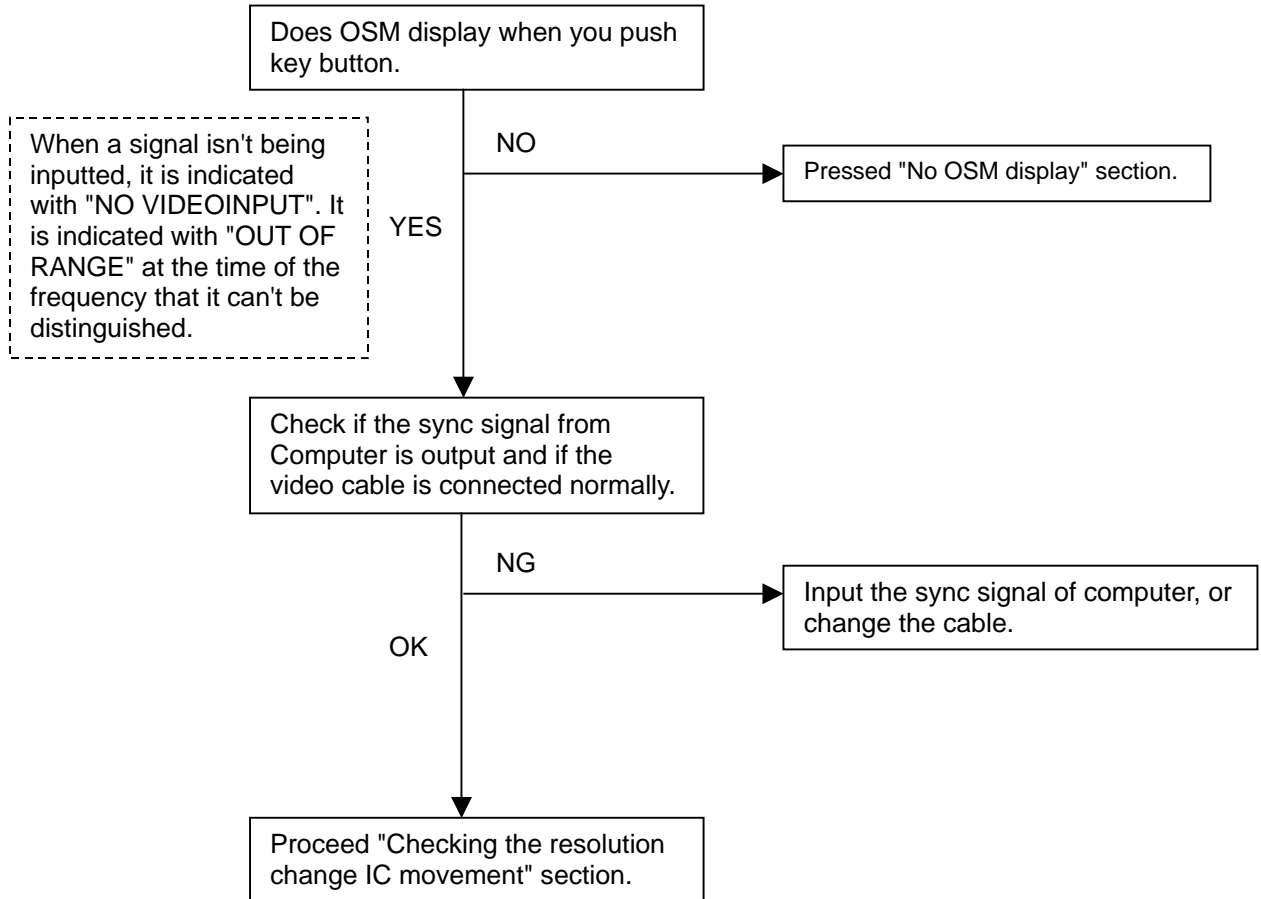
f. A power-supply switch is switched off -> turned on, Display "MONITOR INFORMATION" of the OSM, and confirm that the model name (LCD1550ME) and serial number have been correctly written.

TROUBLE SHOOTING

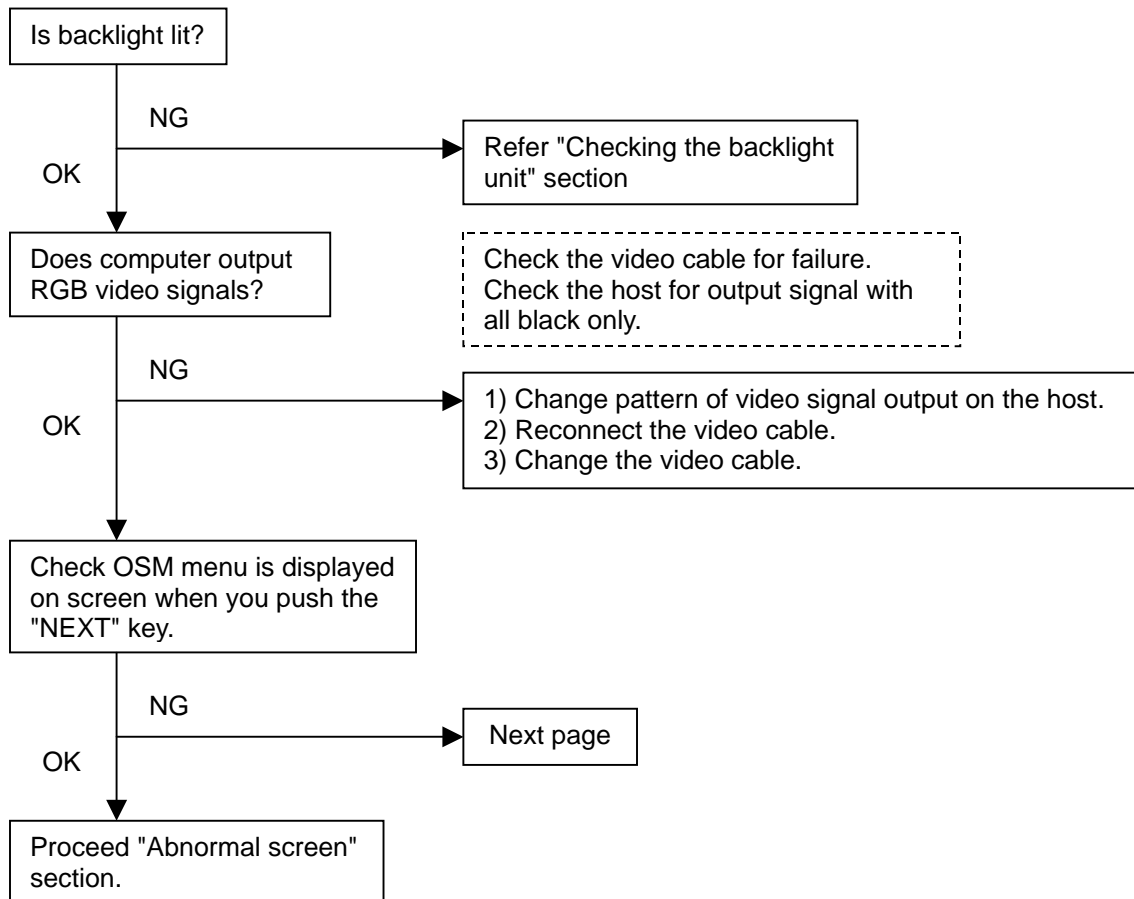
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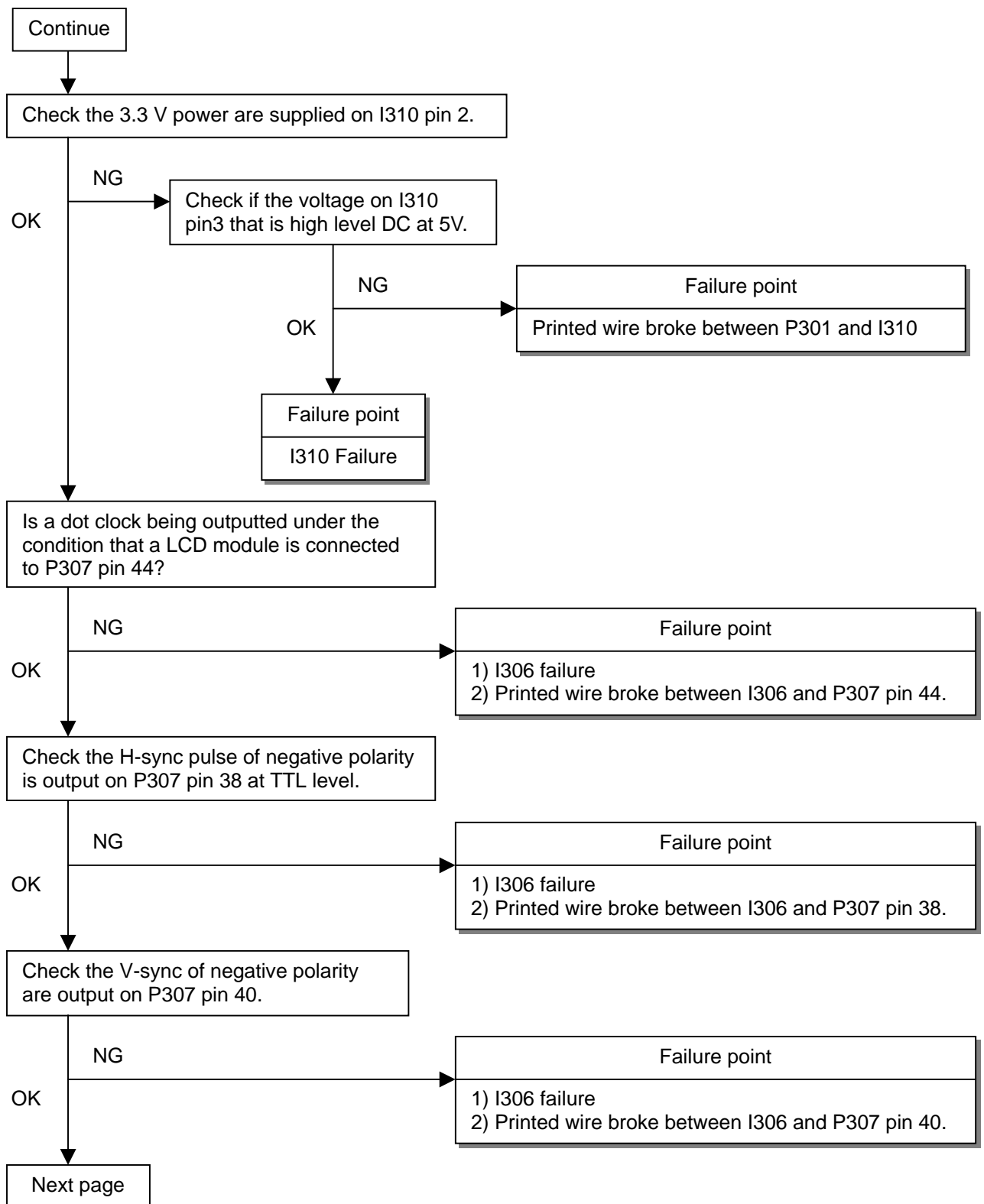
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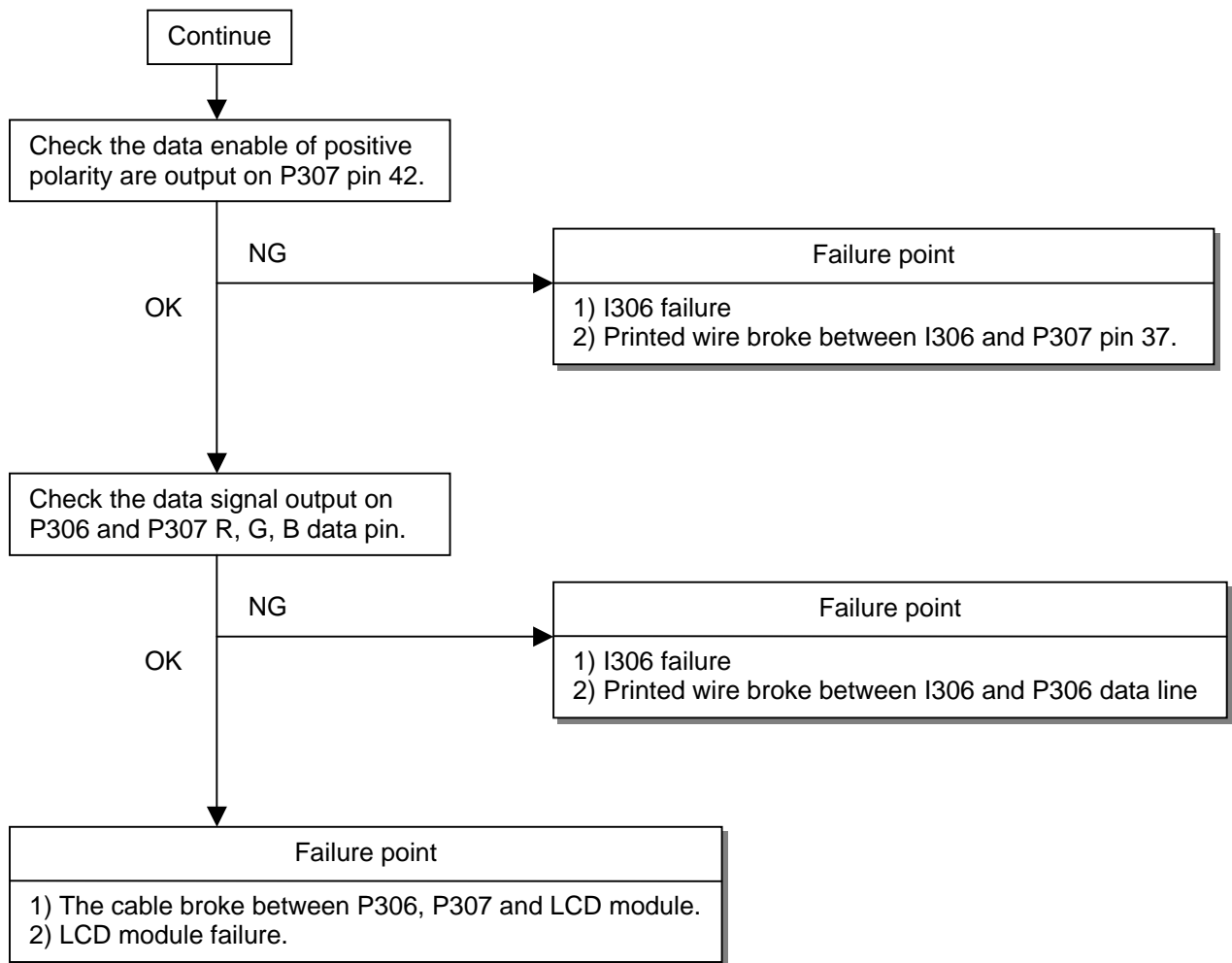
1. No display of screen (Screen is black, color of LED is amber)



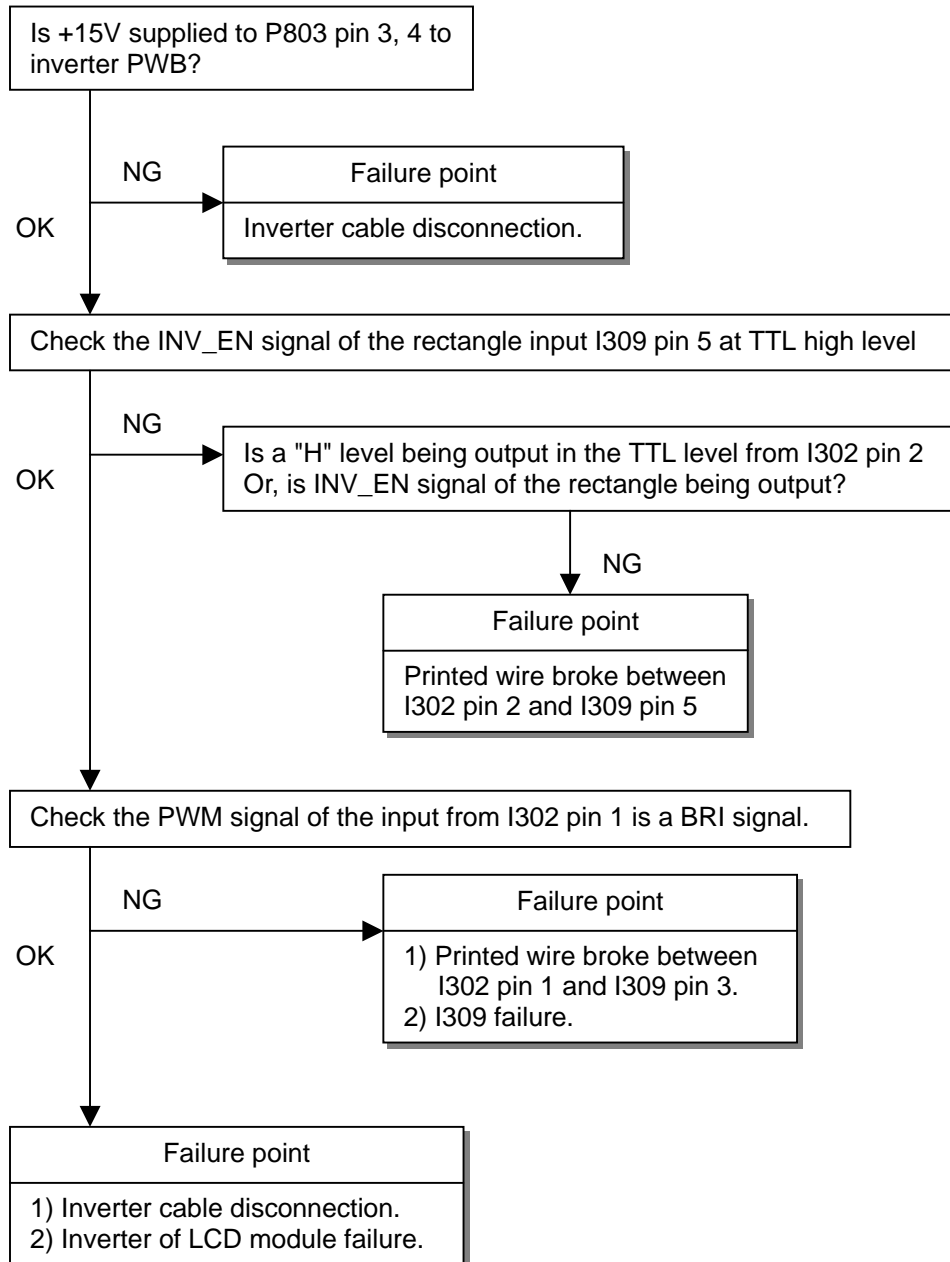
2. Nothing displays on screen (Screen is black, color of LED is green)



