

# Service Guide Specification

## 1. Model Description

<b>MODEL</b>	<b>L1780QN L1980QN</b>	<b>BRAND</b>	<b>LG</b>	<b>LEE H.J 05.03.10</b>	<b>KIM J.O 05.03.10</b>
<b>SUFFIX</b>	<b>ANEUG</b>	<b>Product Name</b>	<b>FLATRON L1780Q FLATRON L1980Q</b>	<b>Part No.</b>	<b>3828TSL096T</b>

## 2. Printing Specification

1. Trim Size (Format) : **215mm x 280 mm**
  
2. Printing Colors
  - Cover : **LG COLORS**
  - Inside : **Black**
  
3. Stock (Paper)
  - Cover : **Snow White 150 g/m<sup>2</sup>**
  - Inside : **Snow White 100 g/m<sup>2</sup>**
  
4. Printing Method :
5. Bindery : **Saddle stitch**
6. Language : **English**
7. Number of pages : **32 ( Including blank 3pages)**

## 3. Special Instructions

### (1) Origin Notification

- |                                |                             |
|--------------------------------|-----------------------------|
| * LGEDI : Printed in Indonesia | * LGEWA : Printed in U.K.   |
| * LGESP : Printed in Brazil    | * LGEMX : Printed in Mexico |
| * LGENT : Printed in China     | * LGEIL : Printed in India  |

## 4. Changes

8				
7				
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1				
<b>REV. NO.</b>	<b>MM/DD/YY</b>	<b>SIGNATURE</b>	<b>CHANGE NO.</b>	<b>CHANGE CONTENTS</b>

# Pagination sheet

P/NO.3828TSL096T  
Total pages : 32pages

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	English ....	English 27	English 28	English blank	English blank	Rear cover Inside blank
						Rear Cover



Website:<http://biz.LGservice.com>  
E-mail:<http://www.LGservice.com/techsup.html>

# COLOR MONITOR

# SERVICE MANUAL

CHASSIS NO. : CL-68

MODEL: FLATRON L1780Q (L1780QN.AN\*\*G)

FLATRON L1980Q (L1980QN.AN\*\*G)

( ) \*\*Same model for Service

## CAUTION

BEFORE SERVICING THE UNIT,  
READ THE **SAFETY PRECAUTIONS** IN THIS MANUAL.



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## SPECIFICATIONS

### 1. LCD CHARACTERISTICS

Type : TFT Color LCD Module  
 Active Display Area : 17inch diagonal-**L1780Q**  
                                   : 19inch diagonal-**L1980Q**  
 Size : 358.5(H) x 296.5(V) x 17.0(D)-**L1780Q**  
       : 396.0(H) x 324.0(V) x 15.5(D)-**L1980Q**  
 Pixel Pitch : 0.264(H) x 0.264(V)-**L1780Q**  
               : 0.0984(H) x 0.294(V)-**L1980Q**  
 Color Depth : 16.2M colors  
 Electrical Interface : LVDS  
 Surface Treatment : Anti-Glare, Hard Coating(3H)  
 Operating Mode : Normally White, Transmissive mode  
 Backlight Unit : 4-CCFL (Cold Cathode  
                                   Fluorescent Lamp)

### 2. OPTICAL CHARACTERISTICS

2-1. Viewing Angle by Contrast Ratio  $\geq 10$   
**L1780Q**  
 Left : 60°(Min.), 70°(Typ) Right : 60°(Min.), 70°(Typ)  
 Top : 45°(Min.), 60°(Typ) Bottom : 50°(Min.), 60°(Typ)  
**L1980Q**  
 Left : 60°(Min.), 70°(Typ) Right : 60°(Min.), 70°(Typ)  
 Top : 65°(Min.), 75°(Typ) Bottom : 55°(Min.), 65°(Typ)

2-2. Luminance : 250(min), 300(Typ) -**L1780Q**  
                   : 200(min), 250(Typ) -**L1980Q**

2-3. Contrast Ratio : 300(min), 450(Typ) -**L1780Q**  
                       : 300(min), 500(Typ) -**L1980Q**

### 3. SIGNAL (Refer to the Timing Chart)

3-1. Sync Signal  
 • Type : Separate Sync, Digital, SOG (Sync On Green)

3-2. Video Input Signal  
 1) Type : R, G, B Analog  
 2) Voltage Level : 0 ~ 0.7 V  
    a) Color 0, 0 : 0 Vp-p  
    b) Color 7, 0 : 0.35 Vp-p  
    c) Color 15, 0 : 0.7 Vp-p  
 3) Input Impedance : 75  $\Omega$

3-3. Operating Frequency  
 Horizontal(Analog) : 30 ~ 83kHz  
 Horizontal(Digital) : 30 ~ 71kHz  
 Vertical : 56 ~ 75Hz

### 4. MAX. RESOLUTION

D-sub Analog : 1280 x 1024@75Hz  
 DVI Digital/Analog : 1280 x 1024@60Hz

### 5. POWER SUPPLY

5-1. Power Adaptor(Built-in Power)  
 Input : AC 100~240V, 50/60Hz , 1.0A  
 Adapter output : DC 12V-3.5A

#### 5-2. Power Consumption

MODE	H/V SYNC	VIDEO	POWER CONSUMPTION	LED COLOR
POWER ON (NORMAL)	ON/ON	ACTIVE	less than 43 W- <b>L1780Q</b>	GREEN
			less than 45 W- <b>L1980Q</b>	
STAND-BY	OFF/ON	OFF	less than 2 W	AMBER
SUSPEND	ON/OFF	OFF	less than 2 W	AMBER
DPM OFF	OFF/OFF	OFF	less than 2 W	AMBER

### 6. ENVIRONMENT

6-1. Operating Temperature : 10°C ~ 35°C  
 6-2. Relative Humidity : 10% ~ 80%  
 6-3. MTBF : 50,000 HRS with 90% Confidence level  
       Lamp Life : 50,000 Hours(Min)

### 7. DIMENSIONS (with TILT/SWIVEL)

**L1780Q**  
 Width : 373.7 mm (14.71")  
 Depth : 240 mm (9.45")  
 Height : 377.6 mm (14.87")

**L1980Q**  
 Width : 422.3 mm (16.63")  
 Depth : 261 mm (10.28")  
 Height : 410.1 mm (16.15")

### 8. WEIGHT (with TILT/SWIVEL)

**L1780Q**  
 Net. Weight : 4.3kg (9.48 lbs)  
 Gross Weight : 6.8kg (14.99 lbs)

**L1980Q**  
 Net. Weight : 5.66kg (12.48 lbs)  
 Gross Weight : 8.5kg (18.74 lbs)

## PRECAUTION

### WARNING FOR THE SAFETY-RELATED COMPONENT.

- There are some special components used in LCD monitor that are important for safety. **These parts are marked  $\triangle$  on the schematic diagram and the replacement parts list.** It is essential that these critical parts should be replaced with the manufacturer's specified parts to prevent electric shock, fire or other hazard.
- Do not modify original design without obtaining written permission from manufacturer or you will void the original parts and labor guarantee.

### TAKE CARE DURING HANDLING THE LCD MODULE WITH BACKLIGHT UNIT.

- Must mount the module using mounting holes arranged in four corners.
- Do not press on the panel, edge of the frame strongly or electric shock as this will result in damage to the screen.
- Do not scratch or press on the panel with any sharp objects, such as pencil or pen as this may result in damage to the panel.
- Protect the module from the ESD as it may damage the electronic circuit (C-MOS).
- Make certain that treatment person's body are grounded through wrist band.
- Do not leave the module in high temperature and in areas of high humidity for a long time.
- The module not be exposed to the direct sunlight.
- Avoid contact with water as it may a short circuit within the module.
- If the surface of panel become dirty, please wipe it off with a softmaterial. (Cleaning with a dirty or rough cloth may damage the panel.)

### $\triangle$ CAUTION

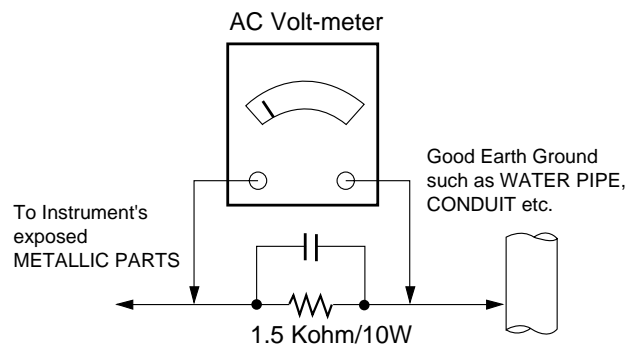
Please use only a plastic screwdriver to protect yourself from shock hazard during service operation.

### $\triangle$ WARNING

BE CAREFUL ELECTRIC SHOCK !

- If you want to replace with the new backlight (CCFL) or inverter circuit, must disconnect the AC adapter because high voltage appears at inverter circuit about 650Vrms.
- Handle with care wires or connectors of the inverter circuit. If the wires are pressed cause short and may burn or take fire.

### Leakage Current Hot Check Circuit



# SERVICING PRECAUTIONS

**CAUTION:** Before servicing receivers covered by this service manual and its supplements and addenda, read and follow the **SAFETY PRECAUTIONS** on page 3 of this publication.

**NOTE:** If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions on page 3 of this publication, always follow the safety precautions. Remember: Safety First.

## General Servicing Precautions

1. Always unplug the receiver AC power cord from the AC power source before;
  - a. Removing or reinstalling any component, circuit board module or any other receiver assembly.
  - b. Disconnecting or reconnecting any receiver electrical plug or other electrical connection.
  - c. Connecting a test substitute in parallel with an electrolytic capacitor in the receiver.

**CAUTION:** A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.

- d. Discharging the picture tube anode.
2. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc) equipped with a suitable high voltage probe.  
Do not test high voltage by "drawing an arc".
  3. Discharge the picture tube anode only by (a) first connecting one end of an insulated clip lead to the degaussing or kine aquadag grounding system shield at the point where the picture tube socket ground lead is connected, and then (b) touch the other end of the insulated clip lead to the picture tube anode button, using an insulating handle to avoid personal contact with high voltage.
  4. Do not spray chemicals on or near this receiver or any of its assemblies.
  5. Unless specified otherwise in this service manual, clean electrical contacts only by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable non-abrasive applicator; 10% (by volume) Acetone and 90% (by volume) isopropyl alcohol (90%-99% strength)

**CAUTION:** This is a flammable mixture.

Unless specified otherwise in this service manual, lubrication of contacts is not required.

6. Do not defeat any plug/socket B+ voltage interlocks with which receivers covered by this service manual might be equipped.
7. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
8. Always connect the test receiver ground lead to the receiver chassis ground before connecting the test receiver positive lead.

Always remove the test receiver ground lead last.

9. Use with this receiver only the test fixtures specified in this service manual.

**CAUTION:** Do not connect the test fixture ground strap to any heat sink in this receiver.

## Electrostatically Sensitive (ES) Devices

Some semiconductor (solid-state) devices can be damaged easily by static electricity. Such components commonly are called *Electrostatically Sensitive (ES) Devices*. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed to prevent potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

**CAUTION:** Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

### General Soldering Guidelines

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range of 500° F to 600° F.
2. Use an appropriate gauge of RMA resin-core solder composed of 60 parts tin/40 parts lead.
3. Keep the soldering iron tip clean and well tinned.
4. Thoroughly clean the surfaces to be soldered. Use a small wire-bristle (0.5 inch, or 1.25cm) brush with a metal handle.