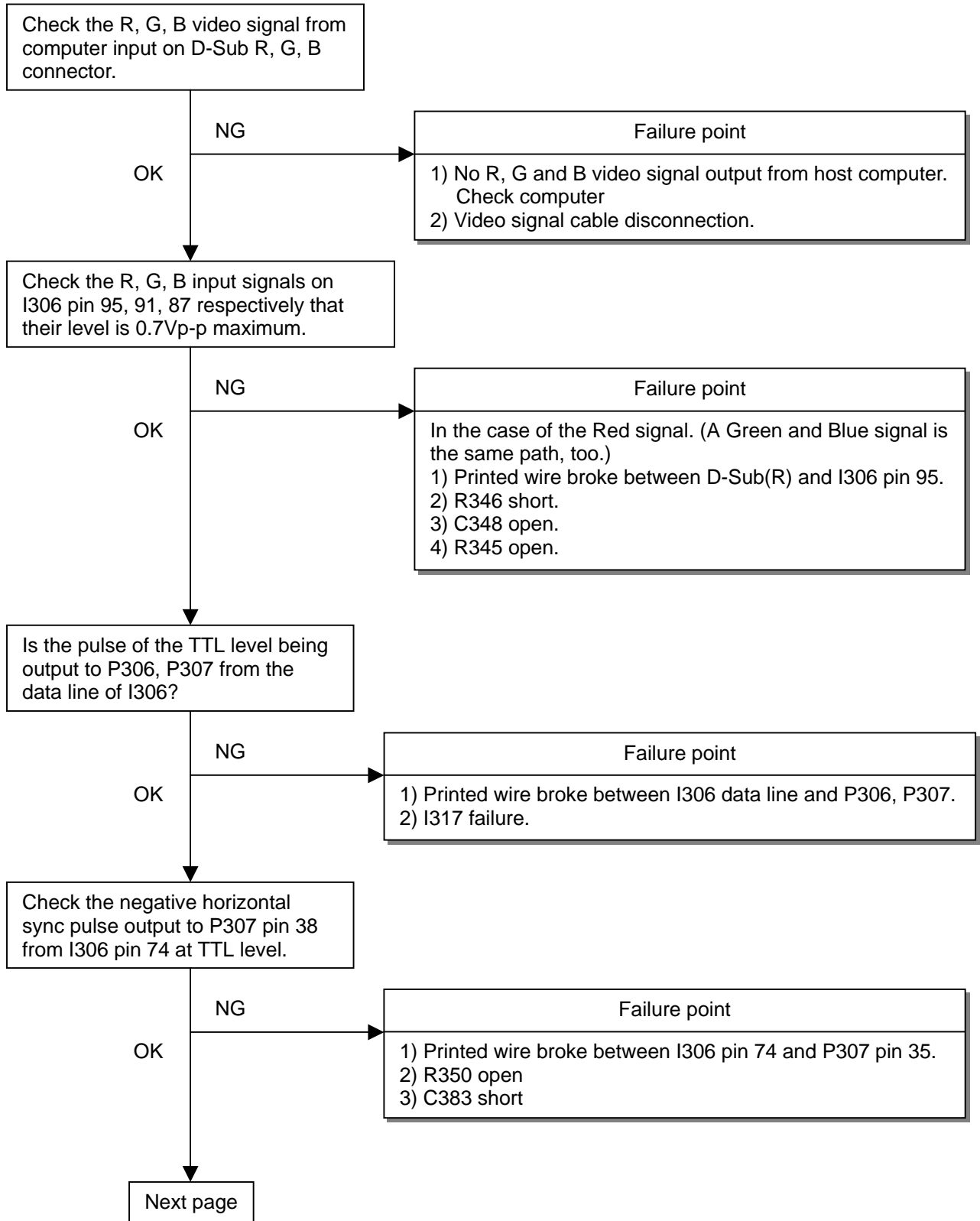


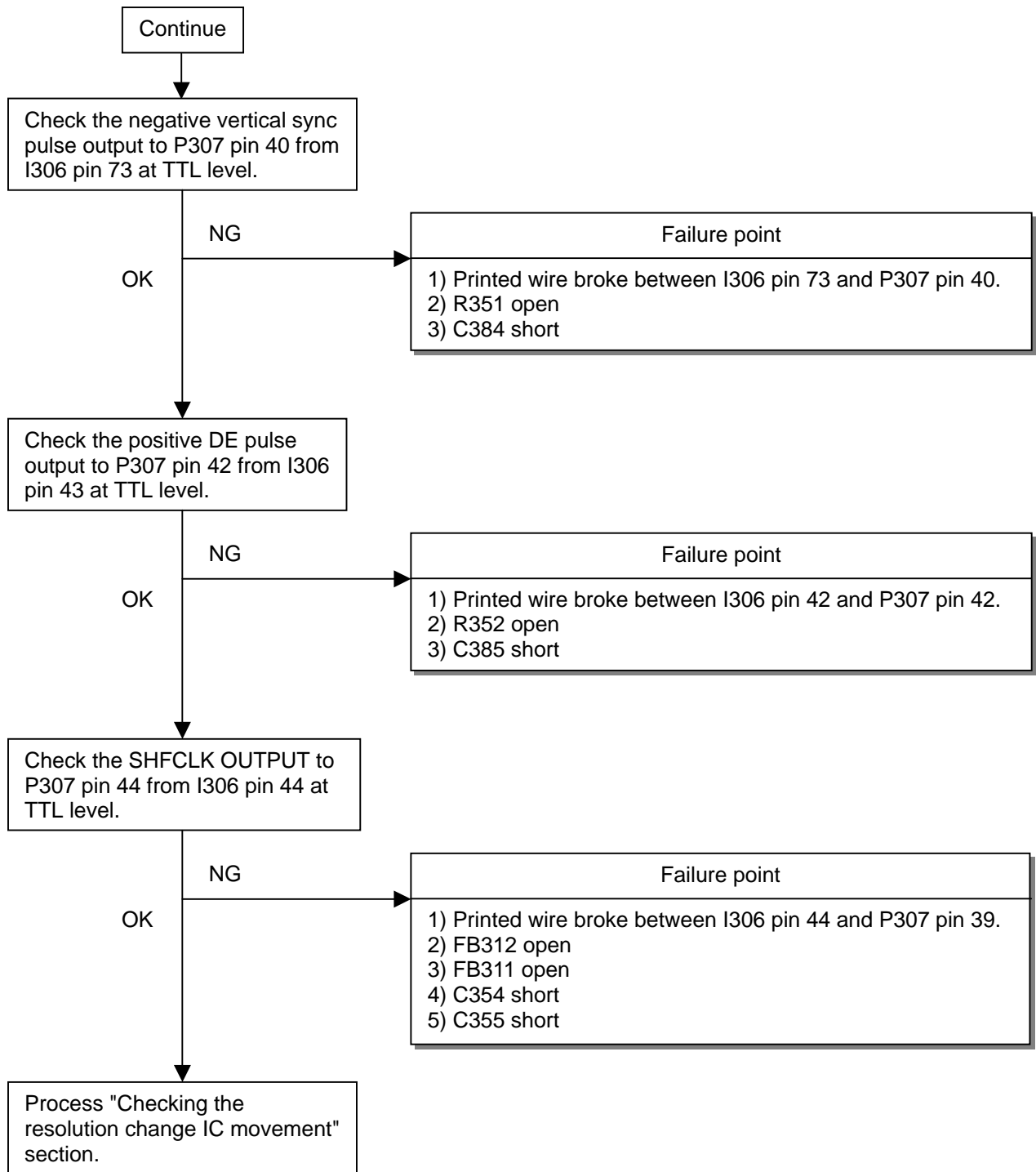


3. Checking the back light unit

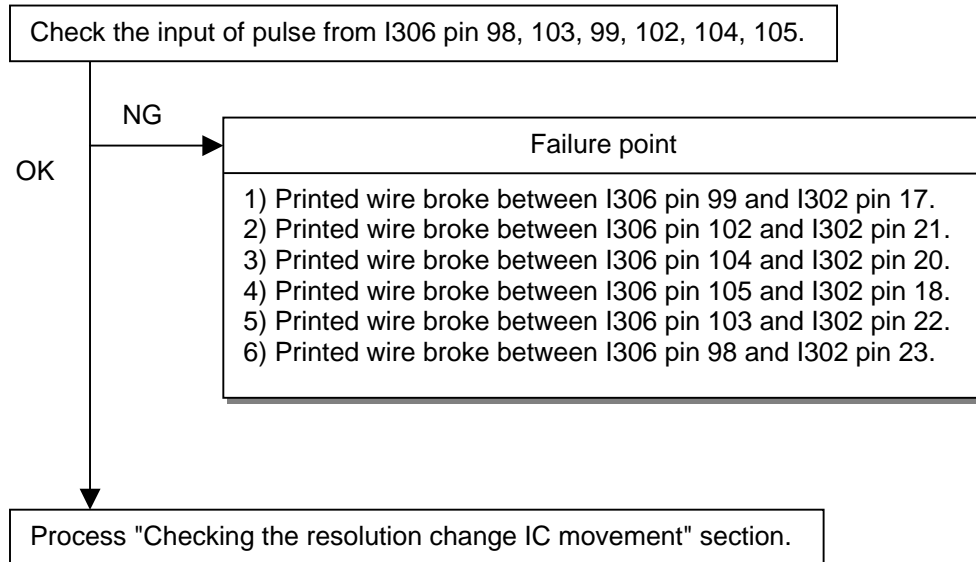


4. Abnormal screen

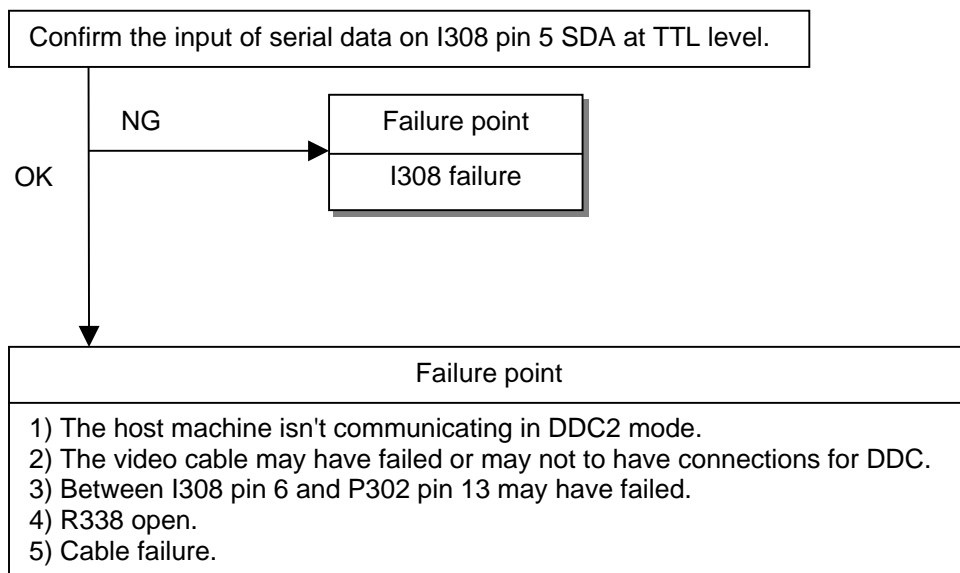
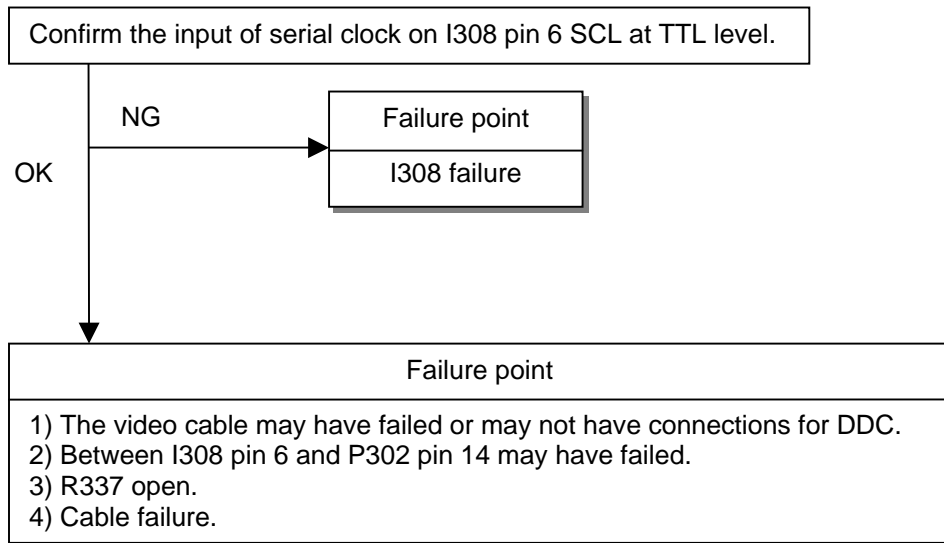




5. No OSM display

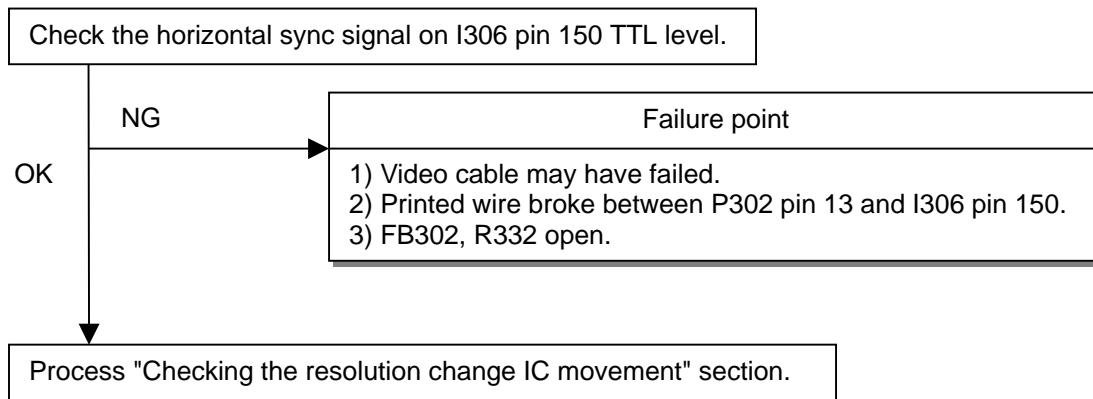


6. Abnormal plug and play operation

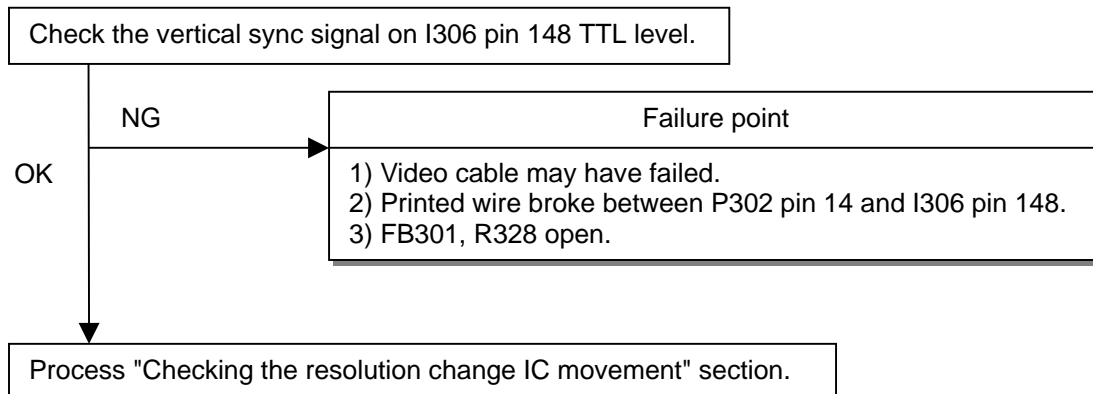


7. Checking the interface circuit of sync signal

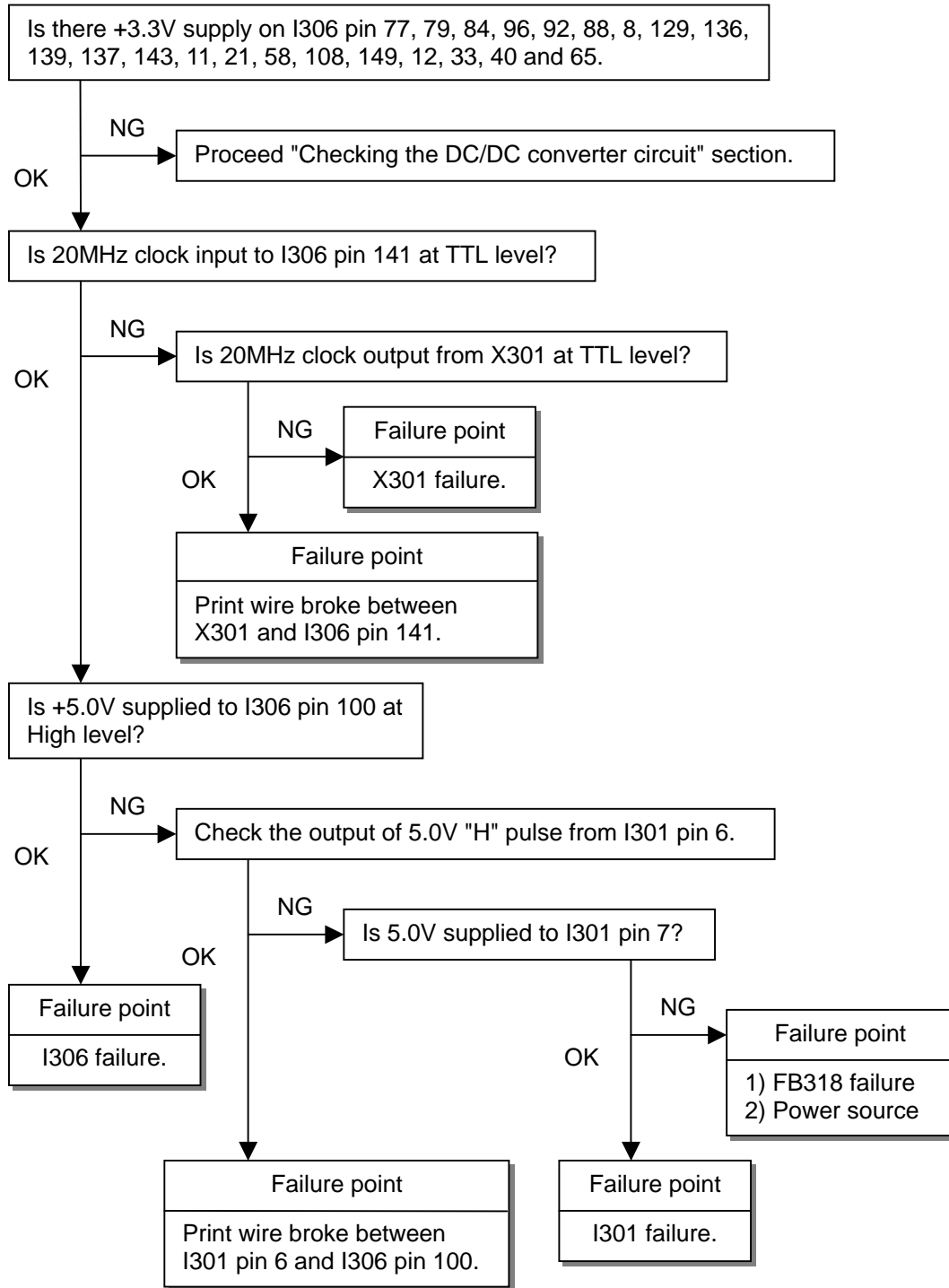
7.1 Checking the control circuit of horizontal sync pulse



7.2 Checking the control circuit of vertical sync pulse

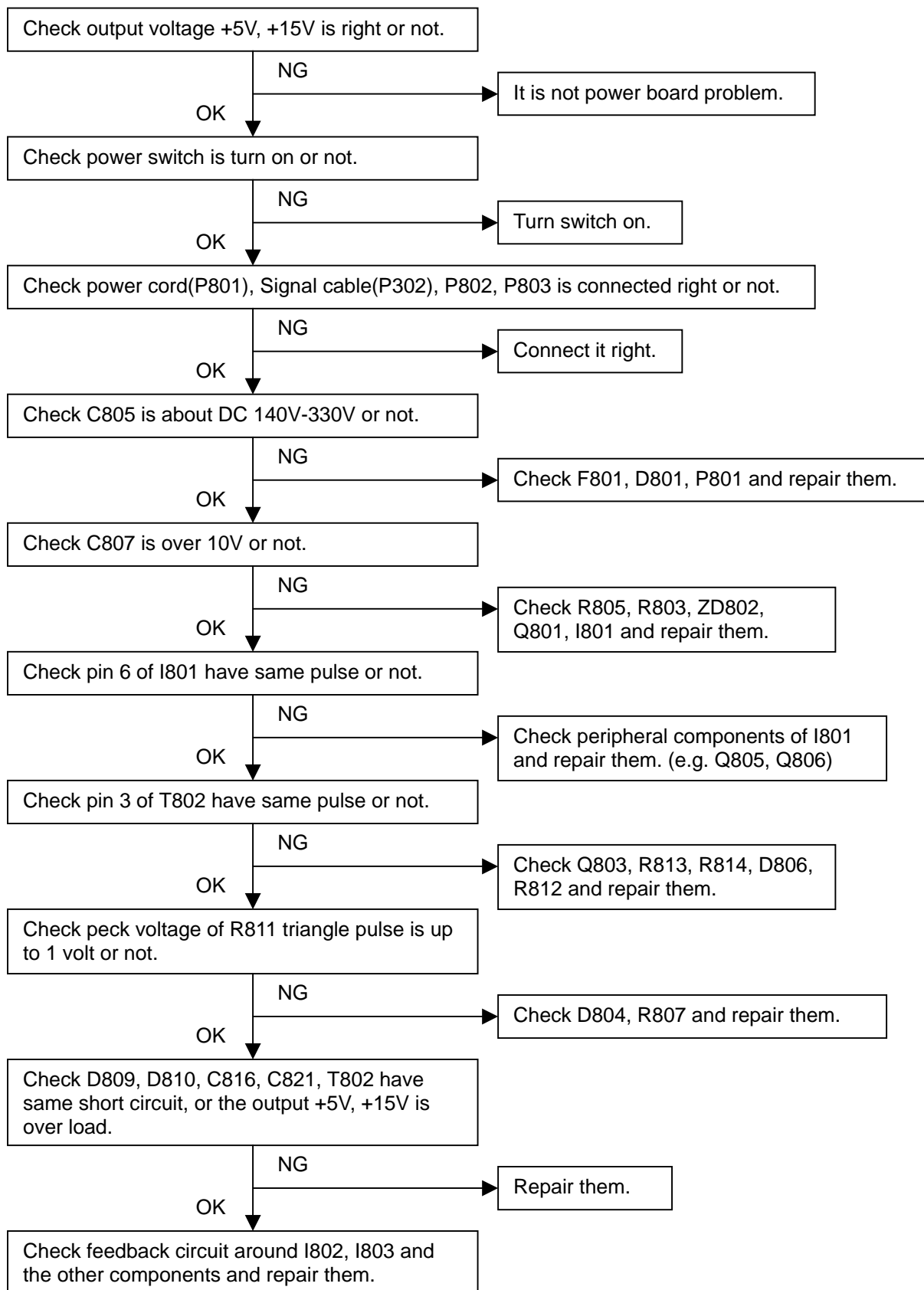


8. Checking the resolution change IC movement

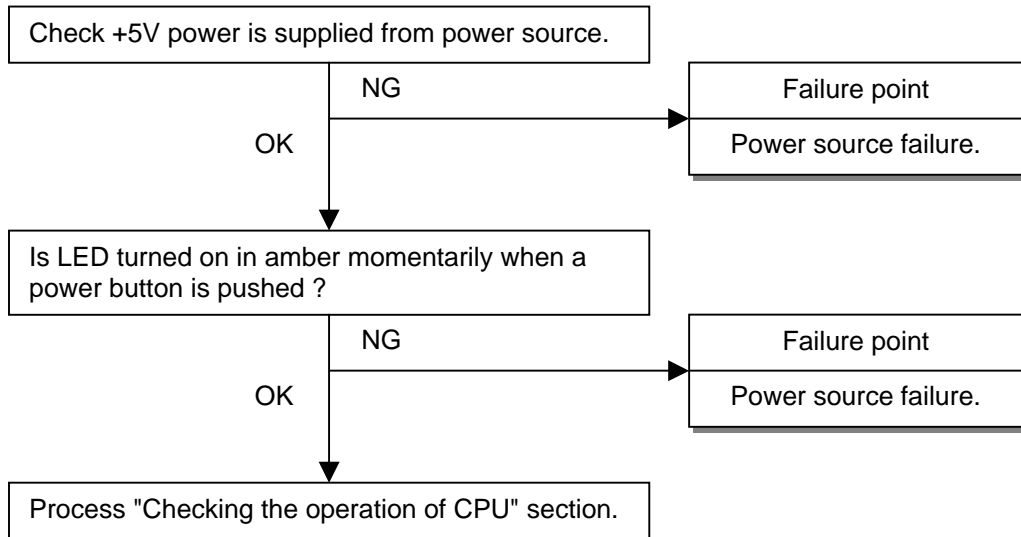


9. No power on

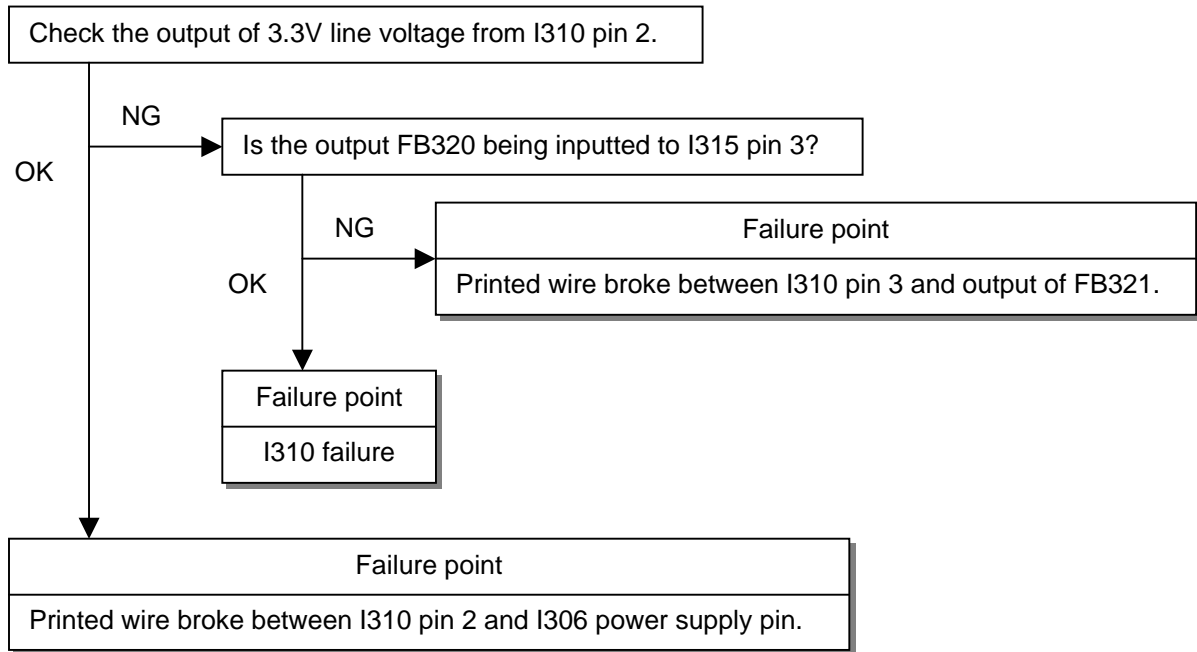
9.1 No power on (1)



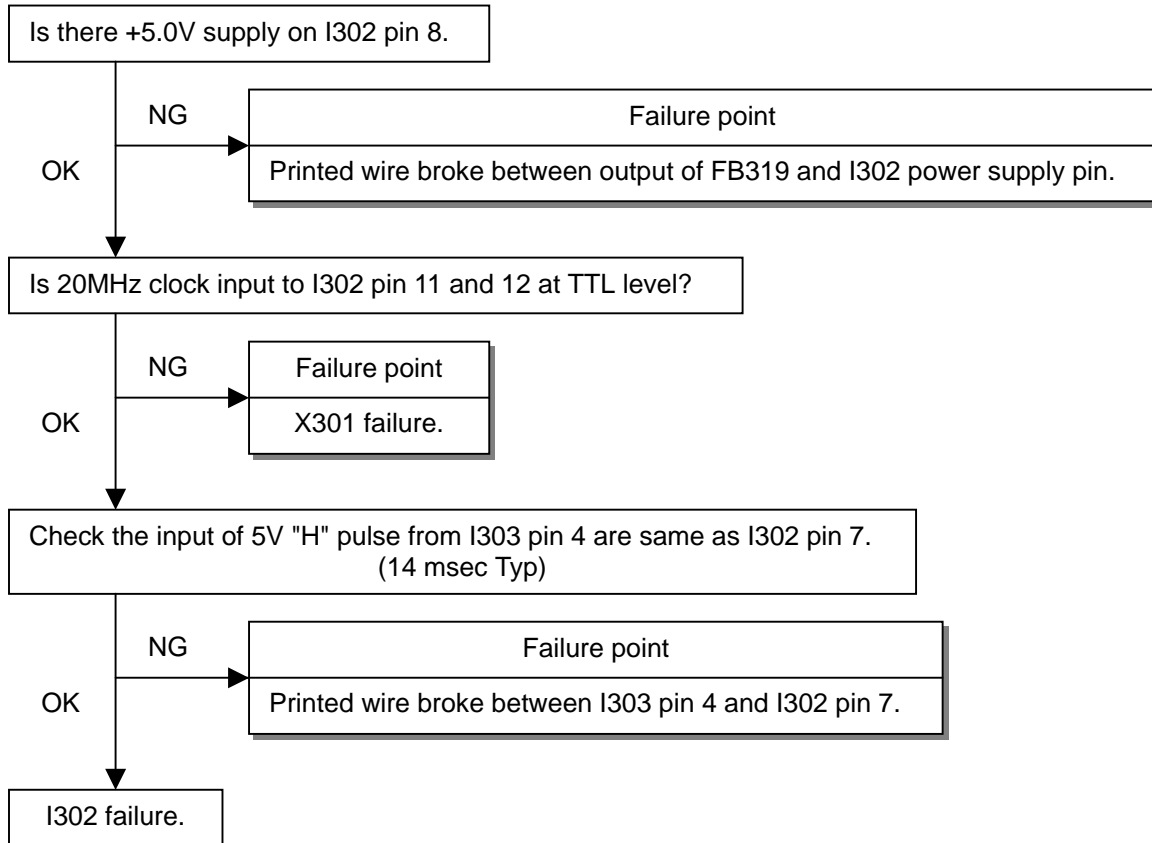
9.2 No power on (2)



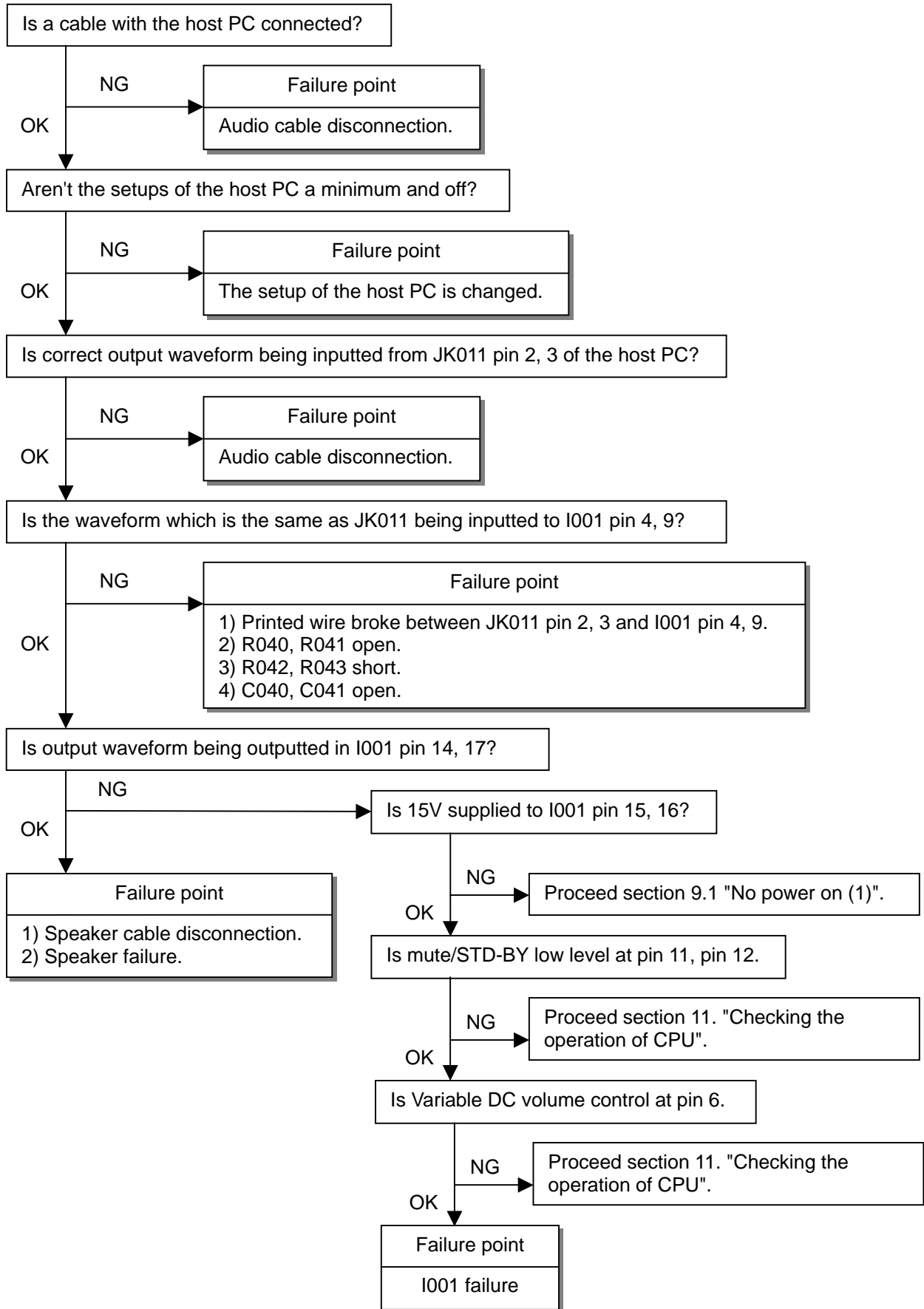
10. Checking the DC/DC converter circuit



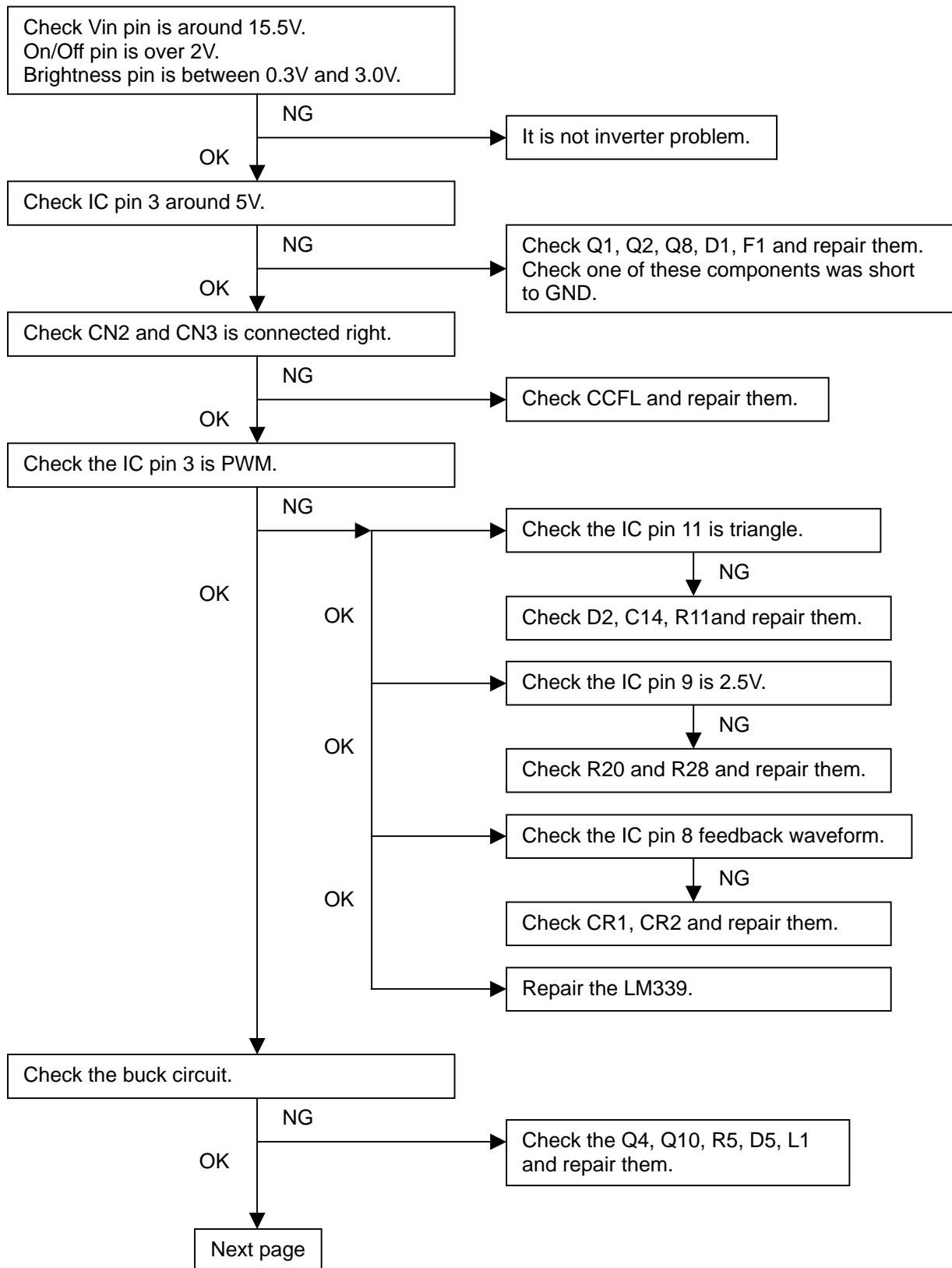
11. Checking the operation of CPU

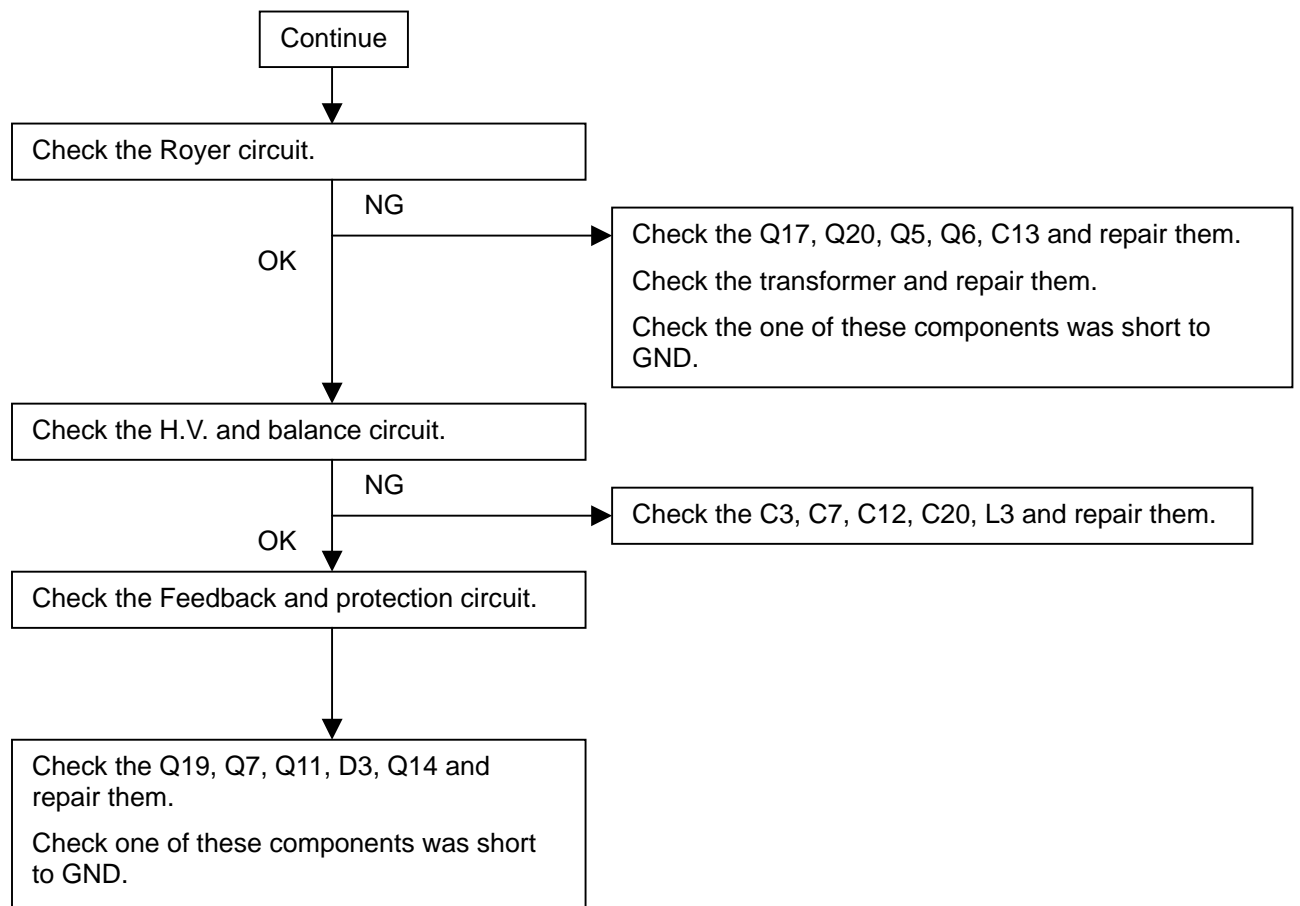


12. Checking the audio circuit



13. Check the inverter board circuit





CIRCUIT DESCRIPTION

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1. Audio circuit (Circuit diagrams Main PWB)

1.1 Audio input

The audio signal input received from the audio input terminal (JK011) is applied to the amplifier I001 of 4 (L-CH) and 9 (R-CH) through the low-pass filter consisting of R040, R041, R042, R043, C040 and C041. In this amplifier, controls of Volume, and mute are conducted. The audio signal controlled at the pin 6 determines the attenuation of output of the amplifiers. Since then, the signal is output to the jack P003.

1.2 Audio output

The audio signal is output from the Audio output terminal (P003) of the jack board to the internal speaker system.

2. Power supply (Circuit diagrams MAIN PWB)

1. Line filter consists of C801, T801, C803, C804. It eliminates high frequency interference to meet EMI's requirement.

2. Rec & Filter

Bridge diode D801 converts AC source into pulsed DC. This pulsed DC is smoothed and filtered by C805. R802 is an NTC (negative thermal coefficient) resistor, used to reduce inrush current to be within safe range.