Do not use freon-propelled spray-on cleaners.

5. Use the following unsoldering technique
  - a. Allow the soldering iron tip to reach normal temperature.  
(500° F to 600° F)
  - b. Heat the component lead until the solder melts.
  - c. Quickly draw the melted solder with an anti-static, suction-type solder removal device or with solder braid.
6. Use the following soldering technique.
  - a. Allow the soldering iron tip to reach a normal temperature (500° F to 600° F)
  - b. First, hold the soldering iron tip and solder the strand against the component lead until the solder melts.

- c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.

**CAUTION:** Work quickly to avoid overheating the circuit board printed foil.

- d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.

### IC Remove/Replacement

Some chassis circuit boards have slotted holes (oblong) through which the IC leads are inserted and then bent flat against the circuit foil. When holes are the slotted type, the following technique should be used to remove and replace the IC. When working with boards using the familiar round hole, use the standard technique as outlined in paragraphs 5 and 6 above.

#### Removal

1. Desolder and straighten each IC lead in one operation by gently prying up on the lead with the soldering iron tip as the solder melts.
2. Draw away the melted solder with an anti-static suction-type solder removal device (or with solder braid) before removing the IC.

### Replacement

1. Carefully insert the replacement IC in the circuit board.
2. Carefully bend each IC lead against the circuit foil pad and solder it.
3. Clean the soldered areas with a small wire-bristle brush. (It is not necessary to reapply acrylic coating to the areas).

### "Small-Signal" Discrete Transistor

#### Removal/Replacement

1. Remove the defective transistor by clipping its leads as close as possible to the component body.
2. Bend into a "U" shape the end of each of three leads remaining on the circuit board.
3. Bend into a "U" shape the replacement transistor leads.
4. Connect the replacement transistor leads to the corresponding leads extending from the circuit board and crimp the "U" with long nose pliers to insure metal to metal contact then solder each connection.

### Power Output, Transistor Device

#### Removal/Replacement

1. Heat and remove all solder from around the transistor leads.
2. Remove the heat sink mounting screw (if so equipped).
3. Carefully remove the transistor from the heat sink of the circuit board.
4. Insert new transistor in the circuit board.
5. Solder each transistor lead, and clip off excess lead.
6. Replace heat sink.

### Diode Removal/Replacement

1. Remove defective diode by clipping its leads as close as possible to diode body.
2. Bend the two remaining leads perpendicular y to the circuit board.
3. Observing diode polarity, wrap each lead of the new diode around the corresponding lead on the circuit board.
4. Securely crimp each connection and solder it.
5. Inspect (on the circuit board copper side) the solder joints of the two "original" leads. If they are not shiny, reheat them and if necessary, apply additional solder.

### Fuse and Conventional Resistor

#### Removal/Replacement

1. Clip each fuse or resistor lead at top of the circuit board hollow stake.
2. Securely crimp the leads of replacement component around notch at stake top.
3. Solder the connections.

**CAUTION:** Maintain original spacing between the replaced component and adjacent components and the circuit board to prevent excessive component temperatures.

### **Circuit Board Foil Repair**

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board causing the foil to separate from or "lift-off" the board. The following guidelines and procedures should be followed whenever this condition is encountered.

#### ***At IC Connections***

To repair a defective copper pattern at IC connections use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections).

1. Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary).
2. Carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.
3. Bend a small "U" in one end of a small gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.
4. Route the jumper wire along the path of the out-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area and clip off any excess jumper wire.

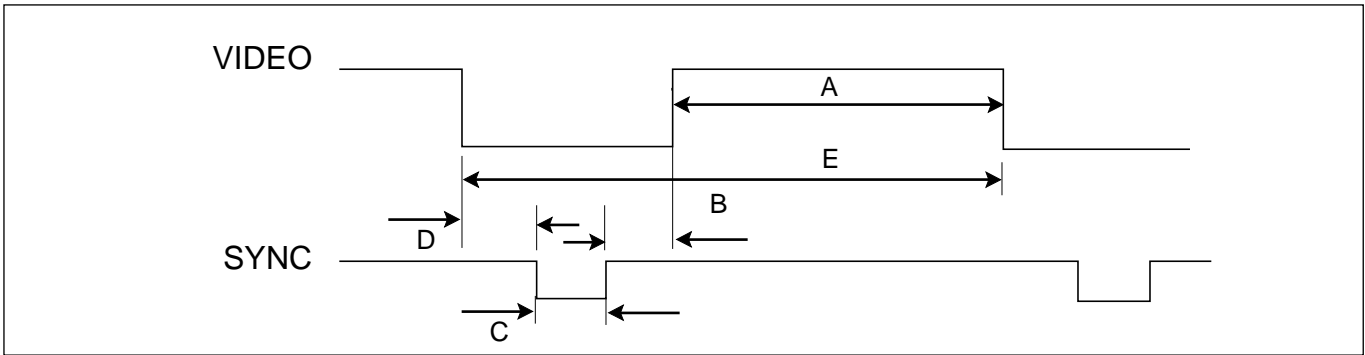
#### ***At Other Connections***

Use the following technique to repair the defective copper pattern at connections other than IC Pins. This technique involves the installation of a jumper wire on the component side of the circuit board.

1. Remove the defective copper pattern with a sharp knife.  
Remove at least 1/4 inch of copper, to ensure that a hazardous condition will not exist if the jumper wire opens.
2. Trace along the copper pattern from both sides of the pattern break and locate the nearest component that is directly connected to the affected copper pattern.
3. Connect insulated 20-gauge jumper wire from the lead of the nearest component on one side of the pattern break to the lead of the nearest component on the other side.  
Carefully crimp and solder the connections.  
**CAUTION:** Be sure the insulated jumper wire is dressed so the it does not touch components or sharp edges.



## TIMING CHART



<< Dot Clock (MHz), Horizontal Frequency (kHz), Vertical Frequency (Hz), Horizontal etc... (μs), Vertical etc... (ms) >>

Mode	Section	Polarity	Dot Clock	Frequency	Total Period (E)	Display (A)	Front Porch (D)	Sync. (C)	Back Porch (B)	Resolution
1	H(Pixels)	+	25.175	31.469	800	640	16	96	48	640 x 350
	V(Lines)	-		70.09						
2	H(Pixels)	-	28.321	31.468	900	720	18	108	54	720 X 400
	V(Lines)	+		70.08						
3	H(Pixels)	-	25.175	31.469	800	640	16	96	48	640 x 480
	V(Lines)	-		59.94						
4	H(Pixels)	-	31.5	37.5	840	640	16	64	120	640 x 480
	V(Lines)	-		75						
5	H(Pixels)	+	40.0	37.879	1056	800	40	128	88	800 x 600
	V(Lines)	+		60.317						
6	H(Pixels)	+	49.5	46.875	1056	800	16	80	160	800 x 600
	V(Lines)	+		75.0						
7	H(Pixels)	+/-	57.283	49.725	1152	832	32	64	224	832 x 624
	V(Lines)	+/-		74.55						
8	H(Pixels)	-	65.0	48.363	1344	1024	24	136	160	1024 x 768
	V(Lines)	-		60.0						
9	H(Pixels)	-	78.75	60.123	1312	1024	16	96	176	1024 x 768
	V(Lines)	-		75.029						
10	H(Pixels)	+/-	100.0	68.681	1456	1152	32	128	144	1152 x 870
	V(Lines)	+/-		75.062						
11	H(Pixels)	+/-	92.978	61.805	1504	1152	18	134	200	1152 x 900
	V(Lines)	+/-		65.96						
12	H(Pixels)	+	108.0	63.981	1688	1280	48	112	248	1280 x 1024
	V(Lines)	+		60.02						
13	H(Pixels)	+	135.0	79.976	1688	1280	16	144	248	1280 x 1024
	V(Lines)	+		75.035						

## Disassembly

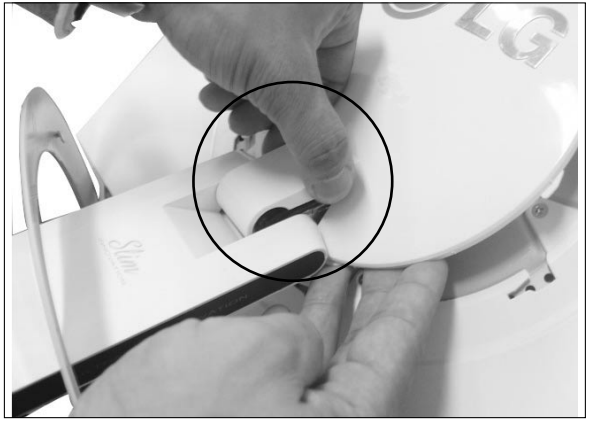
# 1



### 1. Cover Ring

Disassemble the cover ring by turning it counterclockwise as shown.

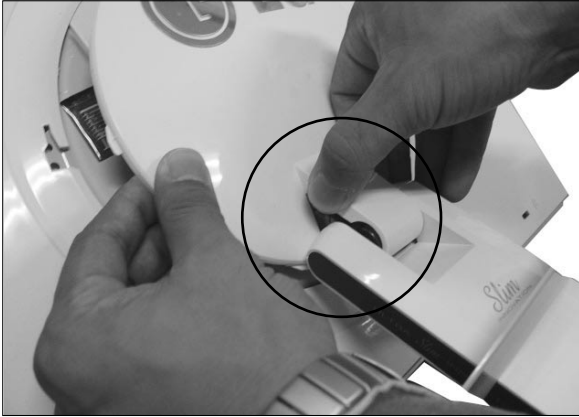
# 2-1



### 2-1. Hinge Rear Cover

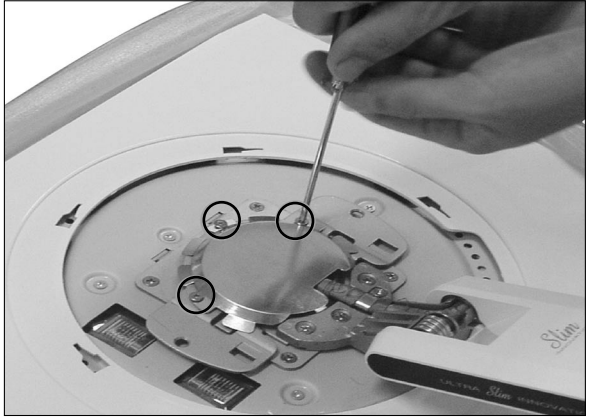
Loosen the catch of the right latch as shown.

#2-2



Loosen the catch of the left latch of the hinge rear cover as shown and remove the hinge rear cover completely.