3. Power transformer :

T802 converts energy for square wave from power source C805 to secondary side to generate +12V and +5V.

4. Output :

The square wave from T802 is rectified by D809, D810, then filtered by C817, C822 to generate +12V and +5V respectively.

4.1 A 5V power supply for LCD module, CPU and logic is generated from the power source.

4.2 I310 : 3-terminal regulator

A 3.3V power supply for I306 analog is generated from the 5V source.

4.3 I310 : 3-terminal regulator

A 3.3V power supply for I306 digital is generated from the 5V source.

Q303, Q304 ON/OFF control for LCD Module

ON/OFF control is performed for power ON/OFF and also for the power saving sequence.

5. Driver : Q803

If the electrical potential of gate is larger than source by about 10 volts, Q803 turns on.

6. FB :

Negative feedback CKT consists of photo coupler I802 and adjustable regulator I803. It can maintain output voltages +5V and +12V at a stable level.

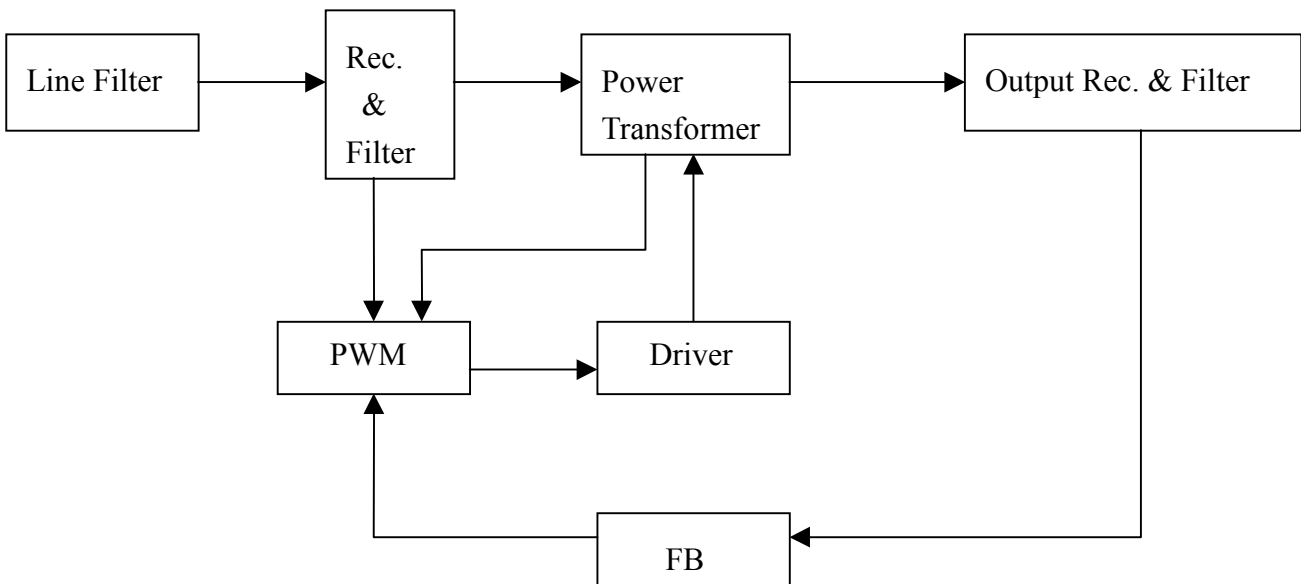
7. PWM :

7.1 Start : When power is turned on, R805, R803 conducts due to bias from C805. C807 is charged a 16 volt and a starting current to pin 7 of I801. I801 starts to oscillate and outputs a pulse train through pin 6 to drive Q803.

7.2 OPP : When Q803 turns on, C805 supplies a linearly increasing triangle current through the primary inductance of T802 to the driver Q803, once the peak value of this current multiplied by R811 exceeds 1 volt, pulse train will be shut down immediately to protect Q803, T802 from being burned out.

- 7.3 Regulation : If output voltage +5V goes up, the R terminal of I803 gets more bias, accordingly photo transistor and photo diode flows more current. The voltage of pin 2 goes up too, making the pulse width of pin 6 to become narrower. So the output voltage +5V will be pulled down to a stable value.
- 7.4 OVP : If +5V goes up too much, the induced voltage on pin 4 of T802 becomes large also. Suppose that it is over 18 volts, ZD801 conducts, pin 3 of I801 is pulled up over 1 volt. The pulse train at pin 6 goes down to zero, shutting Q803 off completely.
- 7.5 SCP : If output terminal is short to ground, photo transistor does not conduct, hence Q806 does not conduct neither. The reference voltage +5V at pin 8 begins to charge on C829 and activates Q806 to conduct either. Then oscillation of I801 is stop, shutting Q803 off completely.

LCD 1550ME Power Board Block Diagram



3. On-screen circuit (Circuit diagrams Main PWB)

I306 (gmZAN1) Embedded function.

On-screen menu screen is established and the resultant data are output from I306 (Circuit diagram MAIN PWB, gmZAN1)

4. Video input circuit (Circuit diagram MAIN PWB)

The AC-coupled video signal is used to clamp the black level at 0V.

5. Definition converter LSI peripheral circuit (Circuit diagram MAIN PWB)

I306 gmZAN1 is the definition converter LSI.

The analog R,G,B signal input entered from the video input circuit is converted into the digital data of video signal through the incorporated A/D converter. Based on this conversion, this device performs interpolation during pixel extension. The source voltage for this device is 3.3V and the system clock frequency is 20MHz. The withstand voltage level for the input signal voltage is 3.3V and 5V.

6. System reset, LED control circuit (Circuit diagram MAIN PWB)

6.1 System reset

System reset is performed by detecting the rising and falling of the 5V source voltage at I301.

6.2 LED control circuit

Green / amber is lit with the control signal of the LED GREEN and LED AMBER signal pin 32, 33 from I302 (Circuit diagram MAIN PWB).

7. E²PROM for PnP (Circuit diagram MAIN PWB)

Data transfer between I304 and host.

There are two forms of communications protocol. In both, display capabilities are retrieved by the system software during the boot-up and configuration time.

For the PC platform, this software layer is defined in the VESA BIOS Extension / Display Data Channel, DDC2, standard.

8. E²PROM (Circuit diagram MAIN PWB)

Data transfer between I304 (24LC32) and CPU (I302) is effected through the IIC bus SCL (pin 14) and SDA (pin 13) of I302. The data to be transferred to each device are stored in I304.

- I303 control data.
- OSD related setting data.
- Other control data for service menu.

9. CPU circuit (Circuit diagram MAIN PWB)

I302 (MTV312MV64) functions as the CPU.

The source voltage for the device is 5.0V and the system clock frequency is 20MHz.

9.1 Detection of POWER switch status

The CPU identifies the ON status of the two power supplies. The identification is made when the power supply is turned off. For example, if the power supply is turned off with the POWER switch, the POWER switch must be turned on when activating the power supply again. If the power supply is turned off by pulling out the power cord, then this power supply can be turned on by connecting the power cord, without pressing the POWER switch.

9.2 Display mode identification

9.2.1 Functions

(1) Display mode identification

- The display mode of input signal is identified based on Table 1, and according to the frequency and polarity (HPOL, VPOL) of horizontal or vertical sync signal, presence of the horizontal or vertical sync signal, and the discrimination signal (HSYNC_DETECT, VSYNC_DETECT).
- When the mode has been identified through the measurement of horizontal and vertical frequencies, the total number of lines is determined with a formula of "Horizontal frequency / Vertical frequency = Total number of lines." Final identification can be made by examining the coincidence of the obtained figure with the number of lines for the mode identified from the frequency.
- When the detected frequency if the sync signal has changed, the total number of lines should be counted even through it is rge identified frequency in the same mode. Then, it is necessary to examine whether the preset value for the vertical display position of Item 4-3 has exceeded the total number of lines. If exceeded, a maximum value should be set up, which does not exceed the vertical display position of Item 4-3.

(2) Out of range

This out-of-range mode is assumed when the frequency of the horizontal / vertical signal is as specified below.

- Vertical frequency : Below 56.2Hz or above 75.1Hz
- Horizontal frequency : Below 31.5KHz or above 60KHz

(3) Power save mode.

The power save mode is assumed when the horizontal / vertical signals are as specified below.

- If there is no horizontal sync signal input.
- If there is no vertical sync signal input.
- If the horizontal sync signal outside the measuring range of gmZAN1.
- If the vertical sync signal outside the measuring range of gmZAN1.

Table 1

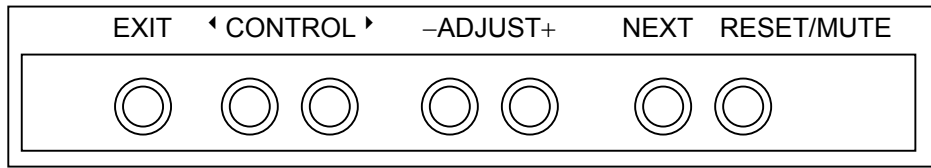
Mode	No	Resolution	H-freq (KHz)	Band Width (MHz)	Polarity	
					H	V
1.	247	VGA 720 x 350 70Hz	31.47	28.322	+	-
2.	102	VGA 720 x 400 70Hz	31.47	28.322	-	+
3.	103	VGA 640 x 480 60Hz	31.47	25.175	-	-
4.	182	MAC 640 x 480 66Hz	35	30.24	-	-
5.	173	VESA 640 x 480 72Hz	37.86	31.5	-	-
6.	109	VESA 640 x 480 75Hz	37.5	31.5	-	-
7.	104	VESA 800 x 600 56Hz	35.16	36	+	+
8.	116	VESA 800 x 600 60Hz	37.88	40	+	+
9.	110	VESA 800 x 600 75Hz	46.88	49.5	+	+
10.	117	VESA 800 x 600 72Hz	48.08	50	+	+
11.	108	MAC 832 x 624 75Hz	49.72	57.283	-	-
12.	118	VESA 1024 x 768 60Hz	48.36	65	-	-
13.	217	SUN 1024 x 768 65Hz	52.45	70.49	-	-
14.	157	VESA 1024 x 768 70Hz	56.48	75	-	-
15.	141	VESA 1024 x 768 75Hz	60.02	78.75	+	+

Attention:

1. When resolution beyond 1024 x 768 is inputted, resolution is lowered with Down scaling to 1024 x 768, and indicated, and OSD should indicate OUT of Range.

9.3 User Control

General Key Description



Exit : Turn off OSM menu, Exit sub menu.

Control : Move the green cursor and select control items.

Adjust : Change the value of each function / Enter to submenu / Proceed auto adjust / Proceed reset

Next : Move the NEXT tag

Reset : Reset the select item (Open reset warning before reset) / Mute the speaker / headphone sound (short cut: when no OSM menu is shown)

9.3.1 Related ports of I306

Port	Pin No.	I/O	Signal name	Function	Remarks
MFB1	112	1	RESET/ Mute	RESET MUTE switch input	The set value is returned to the initial value
MFB5	107	1	EXIT	EXIT switch input	Withdraw from OSD
MFB10	124	1	DOWN	- switch input	(-)key
MFB4	109	1	UP	+ switch input	(+)key
MFB11	123	1	LEFT	◀ switch input	(◀)key
MFB3	110	1	RIGHT	▶ switch input	(▶)key
MFB2	111	1	NEXT	NEXT switch input	

9.3.2 Functions

Control is effected for the push-switches to be used when the user changes the parameters, in order to modify the respective setting values. Whether the switch has been pressed is identified with the switch input level that is turned "L".

Each switch input port is pulled up at outside of MCU.

Each parameter is stored in the EEPROM, the contents of which are updated as required.

9.4 Control of definition converter MCU I306

9.4.1 Ports related to control

Pin No.	I/O	Signal name	Function
101	I	IRQ	gmZan1 interrupt signal
103	O	HCLK	gmZan1 serial clock
99	I/O	HDATA	gmZan1 serial data
98	O	HFS	gmZan1 serial select

9.4.2 Functions

Major function of I306 are as follows:

- (1) Expansion of the display screen.
- (2) Timing control for various signal types.
- (3) Power-supply sequence (LCD panel).

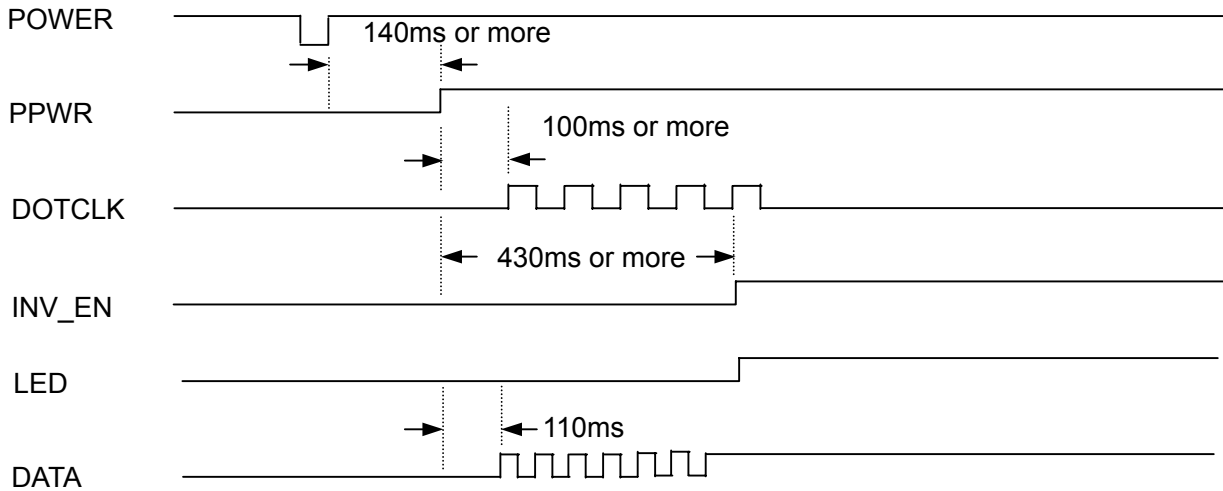
9.5 I²C bus control

9.5.1 Related ports of I306

Port	Pin No.	I/O	Signal name	Function
P3.5	14	O	IICCLK	IIC bus clock
P3.4	13	I/O	IICDATA	IIC bus data

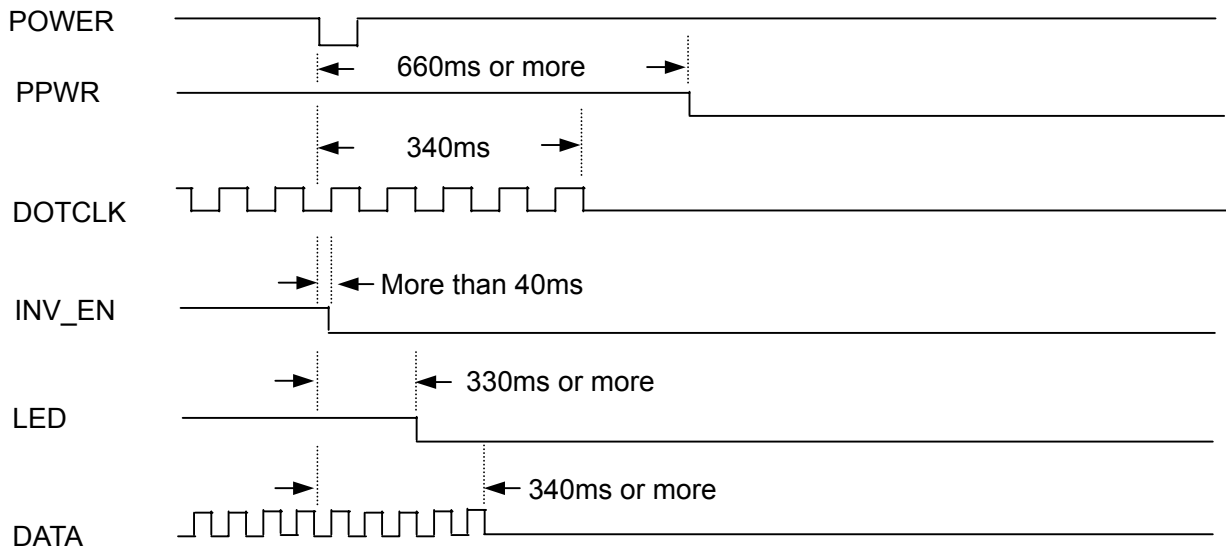
9.6 Power ON sequence

When the POWER switch is pressed, the POWER OFF signal is turned “H”. When this “H” potential is detected, the CPU begins to establish the respective power supplies according to the sequence shown below.



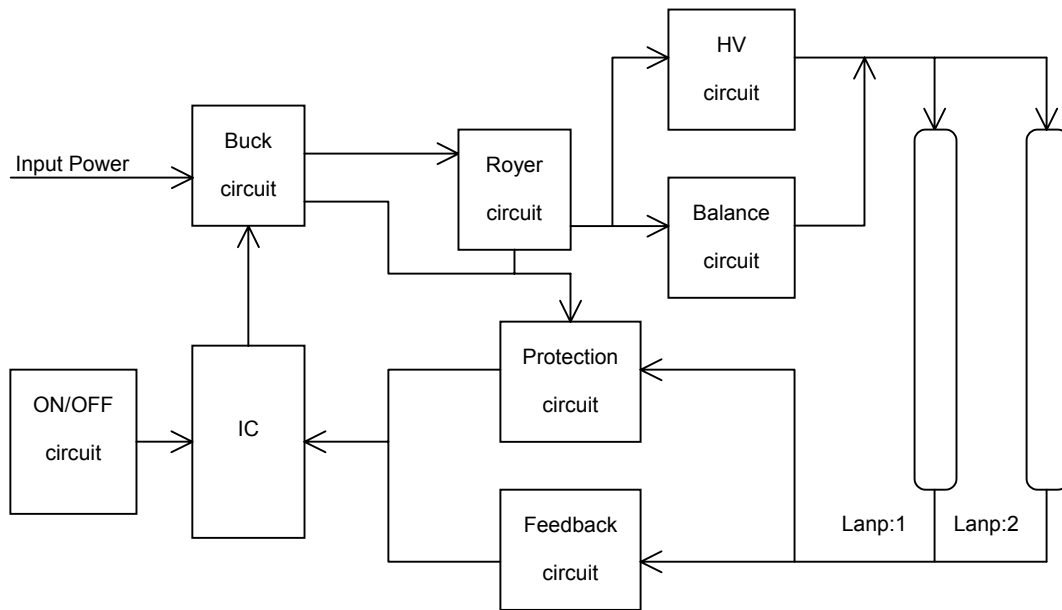
9.7 Power OFF sequence

When the POWER switch is pressed while the power supply is ON, the POWER ON signal is turned "H". When shown below, this "H" potential is detected, the CPU begins to turn off the respective power supplies according to the sequence.



10. Inverter

10.1 Circuit Diagram



10.2 Inverter basic function

This is a Dc-AC Inverter which is developed for driving 2 Cold Cathode Fluorescent Lamp (CCFL) in LCD panel backlight system.

Circuit explain below:

(1) On/Off circuit

This is an input signal to turn on or off the AC output voltage of the Inverter.

ON states : On/Off pin $\geq 2.5V$

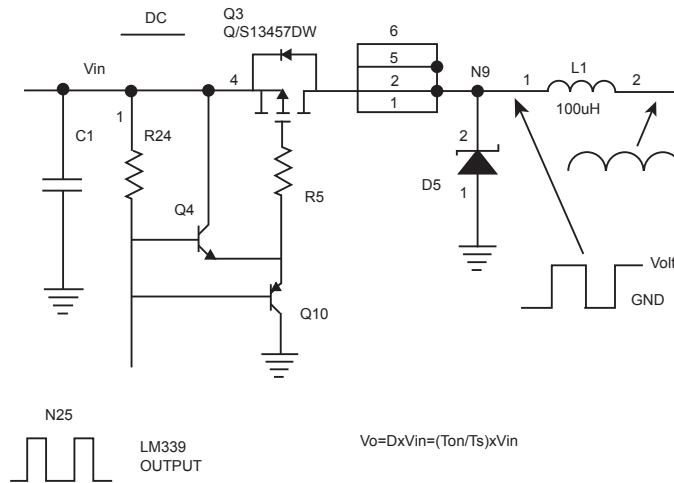
OFF state : On/Off pin $\leq 2.0V$

(2) IC (LM393)

It will get input signal from customer system and control the lamps current and brightness. The other function include burst mode control, PWM control, and soft start.

(3) Buck circuit

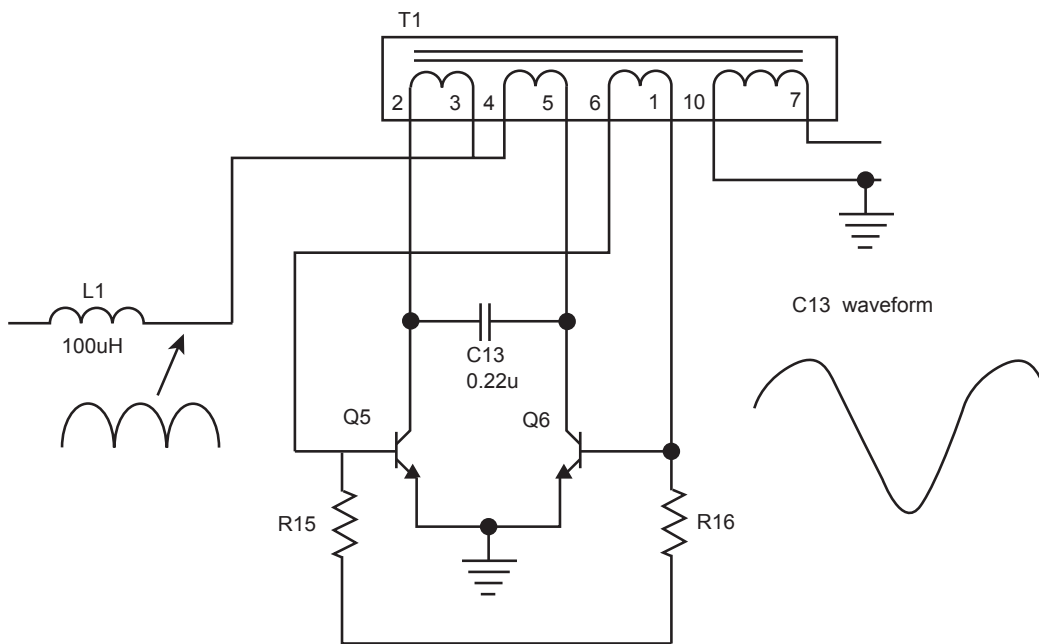
Used the PMOSFET to control the input power.



$V_{out} (avg) = V_{in} * D = V_{in} * (T_{on}/T_s)$. T_s : Transformer period T_{on} : turn on period.

EX: $V_{out}(avg) = 10V$, $V_{in} = 15V$ U, $D = (10/15) * 100\% = 66.66\%$

(4) Royer circuit



This is a standard Royer structure. It transfer the DC input signal to a AC output single. The resistors R15, R16 are supply the base current for Q5, Q6. The C13 and transformer decide the oscillation frequency (working frequency).

EX. If the primary voltage is 15Vrms and the transformer turn ratio is 100.

That secondary voltage is about : $15 * 100 = 1500V_{rms}$

(5) H.V and balance circuit

The H.V connect to the lamps and supply the power to drive the lamps. The balance circuit is use L,C,R resonant to control the output current. It can get the same output current even the load is different.

(6) Feedback circuit

The sense voltage of the feed back is set at 2.5 voltage. And the IC compare the sense voltage with output current, and release the control signal to PWM.

(7) Protection circuit

The protection circuit is sense the output current and abnormal signal to protect the inverter.

(a) For output current

The protect circuit will be monitor the lamps current. If the lamps current is correct, it will be allow the inverter to operating continually. In other ward if the lamps current is abnormal it will be shutdown the inverter.

(b) For other abnormal signal in the inverter.

We sense the abnormal signal from PWM and Royer stage. If something wrong at power stage, the protect circuit will be shutdown the inverter.

REPLACEMENT PARTS LIST

The components specified for Model LCD1550ME(B)

SYMBOL	PART NO	DESCRIPTION
--------	---------	-------------

*** ICS ***

I001	79PL1440	IC TDA7496L 20P PDIP SG
I301	79PL1948	IC-M51953AFP-8P-SOP
I302	79PL1951	IC-MTV312MV64-44P-PLCC-MY
I303	79PL1950	IC-TTL-NC7SZ04M5X-5P-FAIR
I304	79PL1447	IC 24LC32A 8P SOP MICROCH
I305	79PL1949	IC-TTL-NC7SZ08M5X-5P-FAIR
I306	79PL1323	IC GMZAN1 160P PQFP GENES
I308	79PL2046	IC-CPU-24LC024-8PIN-SOIC-
I309	79PL1322	IC LM358DT 8P SOP ST
I310	79PL1441	IC AIC1084 33CM 3P TO26
I801	79PL1439	IC KA3842AE S 8P PDIP F
I802	79PL1438	IC LTV 817D 4P PDIP LIT
I803	79PL1437	IC KA431AZ 3PIN TO-92 T

*** TRANSISTORS ***

Q301	79PL1321	TR NPN SST2222A 800MA/50V
Q302	79PL1321	TR NPN SST2222A 800MA/50V
Q303	79PL1435	FET P-CHNL SI2305DS VISHA
Q304	79PL1036	TR NPN SST3904 SMD
Q305	79PL1037	TR PNP 2SA1037AK T146/R
Q306	79PL1036	TR NPN SST3904 SMD
Q307	79PL1036	TR NPN SST3904 SMD
Q308	79PL1436	FET N&P-CHNL 2SK3018 ROHM
Q309	79PL1436	FET N&P-CHNL 2SK3018 ROHM
Q310	79PL1037	TR PNP 2SA1037AK T146/R
Q311	79PL1036	TR NPN SST3904 SMD
Q312	79PL1436	FET N&P-CHNL 2SK3018 ROHM
Q313	79PL1436	FET N&P-CHNL 2SK3018 ROHM
Q803	79PL2058	FET-N-CHNL-SSS4N60AS-2.3A
Q806	79PL2069	TRANSISTOR-PNP-2SA733P-T-

*** DIODES ***

D301	79PL1947	DIODE-MM4148-SMD-GOODARK
D304	79PL1947	DIODE-MM4148-SMD-GOODARK
D305	79PL1144	DIODE ZNR RLZ TE-11 5.6B
D306	79PL1947	DIODE-MM4148-SMD-GOODARK
D307	79PL1144	DIODE ZNR RLZ TE-11 5.6B
D308	79PL1947	DIODE-MM4148-SMD-GOODARK
D309	79PL1144	DIODE ZNR RLZ TE-11 5.6B
D310	79PL1249	DIODE DAN217 T146 SMD3
D311	79PL1249	DIODE DAN217 T146 SMD3

SYMBOL	PART NO	DESCRIPTION
D312	79PL1249	DIODE DAN217 T146 SMD3
D313	79PL1249	DIODE DAN217 T146 SMD3
D314	79PL1032	DIODE RLS4148 LL-34 SMD
D315	79PL1032	DIODE RLS4148 LL-34 SMD
D316	79PL1144	DIODE ZNR RLZ TE-11 5.6B
D317	79PL1144	DIODE ZNR RLZ TE-11 5.6B
D600	79PL1431	LED LTL-1BEDJ-012 1(Y)3(G
D801	79PL2053	DIODE-BRIDGE-KBP205G-2A/6
D803	79PL0923	DIODE FUF4006AMP
D804	79PL1423	DIODE FUF4005AMP 1A/600V
D806	79PL2068	DIODE-SWITCHING-1N4148 T-
D809	79PL2054	DIODE--SF34-3A/200V-T52--
D810	79PL2055	DIODE-SWITCHING-SB360-3A/
ZD801	79PL2072	DIODE-ZENER-GDZJ18B-T/B--

*** TRANSFORMERS ***

T802	79PL2062	XFRMER-POWER-TPW-1085-ER-
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*** VARIABLE RESISTORS ***

VR801	79PL1385	VARIABLE KOHM 1 0.3W TA 6
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*** RELAYS & SWITCHES ***

P805A	79PL1462	SW POWER HF606A1GGATA HUA
S601	79PL1975	SWITCH-TACT-TSAB-3-260GF-
S602	79PL1975	SWITCH-TACT-TSAB-3-260GF-
S603	79PL1975	SWITCH-TACT-TSAB-3-260GF-
S604	79PL1975	SWITCH-TACT-TSAB-3-260GF-
S605	79PL1975	SWITCH-TACT-TSAB-3-260GF-
S606	79PL1975	SWITCH-TACT-TSAB-3-260GF-
S607	79PL1975	SWITCH-TACT-TSAB-3-260GF-
S608	79PL1975	SWITCH-TACT-TSAB-3-260GF-

*** PWB ASSYS ***

FUKEYB	79PL1819	FUNCTION KEY BD-NEC-FA150
HEPNBD	79PL1901	HEAD PHONE BD-NEC-FA15AA
INTBD	79PL2044	INTERFACE BD
INVA	79PL1982	INVERTER-DC-AC-AMBIT:T15I
POWEBD	79PL2047	POWER BD

*** COILS & FILTERS ***

FB301	79PL1952	CORE-BEAD-WB201209B401QNT
FB302	79PL1952	CORE-BEAD-WB201209B401QNT
FB303	79PL1060	BEAD CORE WB201209F050QST
FB304	79PL1060	BEAD CORE WB201209F050QST
FB305	79PL1060	BEAD CORE WB201209F050QST
FB306	79PL1953	CORE-BEAD-SBK160808T-300Y
FB307	79PL1953	CORE-BEAD-SBK160808T-300Y
FB308	79PL1953	CORE-BEAD-SBK160808T-300Y

SYMBOL	PART NO	DESCRIPTION
FB309	79PL1098	BEAD CORE WB201209B300QST
FB311	79PL1954	CORE-BEAD-FCM1608C-301T01
FB313	79PL1098	BEAD CORE WB201209B300QST
FB314	79PL1098	BEAD CORE WB201209B300QST
FB315	79PL1098	BEAD CORE WB201209B300QST
FB316	79PL1098	BEAD CORE WB201209B300QST
FB317	79PL1098	BEAD CORE WB201209B300QST
FB318	79PL1098	BEAD CORE WB201209B300QST
FB319	79PL1098	BEAD CORE WB201209B300QST
FB320	79PL1098	BEAD CORE WB201209B300QST
FB321	79PL1098	BEAD CORE WB201209B300QST
FB322	79PL1098	BEAD CORE WB201209B300QST
FB323	79PL1098	BEAD CORE WB201209B300QST
FB324	79PL1098	BEAD CORE WB201209B300QST
FB325	79PL1098	BEAD CORE WB201209B300QST
FB326	79PL1098	BEAD CORE WB201209B300QST
FB327	79PL1952	CORE-BEAD-WB201209B401QNT
FB328	79PL1098	BEAD CORE WB201209B300QST
FB329	79PL1098	BEAD CORE WB201209B300QST
FB330	79PL1953	CORE-BEAD-SBK160808T-300Y
FB331	79PL1953	CORE-BEAD-SBK160808T-300Y
FB332	79PL1953	CORE-BEAD-SBK160808T-300Y
L001	79PL0993	COIL CHOKE 45UH K
L301	79PL0991	COIL CHOKE 3UH K
L302	79PL0991	COIL CHOKE 3UH K
L802	79PL2056	COIL CHOKE--UH-33-K-DRWW1
T801	79PL1377	LINE FILTER TLF-1030 MH 1

*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***

AUDA	79PL1452	AUDIO CABLE UL2547#26X2C
F801	79PL1461	FUSE TIME LAG 3.15A/250V
F801A	79PL0329	FUSE CLIP FC-04 FOR D=5MM
P307A	79PL1454	HARNESS 4P/3P 160MM 2547#
P801	79PL2057	AC INLET-3P-INALWAYS-AS07
PC01	79PL1856	CABLE-POWER-TO WALL-2000M
R802	79PL1378	THERMISTOR 8 OHM 3A P=5 S
SP00	79PL1464	SPEAKER 4P N13AA12PCH22 J
V001	79PL2007	CABLE-VIDEO-DSUBX2-2000MM
V002	79PL2036	HARNESS-FFC-45P(0.5)-95/1
V003	79PL2037	HARNESS-FFC-30P(0.5)-115/
V006	79PL2038	HARNESS--12P-330MM-CG150-
V150	79PL2039	LCD-15-CLAA150XG01-CPT"
X301	79PL1053	CRYSTAL 20MHZ HC-49/US

*** APPEARANCE PARTS ***

B0106	79PL1897	REAR COVER ASS'Y-NMV-NEC
B01U	79PL1836	COVER(CONNECTOR)
B02P	79PL1835	STAND FRONT

SYMBOL	PART NO	DESCRIPTION
B02Z	79PL1825	COVER CABLE
B03M	79PL1898	STAND-BASE-NMV-NEC-FA15AA
B03Q	79PL1875	BRACKET-STAND PLATE-NEC-
B03R	79PL1869	FOOT RUBBER
B02M	79PL1905	HINGE-L-NEC-NEC-FA150ATUA
B02N	79PL1906	HINGE-R-NEC-NEC-FA150ATUA
B02Q	79PL1907	BRACKET-HINGE-NEC-FA150AT
F01	79PL2041	FRONT COVER ASS'Y-NMV-NEC

*** PRINTED & PACKING MATERIALS ***

B0102	79PL2076	LABEL-MODEL LABEL-NMV--NE
P11	79PL2075	CARTON-NMV--NEC-FA15AA(9)
P21	79PL1881	CUSHION-FOAM-EPS-LCD1550M
P31	79PL1841	PLASTIC BAG
P32	79PL2005	BAG-PE ORDINARY-ALL MODEL
Y001	79PL2080	MANUAL-MANUAL ASS'Y-NMV-F
Y002	79PL1960	CARD-CAUTION SHEET-NEC-FA
Y003	79PL2079	CARD-SETUP CARD-NEC-FA15A
Y004	79PL2034	CARD-PRODUCT BROCHURE-NEC

*** RESISTORS ***

FB312	79PL1294	CHIP-R OHM 0 1/10W J 0603
R001	79PL0064	CF OHM 270 1/4W J T26
R002	79PL0064	CF OHM 270 1/4W J T26
R003	79PL1297	CHIP-R KOHM 100 1/10W J
R004	79PL1972	RES. CHIP-R-KOHM-300-1/10
R040	79PL1386	R,CHIP R KOHM 1 1/10W F
R041	79PL1386	R,CHIP R KOHM 1 1/10W F
R042	79PL1398	R,CHIP R KOHM 47 1/10W F
R043	79PL1398	R,CHIP R KOHM 47 1/10W F
R045	79PL1296	CHIP-R KOHM 10 1/10W J 06
R046	79PL1294	CHIP-R OHM 0 1/10W J 0603
R047	79PL1302	CHIP-R KOHM 4.7 1/10W J
R053	79PL1973	RES. CHIP-R-KOHM-150-1/10
R054	79PL1973	RES. CHIP-R-KOHM-150-1/10
R055	79PL1296	CHIP-R KOHM 10 1/10W J 06
R056	79PL1296	CHIP-R KOHM 10 1/10W J 06
R301	79PL1302	CHIP-R KOHM 4.7 1/10W J
R305	79PL1295	CHIP-R OHM 100 1/10W J 06
R306	79PL1295	CHIP-R OHM 100 1/10W J 06
R307	79PL1296	CHIP-R KOHM 10 1/10W J 06
R308	79PL1296	CHIP-R KOHM 10 1/10W J 06
R309	79PL1302	CHIP-R KOHM 4.7 1/10W J
R310	79PL1302	CHIP-R KOHM 4.7 1/10W J
R312	79PL1302	CHIP-R KOHM 4.7 1/10W J
R314	79PL1302	CHIP-R KOHM 4.7 1/10W J
R315	79PL1295	CHIP-R OHM 100 1/10W J 06
R316	79PL1295	CHIP-R OHM 100 1/10W J 06

SYMBOL	PART NO	DESCRIPTION
R317	79PL1004	CHIP-R 470H 1/8W J 805
R318	79PL1004	CHIP-R 470H 1/8W J 805
R319	79PL1296	CHIP-R KOHM 10 1/10W J 06
R320	79PL1302	CHIP-R KOHM 4.7 1/10W J
R321	79PL1302	CHIP-R KOHM 4.7 1/10W J
R322	79PL1302	CHIP-R KOHM 4.7 1/10W J
R323	79PL1296	CHIP-R KOHM 10 1/10W J 06
R325	79PL1296	CHIP-R KOHM 10 1/10W J 06
R326	79PL1296	CHIP-R KOHM 10 1/10W J 06
R327	79PL1294	CHIP-R OHM 0 1/10W J 0603
R328	79PL1295	CHIP-R OHM 100 1/10W J 06
R329	79PL1239	CHIP-R KOHM 2.2 1/16W J
R330	79PL1294	CHIP-R OHM 0 1/10W J 0603
R331	79PL1239	CHIP-R KOHM 2.2 1/16W J
R332	79PL1295	CHIP-R OHM 100 1/10W J 06
R333	79PL1399	R,CHIP R KOHM 47 1/10W J
R334	79PL1399	R,CHIP R KOHM 47 1/10W J
R335	79PL1399	R,CHIP R KOHM 47 1/10W J
R336	79PL1302	CHIP-R KOHM 4.7 1/10W J
R337	79PL1303	CHIP-R OHM 47 1/10W J
R338	79PL1303	CHIP-R OHM 47 1/10W J
R339	79PL1298	CHIP-R OHM 150 1/10W J
R340	79PL1305	CHIP-R OHM 75 1/10W J
R341	79PL1298	CHIP-R OHM 150 1/10W J
R342	79PL1298	CHIP-R OHM 150 1/10W J
R343	79PL1305	CHIP-R OHM 75 1/10W J
R344	79PL1298	CHIP-R OHM 150 1/10W J
R345	79PL1298	CHIP-R OHM 150 1/10W J
R346	79PL1305	CHIP-R OHM 75 1/10W J
R347	79PL1298	CHIP-R OHM 150 1/10W J
R348	79PL1941	CHIP-R-KOHM-3.3-1/10W-J-6
R349	79PL1941	CHIP-R-KOHM-3.3-1/10W-J-6
R350	79PL1300	CHIP-R OHM 22 1/10W J
R351	79PL1300	CHIP-R OHM 22 1/10W J
R352	79PL1300	CHIP-R OHM 22 1/10W J
R353	79PL1297	CHIP-R KOHM 100 1/10W J
R354	79PL1297	CHIP-R KOHM 100 1/10W J
R355	79PL1297	CHIP-R KOHM 100 1/10W J
R356	79PL1295	CHIP-R OHM 100 1/10W J 06
R357	79PL1295	CHIP-R OHM 100 1/10W J 06
R358	79PL1302	CHIP-R KOHM 4.7 1/10W J
R359	79PL1399	R,CHIP R KOHM 47 1/10W J
R360	79PL1399	R,CHIP R KOHM 47 1/10W J
R361	79PL1941	CHIP-R-KOHM-3.3-1/10W-J-6
R368	79PL1296	CHIP-R KOHM 10 1/10W J 06
R370	79PL1303	CHIP-R OHM 47 1/10W J
R371	79PL1387	R,CHIP R KOHM 1 1/10W J
R801	79PL1384	R,MGF KOHM 470 1/4W J AT5

SYMBOL	PART NO	DESCRIPTION
R803	79PL2059	RES. MOF-KOHM-100-2W-J-HO
R805	79PL2059	RES. MOF-KOHM-100-2W-J-HO
R806	79PL0741	MOF KOHM 33 3W J HOR
R807	79PL0086	CF OHM 4.7 1/4W J T26
R808	79PL0089	CF KOHM 51 1/4W J T26
R810	79PL0077	CF KOHM 3.9 1/4W J T26
R811	79PL2060	RES. MOF-OHM-1.2-1W-J-HOR
R812	79PL0056	CF KOHM 20 1/4W J T26
R813	79PL2070	RES. CF-OHM-220-1/4W-J-T5
R814	79PL0081	CF OHM 47 1/4W J T26
R815	79PL2071	RES. CF-KOHM-1-1/4W-J-T52
R817	79PL0083	CF KOHM 4.7 1/4W J T26
R818	79PL0089	CF KOHM 51 1/4W J T26
R819	79PL0088	CF KOHM 5.1 1/4W J T26
R820	79PL0039	CF KOHM 1 1/4W J T26
R823	79PL0064	CF OHM 270 1/4W J T26
R824	79PL0065	CF KOHM 2.7 1/4W J T26
R825	79PL0040	CF KOHM 10 1/4W J T26
R826	79PL0039	CF KOHM 1 1/4W J T26
R827	79PL0055	CF KOHM 2 1/4W J T26
R832	79PL0088	CF KOHM 5.1 1/4W J T26
R833	79PL2061	RES. MOF-KOHM-1.2-1W-J-HO
RN301	79PL1011	FRN 10KH 1/16W J 8P4R
RN302	79PL1011	FRN 10KH 1/16W J 8P4R
RN303	79PL1013	FRN 4.7KH 1/16W J 8P4R
RN304	79PL1013	FRN 4.7KH 1/16W J 8P4R
RN305	79PL1307	FRN,OHM,47,1/16W,J,8P4R
RN306	79PL1307	FRN,OHM,47,1/16W,J,8P4R
RN307	79PL1307	FRN,OHM,47,1/16W,J,8P4R
RN308	79PL1307	FRN,OHM,47,1/16W,J,8P4R
RN309	79PL1307	FRN,OHM,47,1/16W,J,8P4R
RN310	79PL1307	FRN,OHM,47,1/16W,J,8P4R
RN311	79PL1307	FRN,OHM,47,1/16W,J,8P4R
RN312	79PL1307	FRN,OHM,47,1/16W,J,8P4R
RN313	79PL1307	FRN,OHM,47,1/16W,J,8P4R
RN314	79PL1307	FRN,OHM,47,1/16W,J,8P4R
RN315	79PL1307	FRN,OHM,47,1/16W,J,8P4R
RN316	79PL1307	FRN,OHM,47,1/16W,J,8P4R