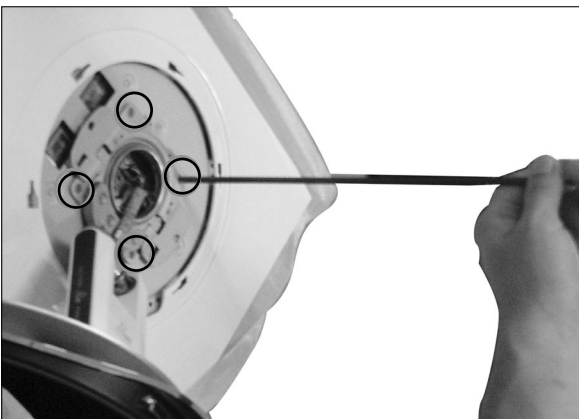
#3-1



### 3-1. Stand Ass'y

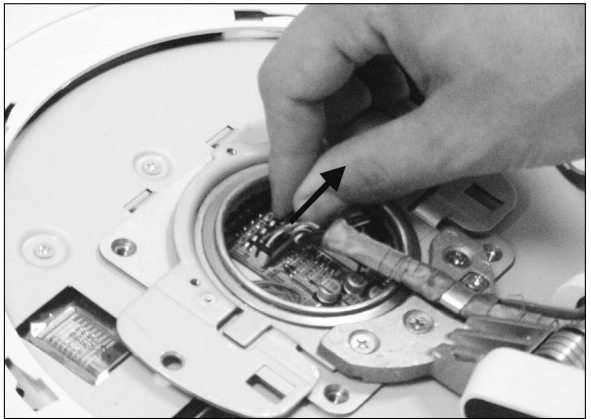
Unscrew and remove the three EMI shield screws.

# 3-2



Remove the four stand assembly screws in the same way.

# 3-3



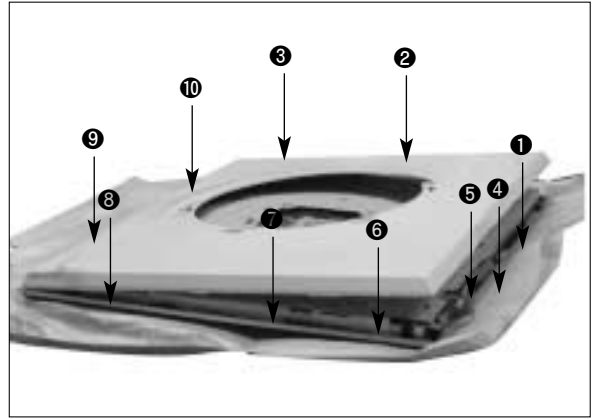
Take the main cable out carefully by hand.

# 3-4



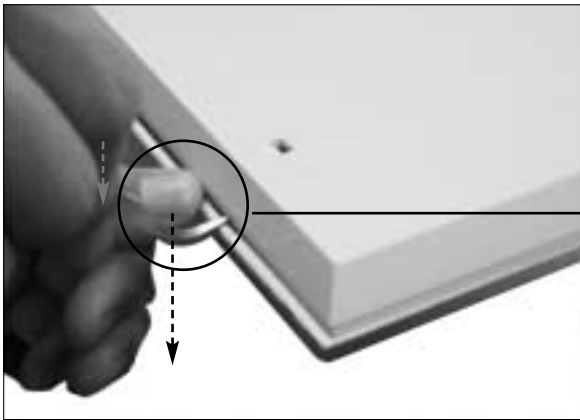
Disassemble the stand assembly by lifting it up and out.

# 4-1

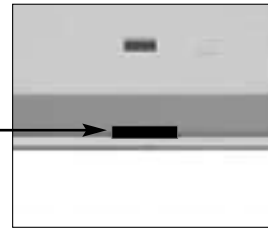


Sequence of disassembling the back cover.

# 4-2



Lift up the back cover a little by inserting a tool into the hole while pressing the cabinet on the bottom right of the back cover with your left hand.



# 4-3

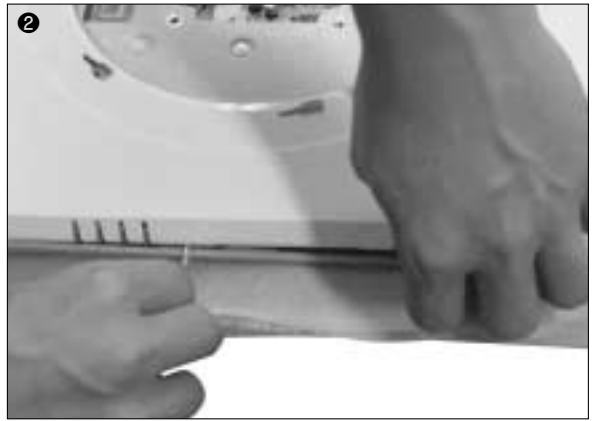


Lift up the next cover in the same way.

# 4-4



# 4-4



Lift up the cover with your left hand in the sequence 1~4 and open up the back cover with your right hand from the bottom left.

# 4-4



# 4-4



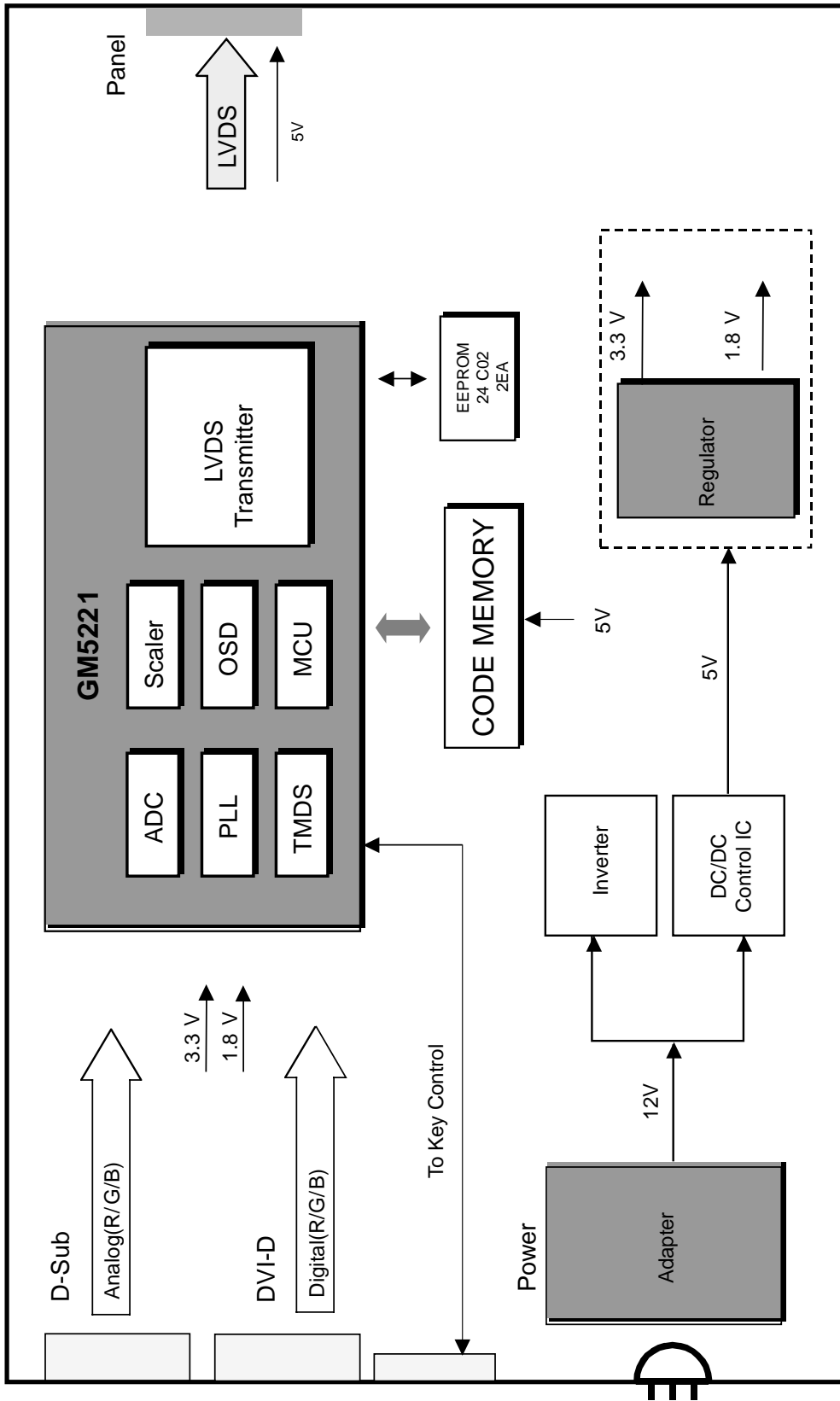
# 5



#### 5. Remove the OSD/Power panel

Remove the two screws and separate cabinet and middle cover.

# BLOCK DIAGRAM



## DESCRIPTION OF BLOCK DIAGRAM

### 1. Video Controller Part.

This part amplifies the level of video signal for the digital conversion and converts from the analog video signal to the digital video signal using a pixel clock.

The pixel clock for each mode is generated by the PLL.

The range of the pixel clock is from 25MHz to 135MHz.

This part consists of the Scaler, ADC convertor, TMDS receiver and LVDS transmitter.

The Scaler gets the video signal converted analog to digital, interpolates input to 1280 X 1024 resolution signal and outputs 8-bit R, G, B signal to transmitter.

### 2. Power Part.

This part consists of the one 3.3V, and one 1.8V regulators to convert power which is provided 5V in Power board.

12V is provided for inverter, 5V is provided for LCD panel and micom.

Also, 5V is converted 3.3V and 1.8V by regulator. Converted power is provided for IC in the main board.

The inverter converts from DC12V to AC 700Vrms and operates back-light lamps of module.

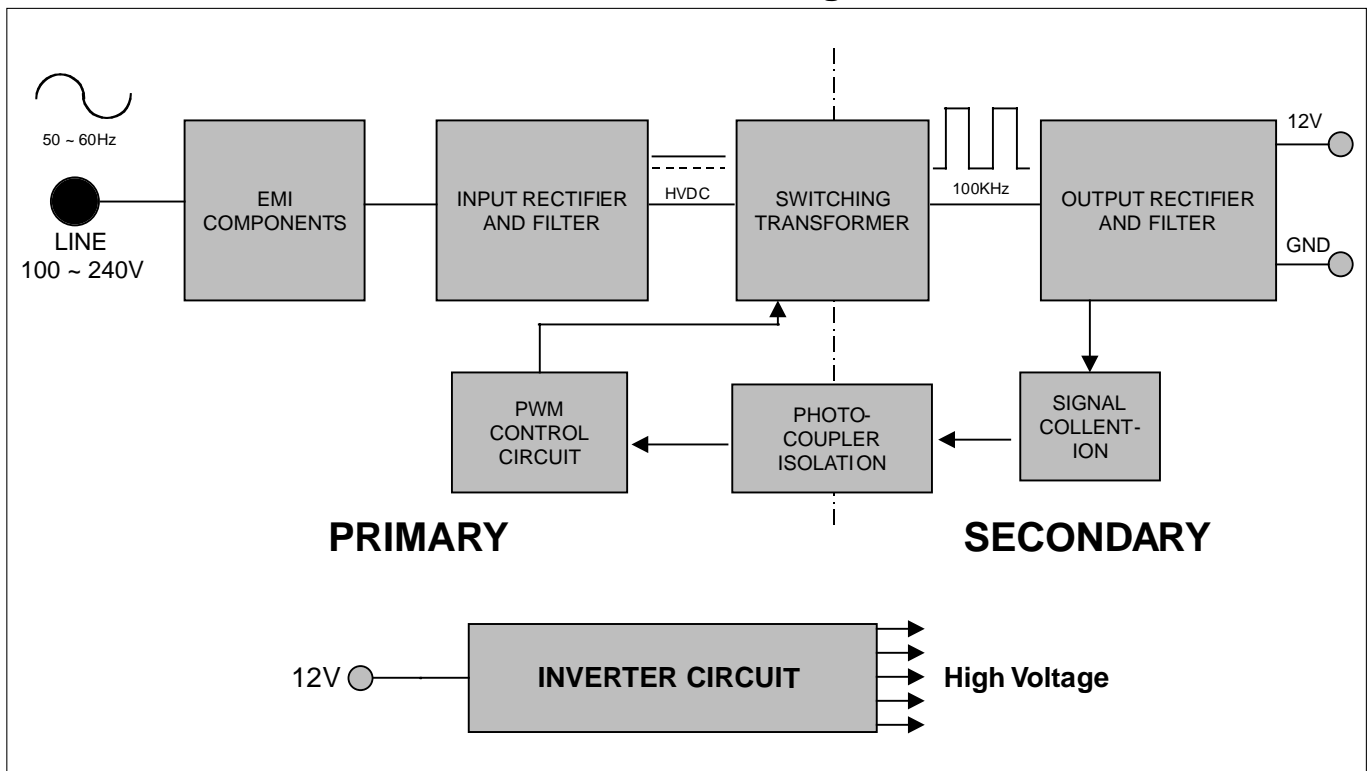
### 3. MICOM Part.