*** CAPACITORS ***

C002	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C003	79PL1407	C,ALU UF 680 25V NF 105C
C004	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C007	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C008	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C009	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C010	79PL0186	ALU UF 100 25V T 105C 6
C015	79PL1418	C,MC UF 0.1 25V Z Y5V SMD

SYMBOL	PART NO	DESCRIPTION
C040	79PL1944	ALU-UF-4.7-50V-F-105C-6.3
C041	79PL1944	ALU-UF-4.7-50V-F-105C-6.3
C042	79PL1407	C,ALU UF 680 25V NF 105C
C043	79PL1407	C,ALU UF 680 25V NF 105C
C044	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C301	79PL1943	ALU-UF-1000-10V-F-105-10X
C302	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C303	79PL1417	C,MC UF 0.047 25V K X7R S
C305	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C306	79PL1141	MC PF 100 50V NPO J SMD 0
C307	79PL1141	MC PF 100 50V NPO J SMD 0
C308	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C310	79PL1014	ALU 10UF 16V 105C T SMD
C311	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C312	79PL1314	MC PF 22 50V NPO J SMD
C313	79PL1318	MC 5PF 50V NPO J SMD 0603
C316	79PL1143	ALU UF 4.7 25V 85C T SMD
C317	79PL1143	ALU UF 4.7 25V 85C T SMD
C318	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C319	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C320	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C321	79PL1319	MC 0.01UF 50V X7R M SMD
C322	79PL1319	MC 0.01UF 50V X7R M SMD
C323	79PL1319	MC 0.01UF 50V X7R M SMD
C324	79PL1319	MC 0.01UF 50V X7R M SMD
C325	79PL1319	MC 0.01UF 50V X7R M SMD
C326	79PL1319	MC 0.01UF 50V X7R M SMD
C327	79PL1319	MC 0.01UF 50V X7R M SMD
C328	79PL1319	MC 0.01UF 50V X7R M SMD
C329	79PL1141	MC PF 100 50V NPO J SMD 0
C334	79PL1141	MC PF 100 50V NPO J SMD 0
C335	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C336	79PL1317	MC 47PF 50V NPO J SMD
C337	79PL1317	MC 47PF 50V NPO J SMD
C338	79PL1141	MC PF 100 50V NPO J SMD 0
C339	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C340	79PL1319	MC 0.01UF 50V X7R M SMD
C341	79PL1318	MC 5PF 50V NPO J SMD 0603
C342	79PL1319	MC 0.01UF 50V X7R M SMD
C343	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C344	79PL1319	MC 0.01UF 50V X7R M SMD
C345	79PL1318	MC 5PF 50V NPO J SMD 0603
C346	79PL1319	MC 0.01UF 50V X7R M SMD
C347	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C348	79PL1319	MC 0.01UF 50V X7R M SMD
C349	79PL1318	MC 5PF 50V NPO J SMD 0603
C350	79PL1319	MC 0.01UF 50V X7R M SMD
C351	79PL1418	C,MC UF 0.1 25V Z Y5V SMD

SYMBOL	PART NO	DESCRIPTION
C352	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C353	79PL1943	ALU-UF-1000-10V-F-105-10X
C354	79PL2045	CAP. MC-PF-82-50V-J-NPO-S
C356	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C357	79PL1319	MC 0.01UF 50V X7R M SMD
C358	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C384	79PL1141	MC PF 100 50V NPO J SMD 0
C385	79PL1141	MC PF 100 50V NPO J SMD 0
C411	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C412	79PL1974	CAP. ALU-UF-220-10V-NF-10
C413	79PL1319	MC 0.01UF 50V X7R M SMD
C414	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C415	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C416	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C417	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C418	79PL1407	C,ALU UF 680 25V NF 105C
C419	79PL1319	MC 0.01UF 50V X7R M SMD
C420	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C421	79PL1313	ALU UF 470 16V 105 10X11
C422	79PL1319	MC 0.01UF 50V X7R M SMD
C423	79PL1974	CAP. ALU-UF-220-10V-NF-10
C424	79PL1974	CAP. ALU-UF-220-10V-NF-10
C425	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C426	79PL1974	CAP. ALU-UF-220-10V-NF-10
C427	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C428	79PL1319	MC 0.01UF 50V X7R M SMD
C429	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C430	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C431	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C432	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C433	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C434	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C435	79PL1974	CAP. ALU-UF-220-10V-NF-10
C436	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C437	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C438	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C439	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C440	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C441	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C442	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C443	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C444	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C445	79PL1974	CAP. ALU-UF-220-10V-NF-10
C446	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C447	79PL1319	MC 0.01UF 50V X7R M SMD
C448	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C449	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C450	79PL1418	C,MC UF 0.1 25V Z Y5V SMD

SYMBOL	PART NO	DESCRIPTION
C454	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C455	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C456	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C457	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C458	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C464	79PL1946	MC-UF-0.47-25V-M-Y5V-SMD
C801	79PL2048	CAP. X2-MEF-UF-0.33-275V-
C802	79PL2049	CAP. X2-MEF-UF-0.33-275V-
C803	79PL2050	CAP. CD-PF-2200-250V-M-F-
C804	79PL2050	CAP. CD-PF-2200-250V-M-F-
C805	79PL2051	CAP. ALU-UF-100-400V-NF-1
C806	79PL0517	CD UF 0.01 1000V M Z5U F
C807	79PL0189	ALU UF 47, 25V,T,105C,
C810	79PL0252	CD UF 0.1 50V Z Y5V T
C811	79PL0231	CD PF 1000 50V K Y5P T
C812	79PL0252	CD UF 0.1 50V Z Y5V T
C813	79PL0232	CD UF 0.01 50V K Y5P T
C814	79PL0191	ALU UF 10 50V T 105C
C815	79PL0526	MEM,UF,0.1 , 50V,J,T
C816	79PL2064	CAP. CD-PF-1000-100V-K-T-
C817	79PL2065	ALUMINATOR-UF-680-25V-T-1
C818	79PL2065	ALUMINATOR-UF-680-25V-T-1
C820	79PL0252	CD UF 0.1 50V Z Y5V T
C821	79PL2066	CAP. CD-PF-1000-100V-K-T-
C822	79PL2067	CAP. ALU-UF-470-25V-T-105
C824	79PL0483	ALU UF 1000 16V T 105C
C826	79PL0252	CD UF 0.1 50V Z Y5V T
C827	79PL0526	MEM,UF,0.1 , 50V,J,T
C828	79PL2052	CAP. CD-PF-1000-250V-M-F-
C831	79PL0185	ALU UF 10 25V T 105C
CN359	79PL1955	MC-PF-33-50V-K-NPO-SMD-06
CN360	79PL1955	MC-PF-33-50V-K-NPO-SMD-06
CN361	79PL1955	MC-PF-33-50V-K-NPO-SMD-06
CN362	79PL1955	MC-PF-33-50V-K-NPO-SMD-06
CN363	79PL1955	MC-PF-33-50V-K-NPO-SMD-06
CN364	79PL1955	MC-PF-33-50V-K-NPO-SMD-06
CN365	79PL1955	MC-PF-33-50V-K-NPO-SMD-06
CN366	79PL1955	MC-PF-33-50V-K-NPO-SMD-06
CN367	79PL1955	MC-PF-33-50V-K-NPO-SMD-06
CN368	79PL1955	MC-PF-33-50V-K-NPO-SMD-06
CN369	79PL1955	MC-PF-33-50V-K-NPO-SMD-06
CN370	79PL1955	MC-PF-33-50V-K-NPO-SMD-06

REPLACEMENT PARTS LIST

The components specified for Model LCD1550ME-BK(B)

SYMBOL	PART NO	DESCRIPTION
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*** ICS ***

I001	79PL1440	IC TDA7496L 20P PDIP SG
I301	79PL1948	IC-M51953AFP-8P-SOP
I302	79PL1951	IC-MTV312MV64-44P-PLCC-MY
I303	79PL1950	IC-TTL-NC7SZ04M5X-5P-FAIR
I304	79PL1447	IC 24LC32A 8P SOP MICROCH
I305	79PL1949	IC-TTL-NC7SZ08M5X-5P-FAIR
I306	79PL1323	IC GMZAN1 160P PQFP GENES
I308	79PL2046	IC-CPU-24LC024-8PIN-SOIC-
I309	79PL1322	IC LM358DT 8P SOP ST
I310	79PL1441	IC AIC1084 33CM 3P TO26
I801	79PL1439	IC KA3842AE S 8P PDIP F
I802	79PL1438	IC LTV 817D 4P PDIP LIT
I803	79PL1437	IC KA431AZ 3PIN TO-92 T

*** TRANSISTORS ***

Q301	79PL1321	TR NPN SST2222A 800MA/50V
Q302	79PL1321	TR NPN SST2222A 800MA/50V
Q303	79PL1435	FET P-CHNL SI2305DS VISHA
Q304	79PL1036	TR NPN SST3904 SMD
Q305	79PL1037	TR PNP 2SA1037AK T146/R
Q306	79PL1036	TR NPN SST3904 SMD
Q307	79PL1036	TR NPN SST3904 SMD
Q308	79PL1436	FET N&P-CHNL 2SK3018 ROHM
Q309	79PL1436	FET N&P-CHNL 2SK3018 ROHM
Q310	79PL1037	TR PNP 2SA1037AK T146/R
Q311	79PL1036	TR NPN SST3904 SMD
Q312	79PL1436	FET N&P-CHNL 2SK3018 ROHM
Q313	79PL1436	FET N&P-CHNL 2SK3018 ROHM
Q803	79PL2058	FET-N-CHNL-SSS4N60AS-2.3A
Q806	79PL2069	TRANSISTOR-PNP-2SA733P-T-

*** DIODES ***

D301	79PL1947	DIODE-MM4148-SMD-GOODARK
D304	79PL1947	DIODE-MM4148-SMD-GOODARK
D305	79PL1144	DIODE ZNR RLZ TE-11 5.6B
D306	79PL1947	DIODE-MM4148-SMD-GOODARK
D307	79PL1144	DIODE ZNR RLZ TE-11 5.6B
D308	79PL1947	DIODE-MM4148-SMD-GOODARK
D309	79PL1144	DIODE ZNR RLZ TE-11 5.6B
D310	79PL1249	DIODE DAN217 T146 SMD3
D311	79PL1249	DIODE DAN217 T146 SMD3

SYMBOL	PART NO	DESCRIPTION
D312	79PL1249	DIODE DAN217 T146 SMD3
D313	79PL1249	DIODE DAN217 T146 SMD3
D314	79PL1032	DIODE RLS4148 LL-34 SMD
D315	79PL1032	DIODE RLS4148 LL-34 SMD
D316	79PL1144	DIODE ZNR RLZ TE-11 5.6B
D317	79PL1144	DIODE ZNR RLZ TE-11 5.6B
D600	79PL1431	LED LTL-1BEDJ-012 1(Y)3(G
D801	79PL2053	DIODE-BRIDGE-KBP205G-2A/6
D803	79PL0923	DIODE FUF4006AMP
D804	79PL1423	DIODE FUF4005AMP 1A/600V
D806	79PL2068	DIODE-SWITCHING-1N4148 T-
D809	79PL2054	DIODE--SF34-3A/200V-T52--
D810	79PL2055	DIODE-SWITCHING-SB360-3A/
ZD801	79PL2072	DIODE-ZENER-GDZJ18B-T/B--

*** TRANSFORMERS ***

T802	79PL2062	XFRMER-POWER-TPW-1085-ER-
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*** VARIABLE RESISTORS ***

VR801	79PL1385	VARIABLE KOHM 1 0.3W TA 6
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*** RELAYS & SWITCHES ***

P805A	79PL1462	SW POWER HF606A1GGATA HUA
S601	79PL1975	SWITCH-TACT-TSAB-3-260GF-
S602	79PL1975	SWITCH-TACT-TSAB-3-260GF-
S603	79PL1975	SWITCH-TACT-TSAB-3-260GF-
S604	79PL1975	SWITCH-TACT-TSAB-3-260GF-
S605	79PL1975	SWITCH-TACT-TSAB-3-260GF-
S606	79PL1975	SWITCH-TACT-TSAB-3-260GF-
S607	79PL1975	SWITCH-TACT-TSAB-3-260GF-
S608	79PL1975	SWITCH-TACT-TSAB-3-260GF-

*** PWB ASSYS ***

FUKEYB	79PL1819	FUNCTION KEY BD-NEC-FA150
HEPNBD	79PL1901	HEAD PHONE BD-NEC-FA15AA
INTBD	79PL2044	INTERFACE BD
INVA	79PL1982	INVERTER-DC-AC-AMBIT:T15I
POWEBD	79PL2047	POWER BD

*** COILS & FILTERS ***

FB301	79PL1952	CORE-BEAD-WB201209B401QNT
FB302	79PL1952	CORE-BEAD-WB201209B401QNT
FB303	79PL1060	BEAD CORE WB201209F050QST
FB304	79PL1060	BEAD CORE WB201209F050QST
FB305	79PL1060	BEAD CORE WB201209F050QST
FB306	79PL1953	CORE-BEAD-SBK160808T-300Y
FB307	79PL1953	CORE-BEAD-SBK160808T-300Y
FB308	79PL1953	CORE-BEAD-SBK160808T-300Y

SYMBOL	PART NO	DESCRIPTION
FB309	79PL1098	BEAD CORE WB201209B300QST
FB311	79PL1954	CORE-BEAD-FCM1608C-301T01
FB313	79PL1098	BEAD CORE WB201209B300QST
FB314	79PL1098	BEAD CORE WB201209B300QST
FB315	79PL1098	BEAD CORE WB201209B300QST
FB316	79PL1098	BEAD CORE WB201209B300QST
FB317	79PL1098	BEAD CORE WB201209B300QST
FB318	79PL1098	BEAD CORE WB201209B300QST
FB319	79PL1098	BEAD CORE WB201209B300QST
FB320	79PL1098	BEAD CORE WB201209B300QST
FB321	79PL1098	BEAD CORE WB201209B300QST
FB322	79PL1098	BEAD CORE WB201209B300QST
FB323	79PL1098	BEAD CORE WB201209B300QST
FB324	79PL1098	BEAD CORE WB201209B300QST
FB325	79PL1098	BEAD CORE WB201209B300QST
FB326	79PL1098	BEAD CORE WB201209B300QST
FB327	79PL1952	CORE-BEAD-WB201209B401QNT
FB328	79PL1098	BEAD CORE WB201209B300QST
FB329	79PL1098	BEAD CORE WB201209B300QST
FB330	79PL1953	CORE-BEAD-SBK160808T-300Y
FB331	79PL1953	CORE-BEAD-SBK160808T-300Y
FB332	79PL1953	CORE-BEAD-SBK160808T-300Y
L001	79PL0993	COIL CHOKE 45UH K
L301	79PL0991	COIL CHOKE 3UH K
L302	79PL0991	COIL CHOKE 3UH K
L802	79PL2056	COIL CHOKE--UH-33-K-DRWW1
T801	79PL1377	LINE FILTER TLF-1030 MH 1

*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***

AUDA	79PL1452	AUDIO CABLE UL2547#26X2C
F801	79PL1461	FUSE TIME LAG 3.15A/250V
F801A	79PL0329	FUSE CLIP FC-04 FOR D=5MM
P307A	79PL1454	HARNESS 4P/3P 160MM 2547#
P801	79PL2057	AC INLET-3P-INALWAYS-AS07
PC01	79PL1848	CABLE-POWER-TO WALL-2000M
R802	79PL1378	THERMISTOR 8 OHM 3A P=5 S
SP00	79PL1464	SPEAKER 4P N13AA12PCH22 J
V001	79PL2078	CABLE-VIDEO-DSUBX2-2000MM
V002	79PL2036	HARNESS-FFC-45P(0.5)-95/1
V003	79PL2037	HARNESS-FFC-30P(0.5)-115/
V006	79PL2038	HARNESS--12P-330MM-CG150-
V150	79PL2039	LCD-15-CLAA150XG01-CPT"
X301	79PL1053	CRYSTAL 20MHZ HC-49/US

*** APPEARANCE PARTS ***

B0106	79PL2043	REAR COVER ASS'Y-NEC-NEC-
B01U	79PL1844	COVER-CONNECTOR-NMV(NEC)-
B02M	79PL1905	HINGE-L-NEC-NEC-FA150ATUA

SYMBOL	PART NO	DESCRIPTION
B02N	79PL1906	HINGE-R-NEC-NEC-FA150ATUA
B02Q	79PL1907	BRACKET-HINGE-NEC-FA150AT
B02P	79PL1845	COVER-STAND FRONT-NMV(NEC
B02Z	79PL1833	COVER CABLE(LCD1550MBK B)
B03M	79PL2040	BASE ASS'Y-NEC-NEC-FA15AA
B03Q	79PL1875	BRACKET-STAND PLATE-NEC-
B03R	79PL1869	FOOT RUBBER
F01	79PL2042	FRONT COVER ASS'Y-NEC-NEC

*** PRINTED & PACKING MATERIALS ***

B0102	79PL2077	LABEL-MODEL LABEL-NMV-155
P11	79PL2075	CARTON-NMV--NEC-FA15AA(9)
P21	79PL1881	CUSHION-FOAM-EPS-LCD1550M
P31	79PL1841	PLASTIC BAG
P32	79PL1102	PLASTIC BAG
Y001	79PL2080	MANUAL-MANUAL ASS'Y-NMV-F
Y002	79PL1960	CARD-CAUTION SHEET-NEC-FA
Y003	79PL2079	CARD-SETUP CARD-NEC-FA15A
Y004	79PL2034	CARD-PRODUCT BROCHURE-NEC

*** RESISTORS ***

FB312	79PL1294	CHIP-R OHM 0 1/10W J 0603
R001	79PL0064	CF OHM 270 1/4W J T26
R002	79PL0064	CF OHM 270 1/4W J T26
R003	79PL1297	CHIP-R KOHM 100 1/10W J
R004	79PL1972	RES. CHIP-R-KOHM-300-1/10
R040	79PL1386	R,CHIP R KOHM 1 1/10W F
R041	79PL1386	R,CHIP R KOHM 1 1/10W F
R042	79PL1398	R,CHIP R KOHM 47 1/10W F
R043	79PL1398	R,CHIP R KOHM 47 1/10W F
R045	79PL1296	CHIP-R KOHM 10 1/10W J 06
R046	79PL1294	CHIP-R OHM 0 1/10W J 0603
R047	79PL1302	CHIP-R KOHM 4.7 1/10W J
R053	79PL1973	RES. CHIP-R-KOHM-150-1/10
R054	79PL1973	RES. CHIP-R-KOHM-150-1/10
R055	79PL1296	CHIP-R KOHM 10 1/10W J 06
R056	79PL1296	CHIP-R KOHM 10 1/10W J 06
R301	79PL1302	CHIP-R KOHM 4.7 1/10W J
R305	79PL1295	CHIP-R OHM 100 1/10W J 06
R306	79PL1295	CHIP-R OHM 100 1/10W J 06
R307	79PL1296	CHIP-R KOHM 10 1/10W J 06
R308	79PL1296	CHIP-R KOHM 10 1/10W J 06
R309	79PL1302	CHIP-R KOHM 4.7 1/10W J
R310	79PL1302	CHIP-R KOHM 4.7 1/10W J
R312	79PL1302	CHIP-R KOHM 4.7 1/10W J
R314	79PL1302	CHIP-R KOHM 4.7 1/10W J
R315	79PL1295	CHIP-R OHM 100 1/10W J 06
R316	79PL1295	CHIP-R OHM 100 1/10W J 06

SYMBOL	PART NO	DESCRIPTION
R317	79PL1004	CHIP-R 470H 1/8W J 805
R318	79PL1004	CHIP-R 470H 1/8W J 805
R319	79PL1296	CHIP-R KOHM 10 1/10W J 06
R320	79PL1302	CHIP-R KOHM 4.7 1/10W J
R321	79PL1302	CHIP-R KOHM 4.7 1/10W J
R322	79PL1302	CHIP-R KOHM 4.7 1/10W J
R323	79PL1296	CHIP-R KOHM 10 1/10W J 06
R325	79PL1296	CHIP-R KOHM 10 1/10W J 06
R326	79PL1296	CHIP-R KOHM 10 1/10W J 06
R327	79PL1294	CHIP-R OHM 0 1/10W J 0603
R328	79PL1295	CHIP-R OHM 100 1/10W J 06
R329	79PL1239	CHIP-R KOHM 2.2 1/16W J
R330	79PL1294	CHIP-R OHM 0 1/10W J 0603
R331	79PL1239	CHIP-R KOHM 2.2 1/16W J
R332	79PL1295	CHIP-R OHM 100 1/10W J 06
R333	79PL1399	R,CHIP R KOHM 47 1/10W J
R334	79PL1399	R,CHIP R KOHM 47 1/10W J
R335	79PL1399	R,CHIP R KOHM 47 1/10W J
R336	79PL1302	CHIP-R KOHM 4.7 1/10W J
R337	79PL1303	CHIP-R OHM 47 1/10W J
R338	79PL1303	CHIP-R OHM 47 1/10W J
R339	79PL1298	CHIP-R OHM 150 1/10W J
R340	79PL1305	CHIP-R OHM 75 1/10W J
R341	79PL1298	CHIP-R OHM 150 1/10W J
R342	79PL1298	CHIP-R OHM 150 1/10W J
R343	79PL1305	CHIP-R OHM 75 1/10W J
R344	79PL1298	CHIP-R OHM 150 1/10W J
R345	79PL1298	CHIP-R OHM 150 1/10W J
R346	79PL1305	CHIP-R OHM 75 1/10W J
R347	79PL1298	CHIP-R OHM 150 1/10W J
R348	79PL1941	CHIP-R-KOHM-3.3-1/10W-J-6
R349	79PL1941	CHIP-R-KOHM-3.3-1/10W-J-6
R350	79PL1300	CHIP-R OHM 22 1/10W J
R351	79PL1300	CHIP-R OHM 22 1/10W J
R352	79PL1300	CHIP-R OHM 22 1/10W J
R353	79PL1297	CHIP-R KOHM 100 1/10W J
R354	79PL1297	CHIP-R KOHM 100 1/10W J
R355	79PL1297	CHIP-R KOHM 100 1/10W J
R356	79PL1295	CHIP-R OHM 100 1/10W J 06
R357	79PL1295	CHIP-R OHM 100 1/10W J 06
R358	79PL1302	CHIP-R KOHM 4.7 1/10W J
R359	79PL1399	R,CHIP R KOHM 47 1/10W J
R360	79PL1399	R,CHIP R KOHM 47 1/10W J
R361	79PL1941	CHIP-R-KOHM-3.3-1/10W-J-6
R368	79PL1296	CHIP-R KOHM 10 1/10W J 06
R370	79PL1303	CHIP-R OHM 47 1/10W J
R371	79PL1387	R,CHIP R KOHM 1 1/10W J
R801	79PL1384	R,MGF KOHM 470 1/4W J AT5

SYMBOL	PART NO	DESCRIPTION
R803	79PL2059	RES. MOF-KOHM-100-2W-J-HO
R805	79PL2059	RES. MOF-KOHM-100-2W-J-HO
R806	79PL0741	MOF KOHM 33 3W J HOR
R807	79PL0086	CF OHM 4.7 1/4W J T26
R808	79PL0089	CF KOHM 51 1/4W J T26
R810	79PL0077	CF KOHM 3.9 1/4W J T26
R811	79PL2060	RES. MOF-OHM-1.2-1W-J-HOR
R812	79PL0056	CF KOHM 20 1/4W J T26
R813	79PL2070	RES. CF-OHM-220-1/4W-J-T5
R814	79PL0081	CF OHM 47 1/4W J T26
R815	79PL2071	RES. CF-KOHM-1-1/4W-J-T52
R817	79PL0083	CF KOHM 4.7 1/4W J T26
R818	79PL0089	CF KOHM 51 1/4W J T26
R819	79PL0088	CF KOHM 5.1 1/4W J T26
R820	79PL0039	CF KOHM 1 1/4W J T26
R823	79PL0064	CF OHM 270 1/4W J T26
R824	79PL0065	CF KOHM 2.7 1/4W J T26
R825	79PL0040	CF KOHM 10 1/4W J T26
R826	79PL0039	CF KOHM 1 1/4W J T26
R827	79PL0055	CF KOHM 2 1/4W J T26
R832	79PL0088	CF KOHM 5.1 1/4W J T26
R833	79PL2061	RES. MOF-KOHM-1.2-1W-J-HO
RN301	79PL1011	FRN 10KH 1/16W J 8P4R
RN302	79PL1011	FRN 10KH 1/16W J 8P4R
RN303	79PL1013	FRN 4.7KH 1/16W J 8P4R
RN304	79PL1013	FRN 4.7KH 1/16W J 8P4R
RN305	79PL1307	FRN,OHM,47,1/16W,J,8P4R
RN306	79PL1307	FRN,OHM,47,1/16W,J,8P4R
RN307	79PL1307	FRN,OHM,47,1/16W,J,8P4R
RN308	79PL1307	FRN,OHM,47,1/16W,J,8P4R
RN309	79PL1307	FRN,OHM,47,1/16W,J,8P4R
RN310	79PL1307	FRN,OHM,47,1/16W,J,8P4R
RN311	79PL1307	FRN,OHM,47,1/16W,J,8P4R
RN312	79PL1307	FRN,OHM,47,1/16W,J,8P4R
RN313	79PL1307	FRN,OHM,47,1/16W,J,8P4R
RN314	79PL1307	FRN,OHM,47,1/16W,J,8P4R
RN315	79PL1307	FRN,OHM,47,1/16W,J,8P4R
RN316	79PL1307	FRN,OHM,47,1/16W,J,8P4R

*** CAPACITORS ***

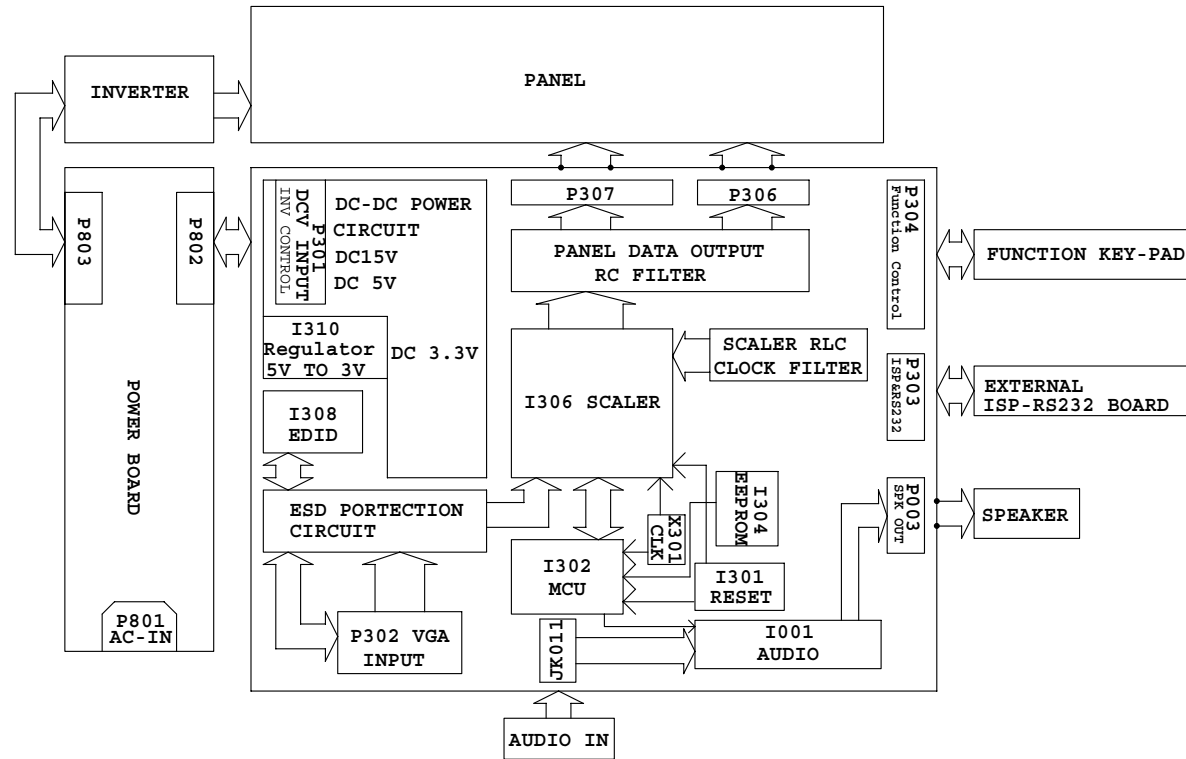
C002	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C003	79PL1407	C,ALU UF 680 25V NF 105C
C004	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C007	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C008	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C009	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C010	79PL0186	ALU UF 100 25V T 105C 6
C015	79PL1418	C,MC UF 0.1 25V Z Y5V SMD

SYMBOL	PART NO	DESCRIPTION
C040	79PL1944	ALU-UF-4.7-50V-F-105C-6.3
C041	79PL1944	ALU-UF-4.7-50V-F-105C-6.3
C042	79PL1407	C,ALU UF 680 25V NF 105C
C043	79PL1407	C,ALU UF 680 25V NF 105C
C044	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C301	79PL1943	ALU-UF-1000-10V-F-105-10X
C302	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C303	79PL1417	C,MC UF 0.047 25V K X7R S
C305	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C306	79PL1141	MC PF 100 50V NPO J SMD 0
C307	79PL1141	MC PF 100 50V NPO J SMD 0
C308	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C310	79PL1014	ALU 10UF 16V 105C T SMD
C311	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C312	79PL1314	MC PF 22 50V NPO J SMD
C313	79PL1318	MC 5PF 50V NPO J SMD 0603
C316	79PL1143	ALU UF 4.7 25V 85C T SMD
C317	79PL1143	ALU UF 4.7 25V 85C T SMD
C318	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C319	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C320	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C321	79PL1319	MC 0.01UF 50V X7R M SMD
C322	79PL1319	MC 0.01UF 50V X7R M SMD
C323	79PL1319	MC 0.01UF 50V X7R M SMD
C324	79PL1319	MC 0.01UF 50V X7R M SMD
C325	79PL1319	MC 0.01UF 50V X7R M SMD
C326	79PL1319	MC 0.01UF 50V X7R M SMD
C327	79PL1319	MC 0.01UF 50V X7R M SMD
C328	79PL1319	MC 0.01UF 50V X7R M SMD
C329	79PL1141	MC PF 100 50V NPO J SMD 0
C334	79PL1141	MC PF 100 50V NPO J SMD 0
C335	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C336	79PL1317	MC 47PF 50V NPO J SMD
C337	79PL1317	MC 47PF 50V NPO J SMD
C338	79PL1141	MC PF 100 50V NPO J SMD 0
C339	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C340	79PL1319	MC 0.01UF 50V X7R M SMD
C341	79PL1318	MC 5PF 50V NPO J SMD 0603
C342	79PL1319	MC 0.01UF 50V X7R M SMD
C343	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C344	79PL1319	MC 0.01UF 50V X7R M SMD
C345	79PL1318	MC 5PF 50V NPO J SMD 0603
C346	79PL1319	MC 0.01UF 50V X7R M SMD
C347	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C348	79PL1319	MC 0.01UF 50V X7R M SMD
C349	79PL1318	MC 5PF 50V NPO J SMD 0603
C350	79PL1319	MC 0.01UF 50V X7R M SMD
C351	79PL1418	C,MC UF 0.1 25V Z Y5V SMD

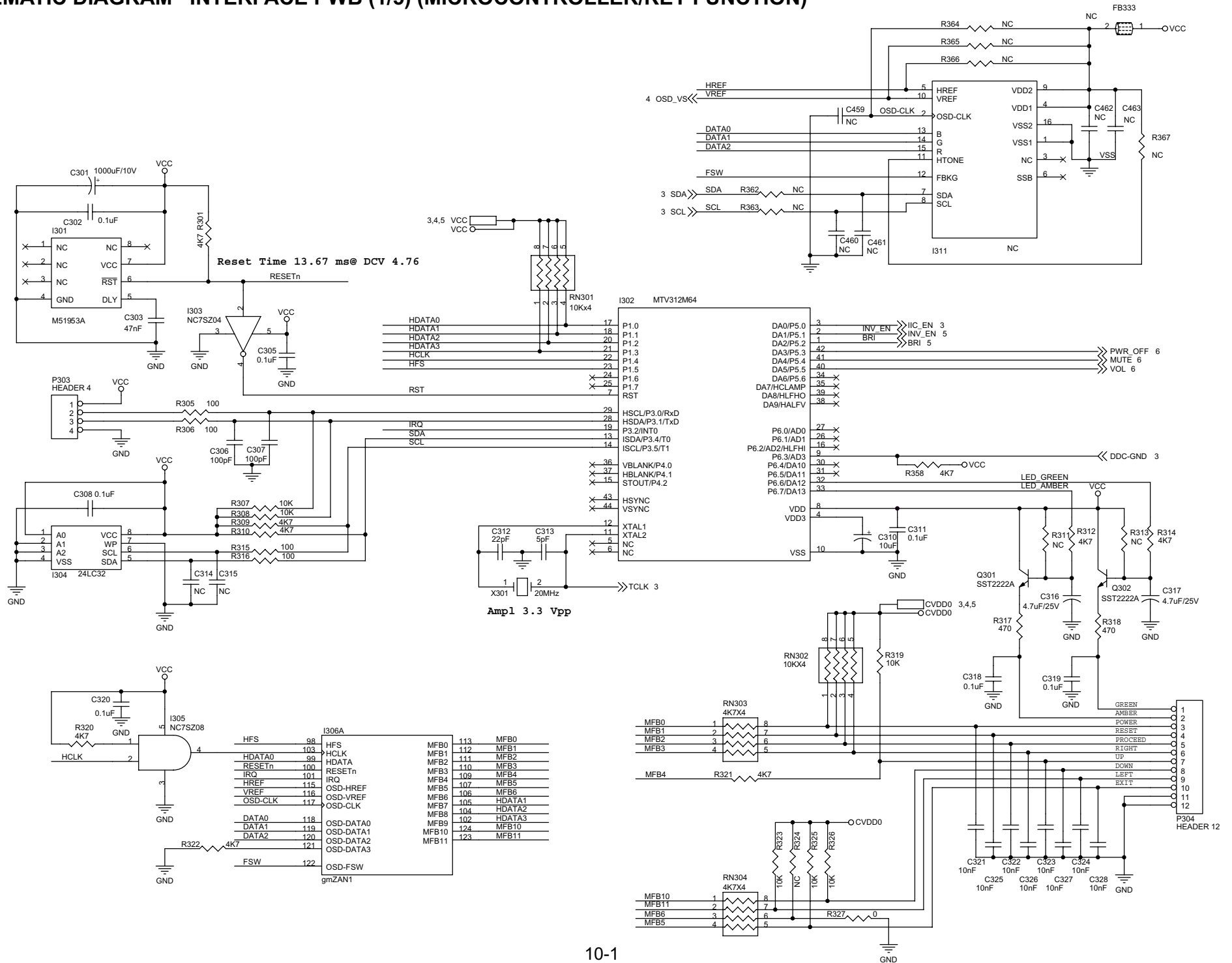
SYMBOL	PART NO	DESCRIPTION
C352	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C353	79PL1943	ALU-UF-1000-10V-F-105-10X
C354	79PL2045	CAP. MC-PF-82-50V-J-NPO-S
C356	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C357	79PL1319	MC 0.01UF 50V X7R M SMD
C358	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C384	79PL1141	MC PF 100 50V NPO J SMD 0
C385	79PL1141	MC PF 100 50V NPO J SMD 0
C411	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C412	79PL1974	CAP. ALU-UF-220-10V-NF-10
C413	79PL1319	MC 0.01UF 50V X7R M SMD
C414	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C415	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C416	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C417	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C418	79PL1407	C,ALU UF 680 25V NF 105C
C419	79PL1319	MC 0.01UF 50V X7R M SMD
C420	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C421	79PL1313	ALU UF 470 16V 105 10X11
C422	79PL1319	MC 0.01UF 50V X7R M SMD
C423	79PL1974	CAP. ALU-UF-220-10V-NF-10
C424	79PL1974	CAP. ALU-UF-220-10V-NF-10
C425	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C426	79PL1974	CAP. ALU-UF-220-10V-NF-10
C427	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C428	79PL1319	MC 0.01UF 50V X7R M SMD
C429	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C430	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C431	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C432	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C433	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C434	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C435	79PL1974	CAP. ALU-UF-220-10V-NF-10
C436	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C437	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C438	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C439	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C440	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C441	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C442	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C443	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C444	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C445	79PL1974	CAP. ALU-UF-220-10V-NF-10
C446	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C447	79PL1319	MC 0.01UF 50V X7R M SMD
C448	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C449	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C450	79PL1418	C,MC UF 0.1 25V Z Y5V SMD

SYMBOL	PART NO	DESCRIPTION
C454	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C455	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C456	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C457	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C458	79PL1418	C,MC UF 0.1 25V Z Y5V SMD
C464	79PL1946	MC-UF-0.47-25V-M-Y5V-SMD
C801	79PL2048	CAP. X2-MEF-UF-0.33-275V-
C802	79PL2049	CAP. X2-MEF-UF-0.33-275V-
C803	79PL2050	CAP. CD-PF-2200-250V-M-F-
C804	79PL2050	CAP. CD-PF-2200-250V-M-F-
C805	79PL2051	CAP. ALU-UF-100-400V-NF-1
C806	79PL0517	CD UF 0.01 1000V M Z5U F
C807	79PL0189	ALU UF 47, 25V,T,105C,
C810	79PL0252	CD UF 0.1 50V Z Y5V T
C811	79PL0231	CD PF 1000 50V K Y5P T
C812	79PL0252	CD UF 0.1 50V Z Y5V T
C813	79PL0232	CD UF 0.01 50V K Y5P T
C814	79PL0191	ALU UF 10 50V T 105C
C815	79PL0526	MEM,UF,0.1 , 50V,J,T
C816	79PL2064	CAP. CD-PF-1000-100V-K-T-
C817	79PL2065	ALUMINATOR-UF-680-25V-T-1
C818	79PL2065	ALUMINATOR-UF-680-25V-T-1
C820	79PL0252	CD UF 0.1 50V Z Y5V T
C821	79PL2066	CAP. CD-PF-1000-100V-K-T-
C822	79PL2067	CAP. ALU-UF-470-25V-T-105
C824	79PL0483	ALU UF 1000 16V T 105C
C826	79PL0252	CD UF 0.1 50V Z Y5V T
C827	79PL0526	MEM,UF,0.1 , 50V,J,T
C828	79PL2052	CAP. CD-PF-1000-250V-M-F-
C831	79PL0185	ALU UF 10 25V T 105C
CN359	79PL1955	MC-PF-33-50V-K-NPO-SMD-06
CN360	79PL1955	MC-PF-33-50V-K-NPO-SMD-06
CN361	79PL1955	MC-PF-33-50V-K-NPO-SMD-06
CN362	79PL1955	MC-PF-33-50V-K-NPO-SMD-06
CN363	79PL1955	MC-PF-33-50V-K-NPO-SMD-06
CN364	79PL1955	MC-PF-33-50V-K-NPO-SMD-06
CN365	79PL1955	MC-PF-33-50V-K-NPO-SMD-06
CN366	79PL1955	MC-PF-33-50V-K-NPO-SMD-06
CN367	79PL1955	MC-PF-33-50V-K-NPO-SMD-06
CN368	79PL1955	MC-PF-33-50V-K-NPO-SMD-06
CN369	79PL1955	MC-PF-33-50V-K-NPO-SMD-06
CN370	79PL1955	MC-PF-33-50V-K-NPO-SMD-06