This part is include video controller part. And this part consists of EEPROM IC which stores control data, Reset IC and the Micom.

The Micom distinguishes polarity and frequency of the H/V sync are supplied from signal cable.

The controlled data of each modes is stored in EEPROM.

## LIPS Board Block Diagram



### Operation description\_LIPS

#### 1. EMI components.

This part contains of EMI components to comply with global marketing EMI standards like FCC,VCCI CISPR, the circuit included a line-filter, across line capacitor and of course the primary protection fuse.

#### 2. Input rectifier and filter.

This part function is for transfer the input AC voltage to a DC voltage through a bridge rectifier and a bulk capacitor.

#### 3. Energy Transfer.

This part function is for transfer the primary energy to secondary through a power transformer.

#### 4. Output rectifier and filter.

This part function is to make a pulse width modulation control and to provide the driver signal to power switch,to adjust the duty cycle during different AC input and output loading condition to achieve the dc output stabilized, and also the over power protection is also monitor by this part.

#### 5. Photo-Coupler isolation.

This part function is to feed back the DC output changing status through a photo transistor to primary controller to achieve the stabilized DC output voltage.

#### 6. Signal collection.

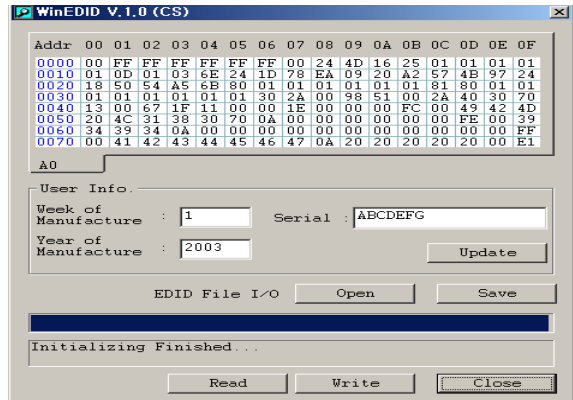
This part function is to collect the any change from the DC output and feed back to the primary through photo transistor

# ADJUSTMENT

Windows EDID V1.0 User Manual

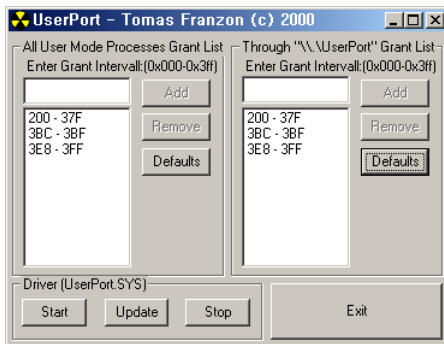
Operating System: MS Windows 98, 2000, XP  
 Port Setup: Windows 98 => Don't need setup  
 Windows 2000, XP => Need to Port Setup.  
 This program is available to LCD Monitor only.

2. EDID Read & Write
  - 1) Run WinEDID.exe



## 1. Port Setup

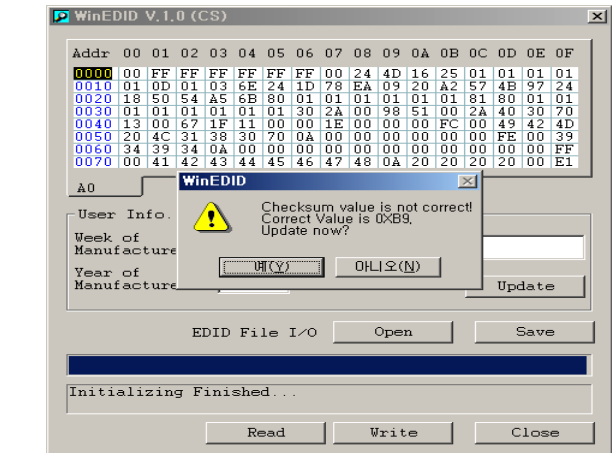
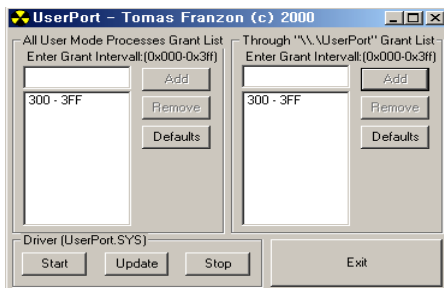
- a) Copy "UserPort.sys" file to "c:\WINNT\system32\drivers" folder
- b) Run Userport.exe



- 2) Edit Week of Manufacture, Year of Manufacture, Serial Number

- a) Input User Info Data
- b) Click "Update" button
- c) Click " Write" button

- c) Remove all default number
- d) Add 300-3FF

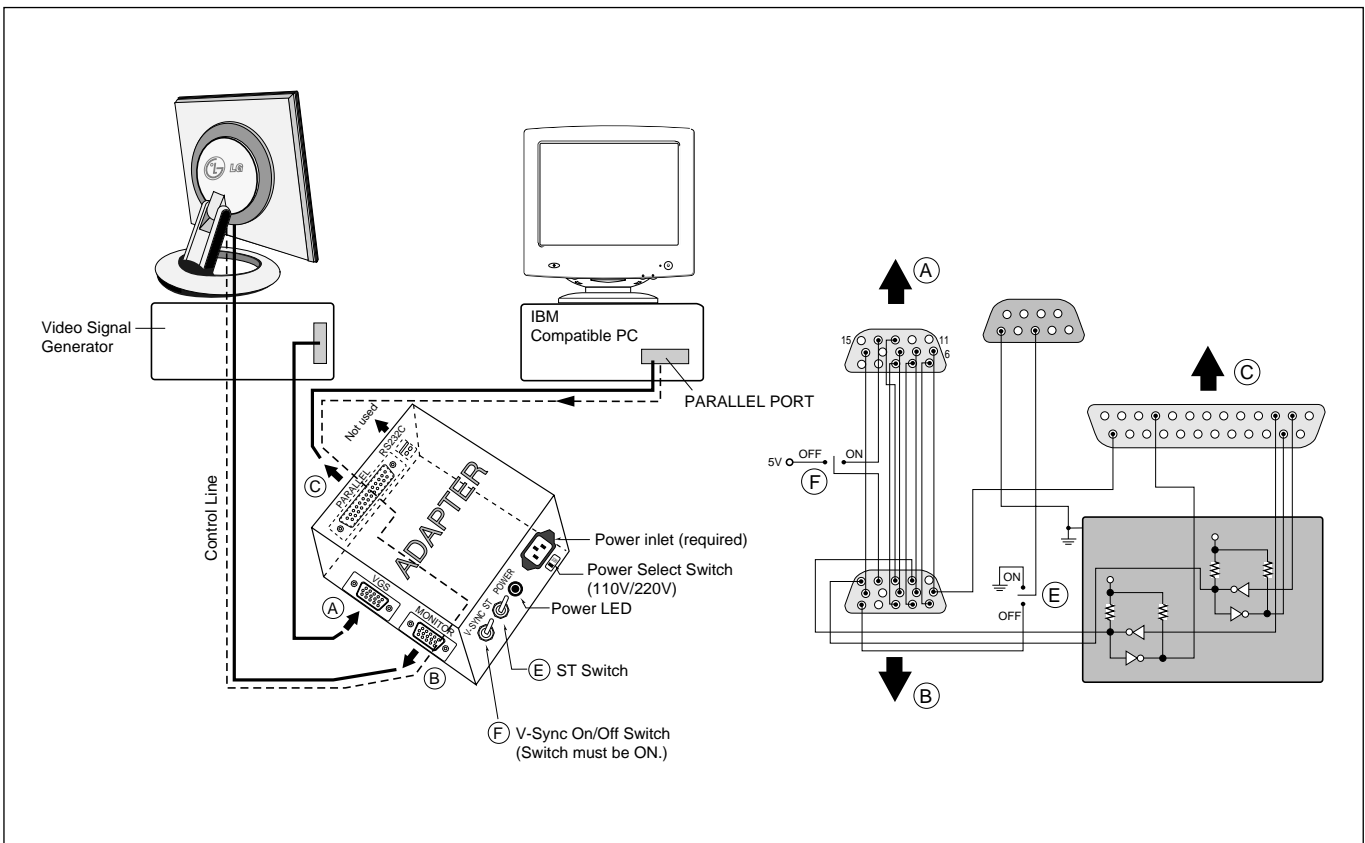


- e) Click Start button.
- f) Click Exit button.