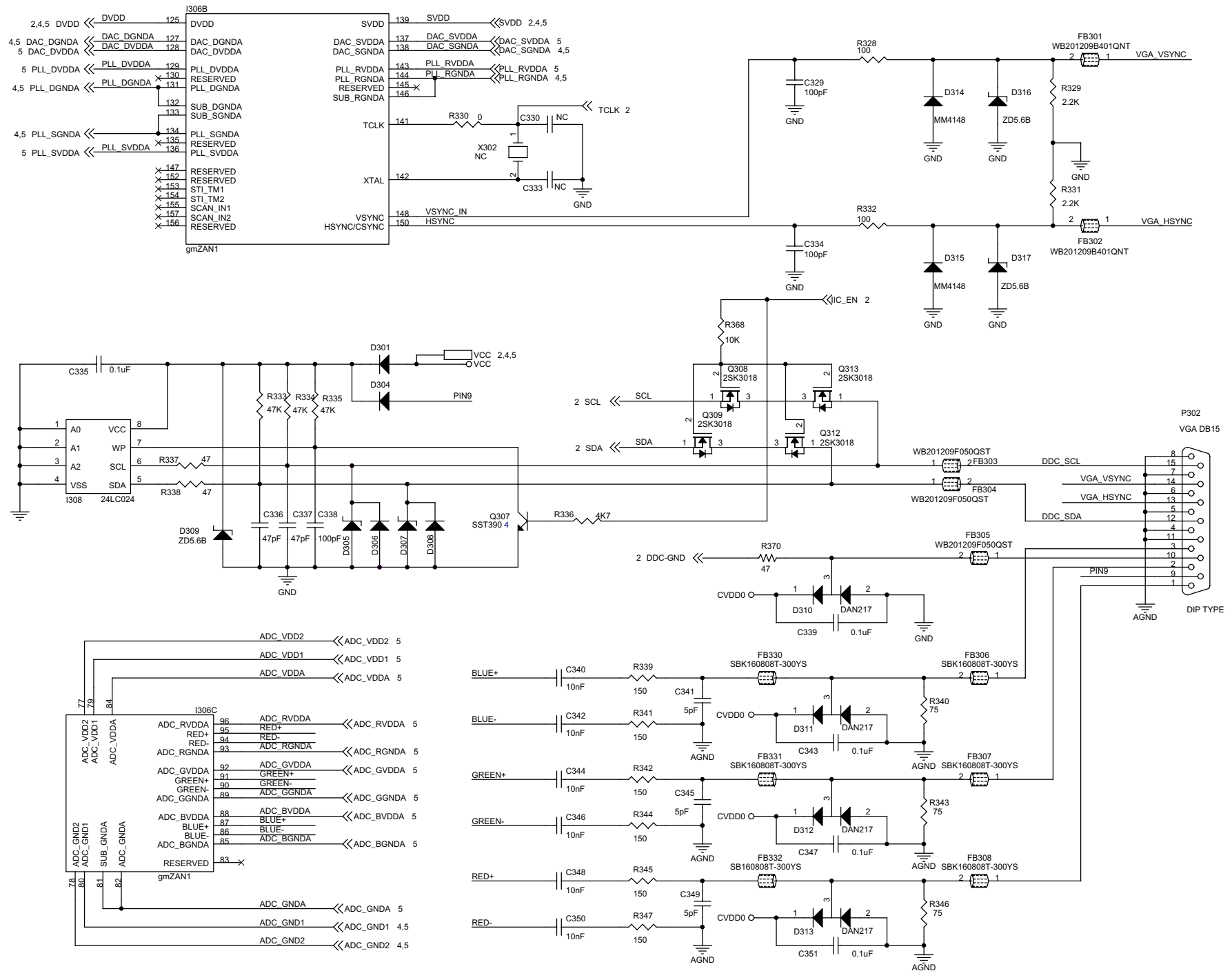
BLOCK DIAGRAM (LCD1550ME)



SCHEMATIC DIAGRAM INTERFACE PWB (1/5) (MICROCONTROLLER/KEY FUNCTION)

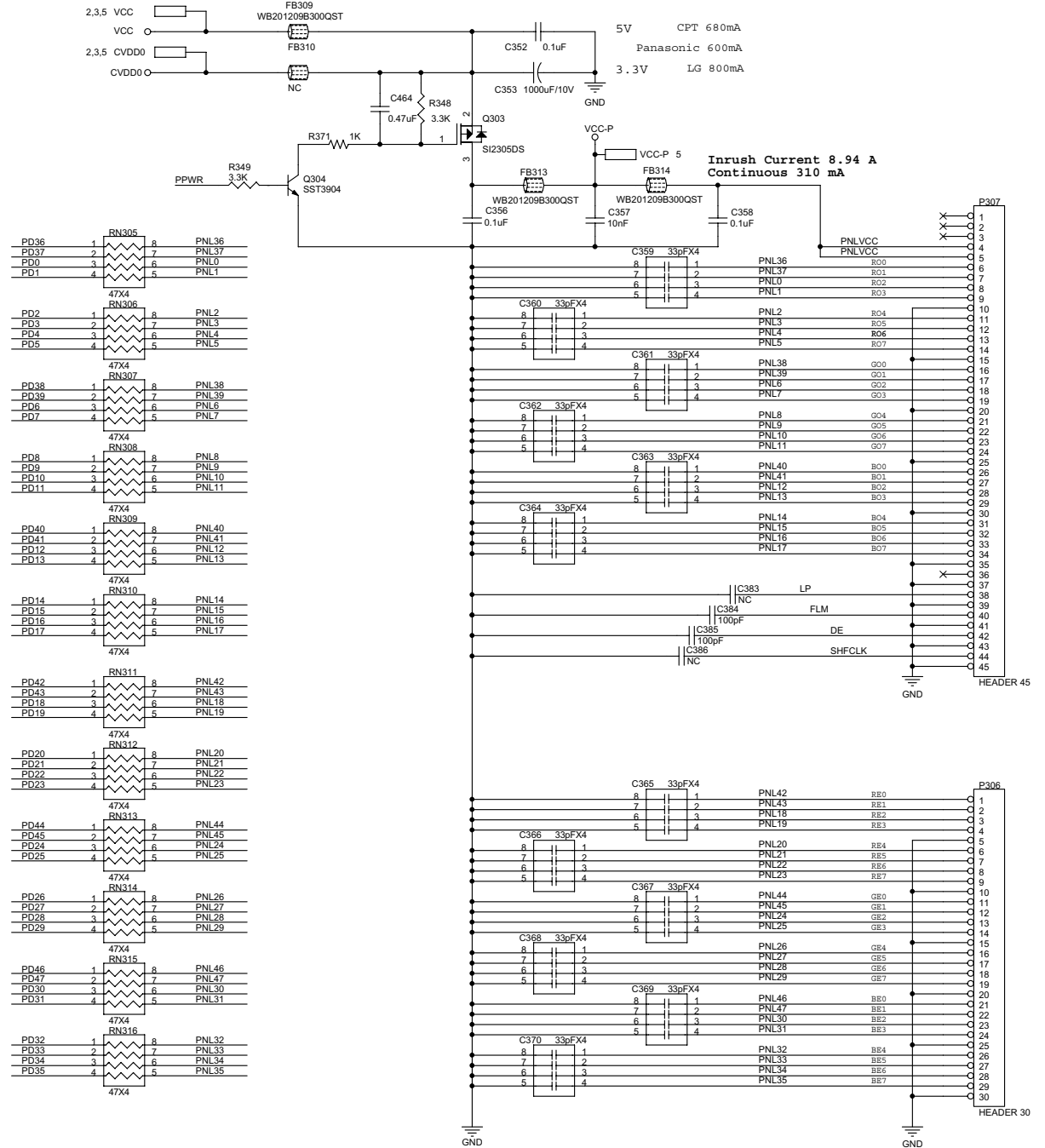
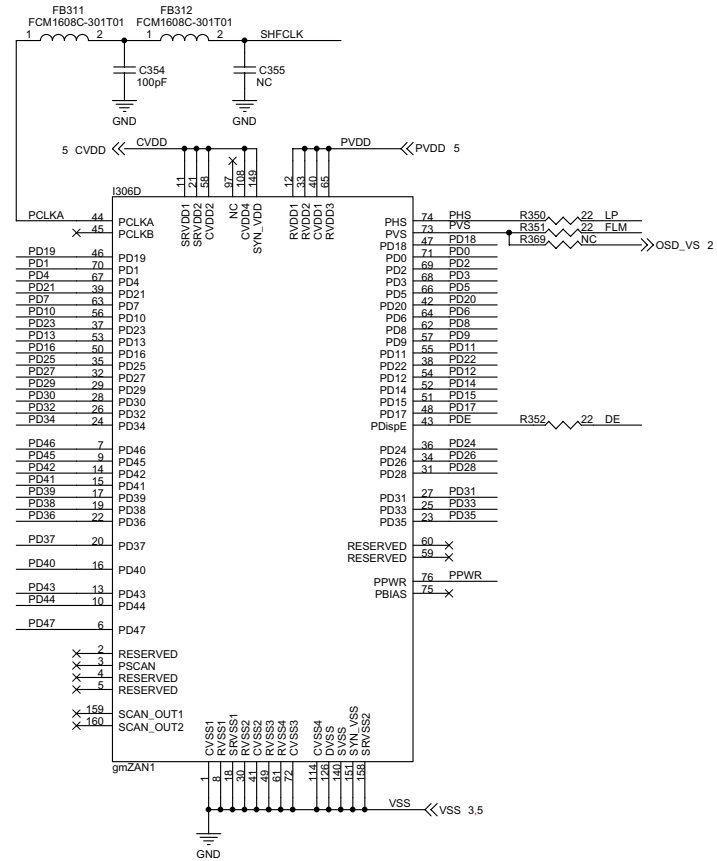


SCHEMATIC DIAGRAM INTERFACE PWB (2/5) (VGA INTERFACE/CLOCK RECOVERY)

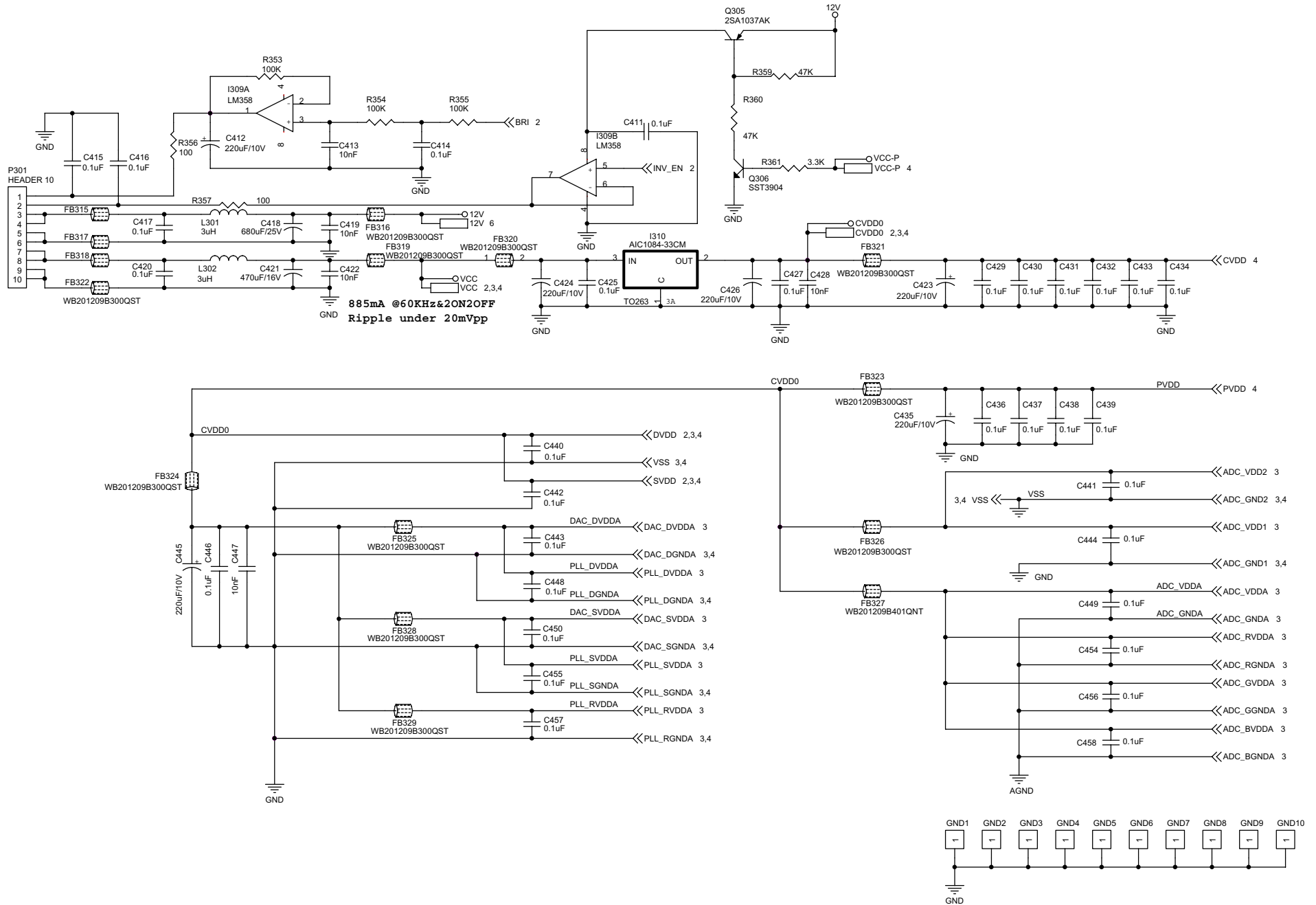


SCHEMATIC DIAGRAM INTERFACE PWB (3/5) (PANEL INTERFACE)

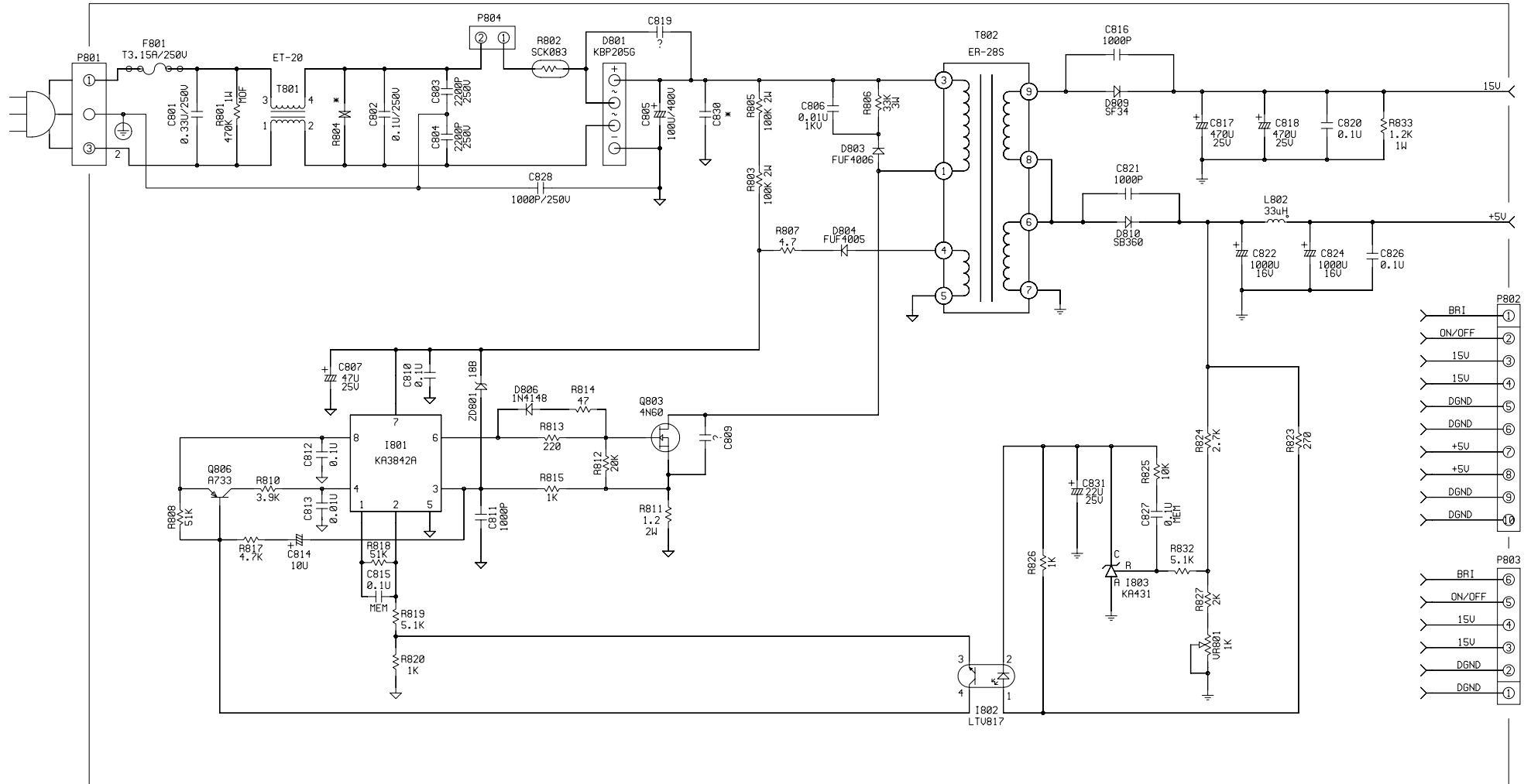
Bridge Panel Interface



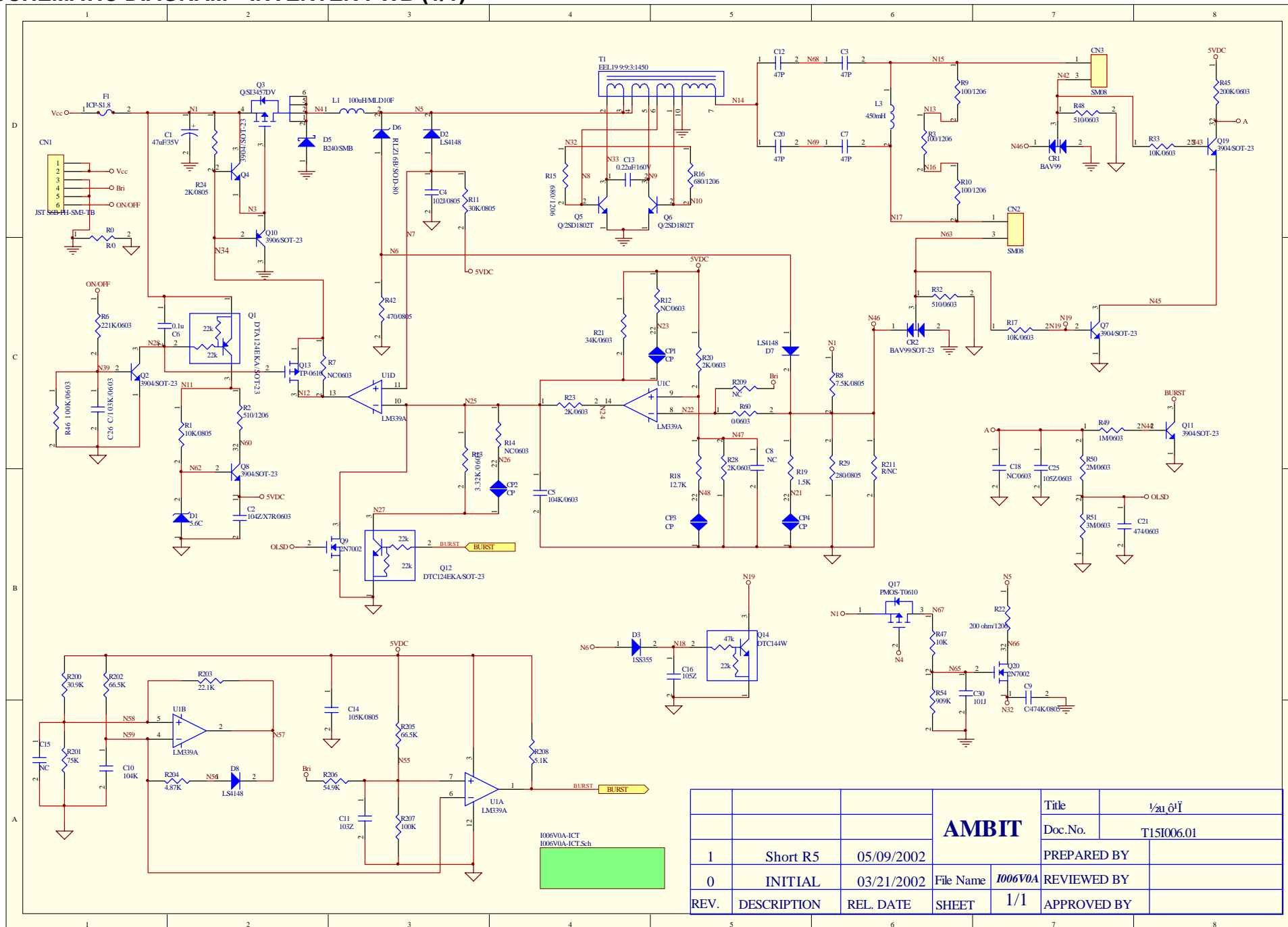
SCHEMATIC DIAGRAM INTERFACE PWB (4/5) (POWER SUPPLY)



SCHEMATIC DIAGRAM POWER PWB (1/1)



SCHEMATIC DIAGRAM INVERTER PWB (1/1)



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