## SERVICE OSD

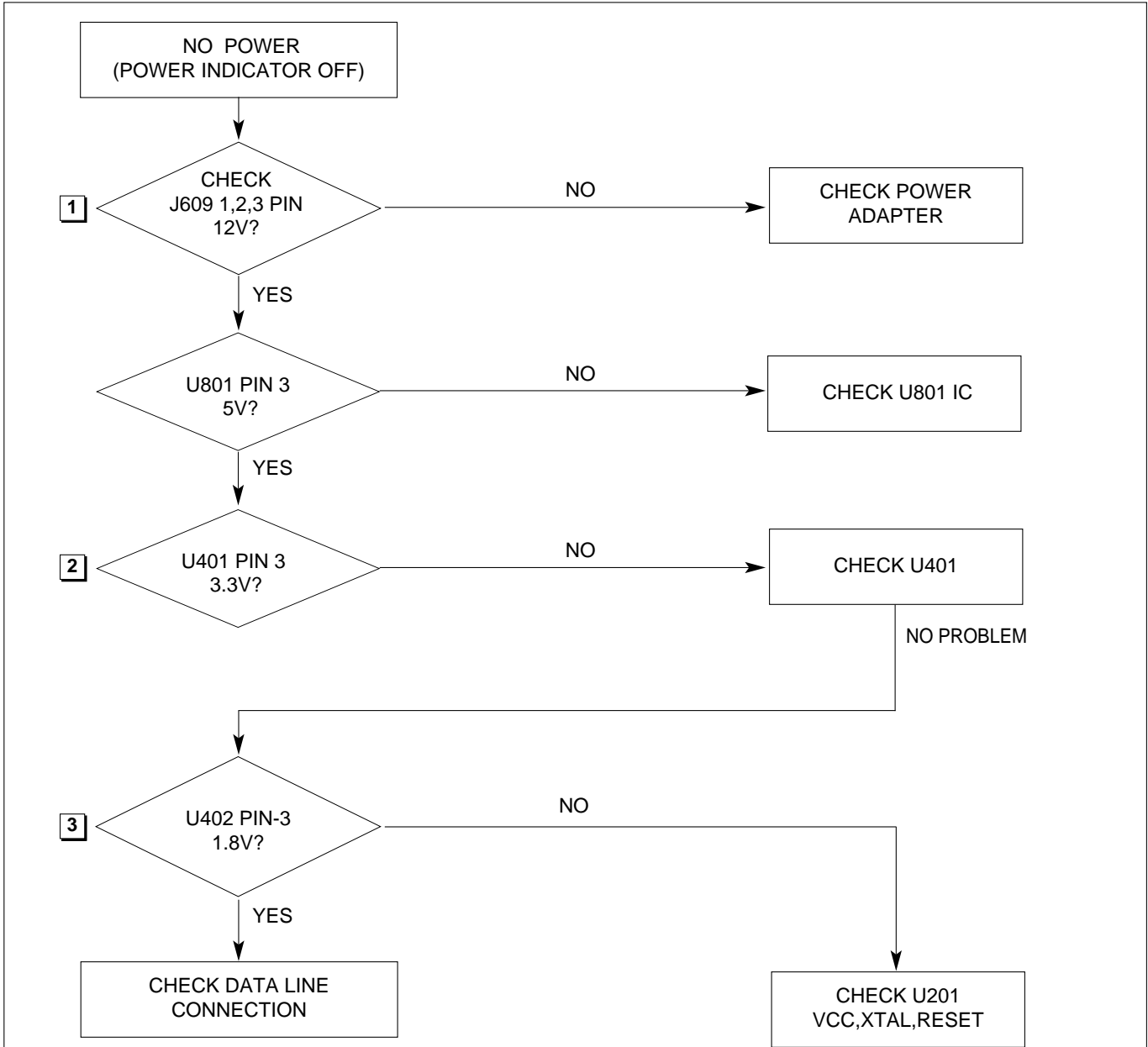
- 1) Turn off the power switch at the front side of the display.
- 2) Wait for about 5 seconds and press MENU, POWER switch with 1 second interval.
- 3) The SVC OSD menu contains additional menus that the User OSD menu as described below.
  - a) Auto Color : W/B balance and Automatically sets the gain and offset value.
  - b) NVRAM INIT : EEPROM initialize.(24C08)
  - c) CLEAR ETI : To initialize using time.
  - d) AGING : Select Aging mode(on/off).
  - e) R/G/B-9300K : Allows you to set the R/G/B-9300K value manually.
  - f) R/G/B-6500K : Allows you to set the R/G/B-6500K value manually.
  - g) R/G/B-Offset : Allows you to set the R/G/B-Offset value manually.(Analog Only)
  - h) R/G/B-Gain : Allows you to set the R/G/B-Gain value manually.(Analog Only)
  - i) MODULE : To select applied module.



**Figure 1. Cable Connection**

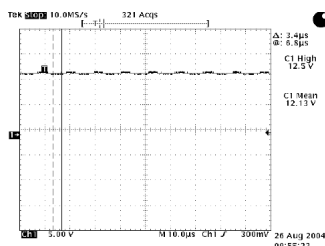
# TROUBLESHOOTING GUIDE

## 1. NO POWER

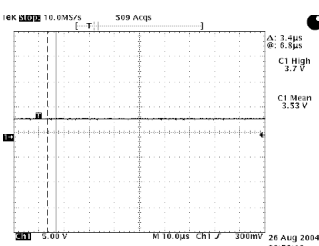


### WAVE FORM

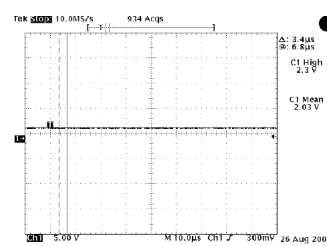
1 J609-#1,2,3



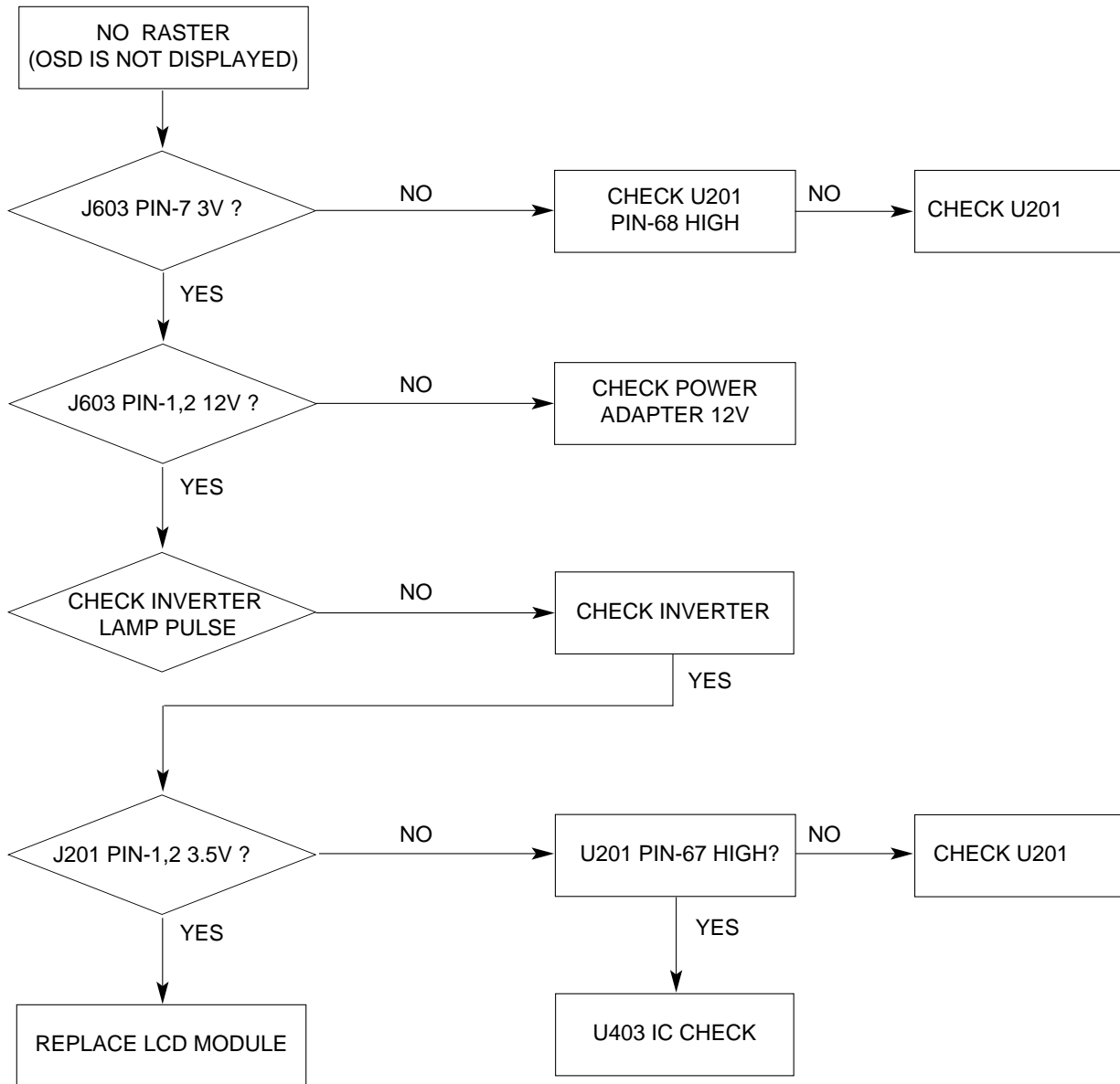
2 U401-#3



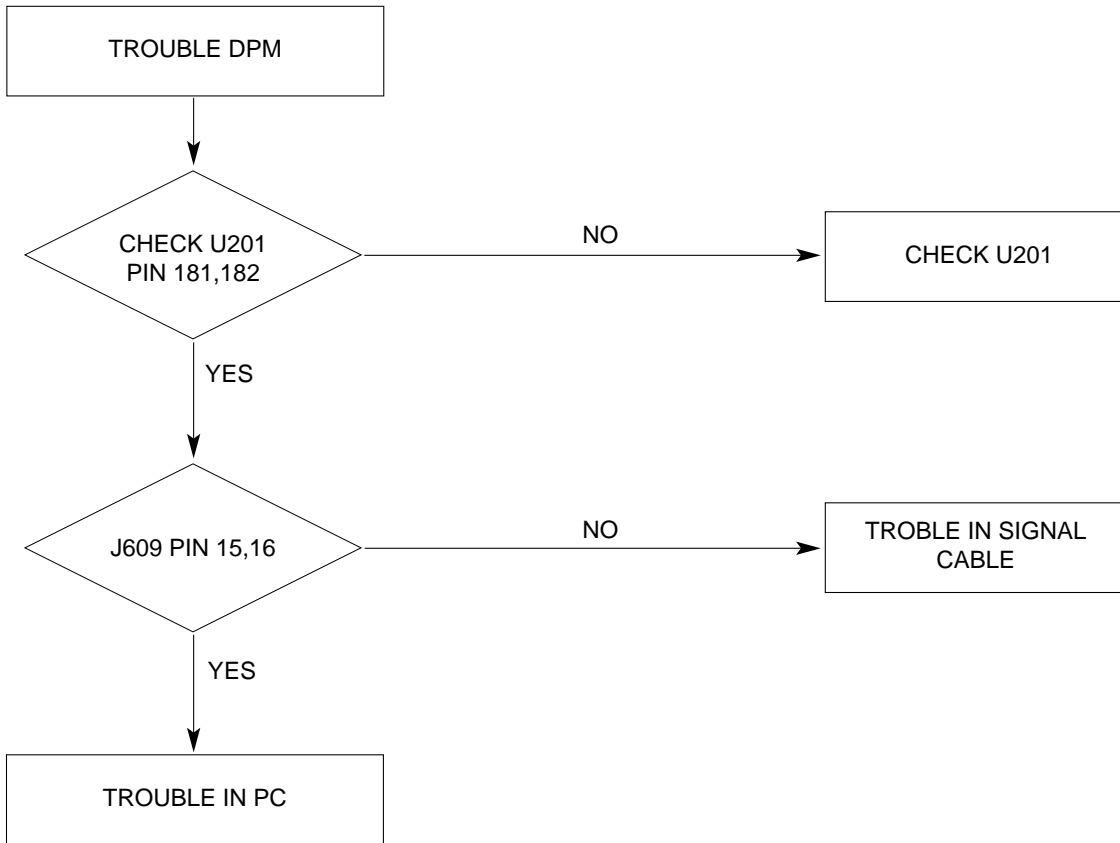
3 U402-#3



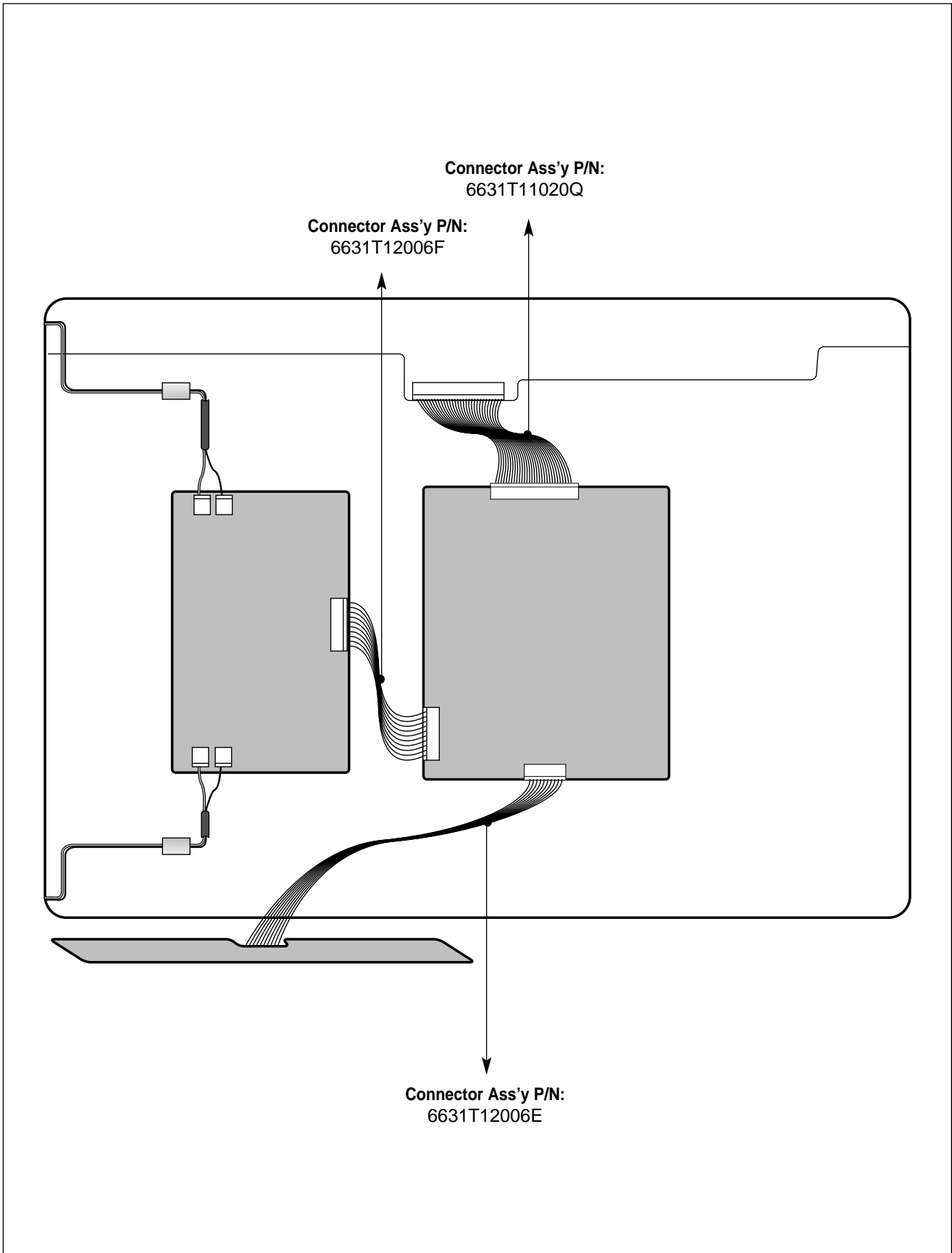
## 2. NO RASTER (OSD IS NOT DISPLAYED) – LIPS



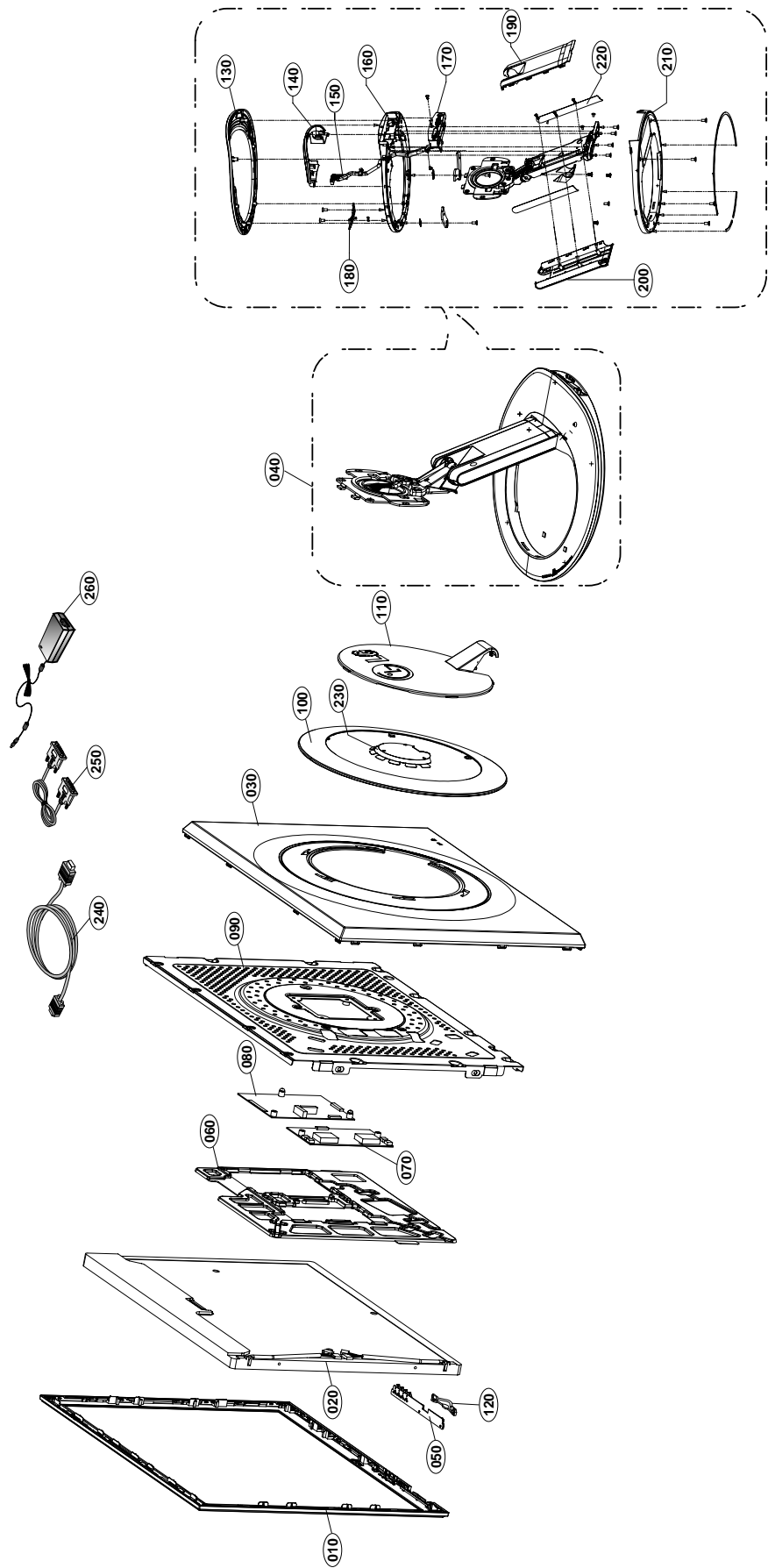
### 3. TROUBLE IN DPM



# WIRING DIAGRAM



# EXPLODED VIEW



## EXPLODED VIEW PARTS LIST

Ref. No.	Part No.	Description
010	3091TKL132A	CABINET ASSEMBLY, <b>L1780UN</b> BRAND 3090TKL109A ULTRA SLIM
	3091TKL132B	CABINET ASSEMBLY, <b>L1780UN</b> BRAND 3090TKL109A ULTRA SLIM- <b>C/SKD</b>
	3091TKL133A	CABINET ASSEMBLY, <b>L1980UN</b> BRAND 3090TKL110A ULTRA SLIM
	3091TKL133B	CABINET ASSEMBLY, <b>L1980UN</b> BRAND 3090TKL110A A- <b>C/SKD</b>
020	6304FLP201A	LCD(LIQUID CRYSTAL DISPLAY), <b>LM170E02-TL01</b> LG PHILPS TFT COLOR 8MS,SUPER SLIM,12.8T,SXGA,LVDS
	6304FLP198A	LCD(LIQUID CRYSTAL DISPLAY), <b>LM190E04-A4K2</b> LG PHILPS TFT COLOR 8MS,SUPER SLIM,15.5T,TN,SXGA,LVDS
030	3809TKL090B	BACK COVER ASSEMBLY, <b>L1780UN</b> 3808TKL088A ULTRA SLIM
	3809TKL090C	BACK COVER ASSEMBLY, <b>L1780UN</b> 3808TKL088A ULTRA SLIM- <b>C/SKD</b>
	3809TKL091C	BACK COVER ASSEMBLY, <b>L1980UN</b> 3808TKL089A .
	3809TKL091B	BACK COVER ASSEMBLY, <b>L1980UN</b> 3808TKL089A A- <b>C/SKD</b>
040	3043TKK208A	TILT SWIVEL ASSEMBLY, <b>L1780UN</b> . ULTRA SLIM
	3043TKK208B	TILT SWIVEL ASSEMBLY, <b>L1780UN</b> . ULTRA SLIM ( <b>C/SKD</b> )
	3043TKK210A	TILT SWIVEL ASSEMBLY, <b>L1980UN</b> . ULTRA SLIM
	3043TKK210B	TILT SWIVEL ASSEMBLY, <b>L1980UN</b> . A- <b>C/SKD</b>
050	6871TST739A	PWB(PCB) ASSEMBLY,SUB, L1980UN CONTROL TOTAL BRAND CL-68- <b>L1780Q,L1980Q</b>
	6871TST739B	PWB(PCB) ASSEMBLY,SUB, L1980UN MX <b>C/SKD</b> CONTROL TOTAL BRAND CL-68
060	3550TKK683A	COVER, <b>L173UPN</b> PANEL VACUUM MOLDING
	3550TKK683B	COVER, <b>L173UPN</b> PANEL VACUUM MOLDING- <b>C/SKD</b>
	3550TKK682A	COVER, <b>L193UPN</b> PANEL VACUUM
	3550TKK682B	COVER, <b>L193UPN</b> PANEL VACUUM A- <b>C/SKD</b>
070	6633TZA019B	INVERTER ASSEMBLY, FRONTEK FIF1742-50A 17,19INCH SLIM
	or 6633TZA020A	INVERTER ASSEMBLY, ALPS KUBNKM099A 4LAMP 17,19INCH SLIM
080	3313TL7062C	MAIN TOTAL ASSEMBLY, <b>L1780QN/L1781QN</b> BRAND CL-68
	3313TL7062D	MAIN TOTAL ASSEMBLY, <b>L1780QN/L1781QN</b> MX <b>C/SKD</b> BRAND CL-68
	3313TL9048A	MAIN TOTAL ASSEMBLY, <b>L1980UN</b> BRAND CL-68
	3313TL9048D	MAIN TOTAL ASSEMBLY, <b>L1980QN/L1981QN</b> MX <b>C/SKD</b> BRAND CL-68
090	4951TKS185A	METAL ASSEMBLY, FRAME MAIN <b>L1780UN</b>
	4951TKS185B	METAL ASSEMBLY, FRAME MAIN <b>L1780UN-C/SKD</b>
	4951TKS186A	METAL ASSEMBLY, FRAME MAIN <b>L1980UN</b>
	4951TKS186B	METAL ASSEMBLY, FRAME <b>1980UN</b> A- <b>C/SKD</b>
100	3550TKK666A	COVER, <b>L173UPN</b> BACK RING DECO
	3550TKK666B	COVER, <b>L173UPN</b> BACK RING DECO- <b>C/SKD</b>
	3550TKK668A	COVER, <b>L193UPN</b> BACK RING DECO
	3550TKK668B	COVER, <b>L193UPN</b> BACK RING DECO A- <b>C/SKD</b>
110	3551TKK552A	COVER ASSEMBLY, <b>L1780UN</b> REAR . HINGE COVER
	3551TKK552B	COVER ASSEMBLY, <b>L1780UN</b> REAR . HINGE COVER- <b>C/SKD</b>
	3551TKK553A	COVER ASSEMBLY, <b>L1980UN</b> REAR . HINGE COVER
	3551TKK553B	COVER ASSEMBLY, <b>L1980UN</b> REAR . HINGE COVER A- <b>C/SKD</b>
120	3551TKK555A	COVER ASSEMBLY, <b>L1980UN</b> FRONT . KNOB ASSY
130	3550TKK674A	COVER, <b>L173UPN</b> BASE TOP .
	3550TKK673A	COVER, <b>L193UPN</b> BASE TOP DECO COVER
140	3550TKK681A	COVER, <b>L173UPN</b> BASE TOP DECO
	3550TKK671A	COVER, <b>L193UPN</b> BASE TOP COVER
150	6850TAV002A	CABLE,DVI, UL20276(7.5MM) AT 17INCHMM BLACK L1780UN,SLIM DM
160	4950TKA018A	METAL, BASE CASTING- <b>L1780Q</b>
	4950TKA026A	METAL, BASE CASTING- <b>L1980Q</b>
170	4950TKA010A	METAL, SHIELD DVI
180	4950TKA007A	METAL, FIX FOLDING STOPPER
190	3550TKK676A	COVER, L173UPN STAND REAR .
200	3550TKK675A	COVER, L173UPN STAND FRONT .
210	3550TKK678A	COVER, <b>L173UPN</b> BASE BOTTOM .
	3550TKK672A	COVER, <b>L193UPN</b> BASE BOTTOM COVER
220	3550TKK679A	COVER, L173UPN SIDE STAND DECO
230	4814TKK294A	SHIELD, REAR EMI- <b>L1780Q</b>
	4814TKK294B	SHIELD, REAR EMI A- <b>C/SKD-L1780Q</b>
	4814TKK333A	SHIELD, REAR EMISHIELD- <b>L1980Q</b>
	4814TKK333B	SHIELD, REAR EMISHIELD- <b>C/SKD-L1980Q</b>
240	6850TD9007D	CABLE,D-SUB, UL20276-9C(5.8MM) DT L1800,CORE POS400, S/HEAD 1.8MM BLACK(9930) DELL 20.1 DM
	or 6850TD9007C	CABLE,D-SUB, UL20276-9C(5.8MM) DT L1800MM, CORE POS400MM BLACK(9930) L1730 DM
250	6866TDV004S	CABLE,DVI, UL20276 AWG30 DT 1800MM BLACK(9930) LS204L DM
260	6634B00078A	ADAPTER,AC-DC, AD-4212L 12V 3.5A SAMSUNG 42W SLIM MNT L1780UN,L1980UN

# REPLACEMENT PARTS LIST

**CAUTION:** BEFORE REPLACING ANY OF THESE COMPONENTS,  
READ CAREFULLY THE **SAFETY PRECAUTIONS** IN THIS MANUAL.

\* NOTE : **S** SAFETY Mark   
**AL** ALTERNATIVE PARTS

DATE: 2005. 02. 07.			
*S	*AL	LOC. NO.	PART NO. DESCRIPTION / SPECIFICATION
<b>MAIN BOARD</b>			
<b>CAPACITORS</b>			
		C201	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C202	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C203	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C204	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C205	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C206	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C207	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C208	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C209	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C210	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C211	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C212	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C213	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C214	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C215	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C216	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C217	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C218	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C219	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C220	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C221	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C222	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C223	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C224	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C225	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C226	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C227	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C228	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C229	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C230	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C231	0CK103CK51A 0.01UF 1608 50V 10% R/TP B(Y)
		C232	0CK103CK51A 0.01UF 1608 50V 10% R/TP B(Y)
		C233	0CK103CK51A 0.01UF 1608 50V 10% R/TP B(Y)
		C234	0CK103CK51A 0.01UF 1608 50V 10% R/TP B(Y)
		C235	0CK103CK51A 0.01UF 1608 50V 10% R/TP B(Y)
		C236	0CK103CK51A 0.01UF 1608 50V 10% R/TP B(Y)
		C237	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C238	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C239	0CC080CK11A 8PF 1608 50V 0.5 PF R/TP NP0
		C240	0CC080CK11A 8PF 1608 50V 0.5 PF R/TP NP0
		C241	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C243	0CC101CK41A 100PF 1608 50V 5% R/TP NP0
		C244	0CC101CK41A 100PF 1608 50V 5% R/TP NP0
		C245	0CK103CK51A 0.01UF 1608 50V 10% R/TP B(Y)
		C246	0CC221CK41A 220PF 1608 50V 5% R/TP NP0
		C247	0CC220CK41A 22PF 1608 50V 5% R/TP NP0
		C248	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C249	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C250	0CK103CK51A 0.01UF 1608 50V 10% R/TP B(Y)
		C251	0CK103CK51A 0.01UF 1608 50V 10% R/TP B(Y)
		C252	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C253	0CH8107F611 100UF 16V M 85STD(CYL) R/TP

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*S	*AL	LOC. NO.	PART NO. DESCRIPTION / SPECIFICATION
		C403	0CK105CD56A 1UF 1608 10V 10% R/TP X7R
		C405	0CC102CK41A 1000PF 1608 50V 5% R/TP NP0
		C406	0CK103CK51A 0.01UF 1608 50V 10% R/TP B(Y)
		C407	0CH8107F611 100UF 16V M 85STD(CYL) R/TP
		C408	0CH8107F611 100UF 16V M 85STD(CYL) R/TP
		C409	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C410	0CC102CK41A 1000PF 1608 50V 5% R/TP NP0
		C411	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C412	0CC102CK41A 1000PF 1608 50V 5% R/TP NP0
		C413	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C414	0CC102CK41A 1000PF 1608 50V 5% R/TP NP0
		C415	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C416	0CC102CK41A 1000PF 1608 50V 5% R/TP NP0
		C417	0CH8107F611 100UF 16V M 85STD(CYL) R/TP
		C418	0CH8107F611 100UF 16V M 85STD(CYL) R/TP
		C419	0CH8107F611 100UF 16V M 85STD(CYL) R/TP
		C601	0CC101CK41A 100PF 1608 50V 5% R/TP NP0
		C602	0CC101CK41A 100PF 1608 50V 5% R/TP NP0
		C603	0CC101CK41A 100PF 1608 50V 5% R/TP NP0
		C604	0CC101CK41A 100PF 1608 50V 5% R/TP NP0
		C605	0CC101CK41A 100PF 1608 50V 5% R/TP NP0
		C606	0CC101CK41A 100PF 1608 50V 5% R/TP NP0
		C607	0CC220CK41A 22PF 1608 50V 5% R/TP NP0
		C608	0CC220CK41A 22PF 1608 50V 5% R/TP NP0
		C610	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C611	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C612	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C613	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C614	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C615	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C630	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C631	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C632	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C642	0CK103CK51A 0.01UF 1608 50V 10% R/TP B(Y)
		C643	0CK105CD56A 1UF 1608 10V 10% R/TP X7R
		C644	0CK105CD56A 1UF 1608 10V 10% R/TP X7R
		C646	0CK103CK51A 0.01UF 1608 50V 10% R/TP B(Y)
		C647	0CK103CK51A 0.01UF 1608 50V 10% R/TP B(Y)
		C648	0CK103CK51A 0.01UF 1608 50V 10% R/TP B(Y)
		C649	0CK103CK51A 0.01UF 1608 50V 10% R/TP B(Y)
		C801	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C802	0CH8107F611 100UF 16V M 85STD(CYL) R/TP
		C803	0CH8107F611 100UF 16V M 85STD(CYL) R/TP
		C804	0CK104CK56A 0.1UF 1608 50V 10% R/TP X7R
		C805	0CH8107F611 100UF 16V M 85STD(CYL) R/TP
		C806	0CH8107F611 100UF 16V M 85STD(CYL) R/TP
		C807	0CH8107F611 100UF 16V M 85STD(CYL) R/TP
		C808	0CH8107F611 100UF 16V M 85STD(CYL) R/TP
		C809	0CK103CK51A 0.01UF 1608 50V 10% R/TP B(Y)
		C810	0CK103CK51A 0.01UF 1608 50V 10% R/TP B(Y)
		C811	0CC101CK41A 100PF 1608 50V 5% R/TP NP0
		C812	0CH8107F611 100UF 16V M 85STD(CYL) R/TP
		C814	0CH8107F611 100UF 16V M 85STD(CYL) R/TP
		C815	0CH8107F611 100UF 16V M 85STD(CYL) R/TP



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*S	*AL	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
		C816	0CH8107F611	100UF 16V M 85STD(CYL) R/TP
<b>DIODEs</b>				
		D201	0DS301109AA	MMBD301LT1 TP MOTOROLA SOT23
		D202	0DS301109AA	MMBD301LT1 TP MOTOROLA SOT23
		D601	0DS226009AA	KDS226 TP KEC SOT-23 80V 30
		D602	0DS226009AA	KDS226 TP KEC SOT-23 80V 30
		D603	0DS226009AA	KDS226 TP KEC SOT-23 80V 30
		D604	0DS226009AA	KDS226 TP KEC SOT-23 80V 30
		D621	0DS301109AA	MMBD301LT1 TP MOTOROLA SOT23
		D622	0DS301109AA	MMBD301LT1 TP MOTOROLA SOT23
		D623	0DS301109AA	MMBD301LT1 TP MOTOROLA SOT23
		D801	0DR190309AA	MBRS190T3 TP MOTOROLA - 90V
		U604	0DRCE00018A	"PACDN004SR,LF CAMD R/TP SOT1"
		U605	0DRCE00018A	"PACDN004SR,LF CAMD R/TP SOT1"
		U606	0DRCE00018A	"PACDN004SR,LF CAMD R/TP SOT1"
		U607	0DRCE00018A	"PACDN004SR,LF CAMD R/TP SOT1"
		ZD601	0DZKE00138A	KDZ5.6V KEC R/TP USC 0.2W 5.
		ZD602	0DZKE00138A	KDZ5.6V KEC R/TP USC 0.2W 5.
		ZD603	0DZKE00138A	KDZ5.6V KEC R/TP USC 0.2W 5.
		ZD604	0DZKE00138A	KDZ5.6V KEC R/TP USC 0.2W 5.
		ZD605	0DZKE00138A	KDZ5.6V KEC R/TP USC 0.2W 5.
		ZD606	0DZKE00138A	KDZ5.6V KEC R/TP USC 0.2W 5.
		ZD607	0DZKE00138A	KDZ5.6V KEC R/TP USC 0.2W 5.
		ZD608	0DZKE00138A	KDZ5.6V KEC R/TP USC 0.2W 5.
		ZD609	0DZKE00138A	KDZ5.6V KEC R/TP USC 0.2W 5.
<b>ICs</b>				
		U201	0IPRPGN014B	"FE2010,GM5221-FLATRON F ENGI"
		U201	0IPRPGN014D	"FE2010(GM5221-BC-LF),PB FREE"-C/SKID
		U202	0IZZTSZ584A	ATMEL 32PIN ST OPT <b>L1780UUN</b>
		U202	0IZZTSZ503A	ATMEL 32PIN ST OPT <b>L1980UUN</b>
		U203	0IKE704200J	KIA7042AF SOT-89 TP 4.2V VOL
		U204	0ISG240860B	"M24C08WMN6T(P),LF SGS-THOMSO"
		U401	0IPMGKE011A	KIA78D33F KEC DPAK R/TP 3.3V
		U402	0IPMGSG019A	"LD1117S18TR,LF STM SOT223 R"
		U601	0IMMRS036A	"M24C02-WMN6T(P),LF SGS-THOMS"
		U602	0IMMRS036A	"M24C02-WMN6T(P),LF SGS-THOMS"
		U801	0IMCRMZ001A	MP1583DN MONOLITHIC POWER SY
<b>COILs &amp; FILTERs</b>				
		L601	6210TCE001S	HU-1M2012-121 CERATECH 2012M
		L801	6140TBZ048A	"SLF10145T-150M2R2, TDK,SMD,"
<b>TRANSISTOR</b>				
		Q201	0TR390409AE	FAIRCHILD KST3904(LGEMTF) TP
		Q601	0TR390409AE	FAIRCHILD KST3904(LGEMTF) TP
		Q602	0TR390409AE	FAIRCHILD KST3904(LGEMTF) TP
		Q603	0TR390609FA	KST3906-MTF TP SAMSUNG SOT2
		Q604	0TR390609FA	KST3906-MTF TP SAMSUNG SOT2
		U403	0TFV180023A	VISHAY SI3865DV R/TP TSOP-6
		U403	0TFV180067A	SI3865BDV(E3) VISHAY R/TP TS-C/SKID
<b>RESISTORs</b>				
		R201	0RJ0472D677	47 OHM 1/10 W 5% 1608 R/TP
		R202	0RJ0822D677	82 OHM 1/10 W 5% 1608 R/TP
		R203	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP

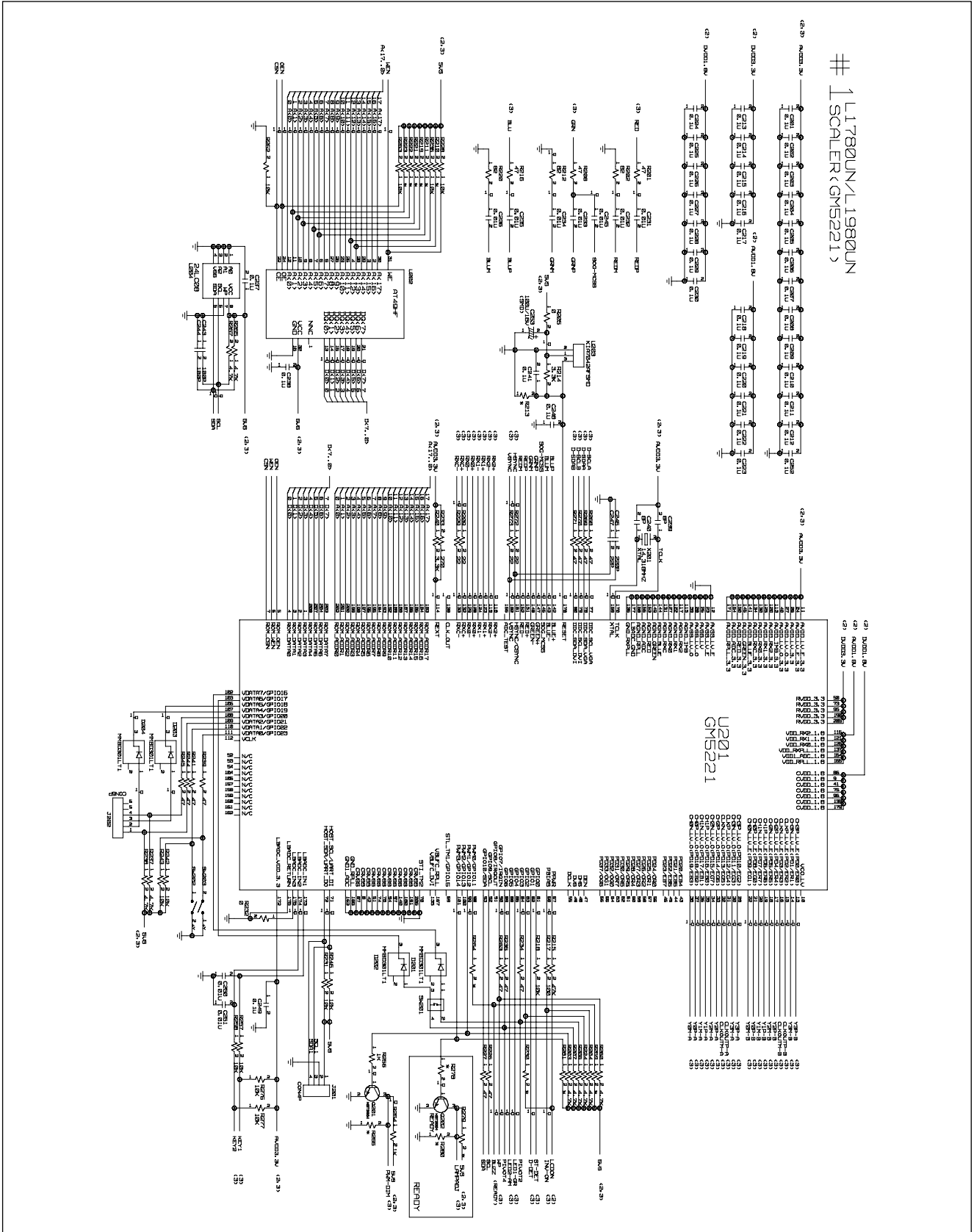
DATE: 2005. 02. 07.				
*S	*AL	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
			R204	0RJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
			R205	0RJ0000D677 0 OHM 1/10 W 5% 1608 R/TP
			R206	0RJ1002D677 10K OHM 1/10 W 5% 1608 R/TP
			R207	0RJ1002D677 10K OHM 1/10 W 5% 1608 R/TP
			R208	0RJ0472D677 47 OHM 1/10 W 5% 1608 R/TP
			R209	0RJ0471D677 4.7 OHM 1/10 W 5% 1608 R/TP
			R212	0RJ0822D677 82 OHM 1/10 W 5% 1608 R/TP
			R214	0RJ3301D677 3.3K OHM 1/10 W 5% 1608 R/TP
			R215	0RJ4702D677 47000 OHM 1/10 W 5% 1608 R/TP
			R216	0RJ0472D677 47 OHM 1/10 W 5% 1608 R/TP
			R217	0RJ1000D677 100 OHM 1/10 W 5% 1608 R/TP
			R218	0RJ1002D677 10K OHM 1/10 W 5% 1608 R/TP
			R220	0RJ0822D677 82 OHM 1/10 W 5% 1608 R/TP
			R224	0RJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
			R226	0RJ0472D677 47 OHM 1/10 W 5% 1608 R/TP
			R227	0RJ0472D677 47 OHM 1/10 W 5% 1608 R/TP
			R228	0RJ1002D677 10K OHM 1/10 W 5% 1608 R/TP
			R229	0RJ0471D677 4.7 OHM 1/10 W 5% 1608 R/TP
			R231	0RJ1002D677 10K OHM 1/10 W 5% 1608 R/TP
			R232	0RJ0000D677 0 OHM 1/10 W 5% 1608 R/TP
			R233	0RJ2700D677 270 OHM 1/10 W 5% 1608 R/TP
			R234	0RJ0472D677 47 OHM 1/10 W 5% 1608 R/TP
			R235	0RJ0472D677 47 OHM 1/10 W 5% 1608 R/TP
			R236	0RJ1002D677 10K OHM 1/10 W 5% 1608 R/TP
			R237	0RJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
			R238	0RJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
			R239	0RJ0472D677 47 OHM 1/10 W 5% 1608 R/TP
			R240	0RJ3301D677 3.3K OHM 1/10 W 5% 1608 R/TP
			R241	0RJ0472D677 47 OHM 1/10 W 5% 1608 R/TP
			R242	0RJ1002D677 10K OHM 1/10 W 5% 1608 R/TP
			R243	0RJ1002D677 10K OHM 1/10 W 5% 1608 R/TP
			R244	0RJ0472D677 47 OHM 1/10 W 5% 1608 R/TP
			R245	0RJ0472D677 47 OHM 1/10 W 5% 1608 R/TP
			R246	0RJ1002D677 10K OHM 1/10 W 5% 1608 R/TP
			R253	0RJ1002D677 10K OHM 1/10 W 5% 1608 R/TP
			R254	0RJ1001D677 1K OHM 1/10 W 5% 1608 R/TP
			R256	0RJ1001D677 1K OHM 1/10 W 5% 1608 R/TP
			R257	0RJ1002D477 10K OHM 1/10 W 1% 1608 R/TP
			R258	0RJ1002D477 10K OHM 1/10 W 1% 1608 R/TP
			R260	0RJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
			R262	0RJ1002D677 10K OHM 1/10 W 5% 1608 R/TP
			R263	0RJ0472D677 47 OHM 1/10 W 5% 1608 R/TP
			R265	0RJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
			R267	0RJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
			R268	0RJ0472D677 47 OHM 1/10 W 5% 1608 R/TP
			R269	0RJ1500D677 150 OHM 1/10 W 5% 1608 R/TP
			R270	0RJ0472D677 47 OHM 1/10 W 5% 1608 R/TP
			R271	0RJ0472D677 47 OHM 1/10 W 5% 1608 R/TP
			R272	0RJ0222D677 22 OHM 1/10 W 5% 1608 R/TP
			R273	0RJ0222D677 22 OHM 1/10 W 5% 1608 R/TP
			R276	0RJ1002D477 10K OHM 1/10 W 1% 1608 R/TP
			R277	0RJ1002D477 10K OHM 1/10 W 1% 1608 R/TP
			R413	0RJ2202D677 22K OHM 1/10 W 5% 1608 R/TP
			R414	0RJ5600D677 560 OHM 1/10 W 5% 1608 R/TP
			R419	0RJ0000D677 0 OHM 1/10 W 5% 1608 R/TP
			R420	0RJ0000D677 0 OHM 1/10 W 5% 1608 R/TP
			R421	0RJ0000D677 0 OHM 1/10 W 5% 1608 R/TP
			R422	0RJ0000D677 0 OHM 1/10 W 5% 1608 R/TP
			R601	0RJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
			R602	0RJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
			R604	0RJ0752D677 75 OHM 1/10 W 5% 1608 R/TP
			R605	0RJ0752D677 75 OHM 1/10 W 5% 1608 R/TP

DATE: 2005. 02. 07.				
*S	*AL	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
		R606	0RJ0752D677	75 OHM 1/10 W 5% 1608 R/TP
		R607	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R609	0RJ0332D677	33 OHM 1/10 W 5% 1608 R/TP
		R611	0RJ0332D677	33 OHM 1/10 W 5% 1608 R/TP
		R616	0RJ0332D677	33 OHM 1/10 W 5% 1608 R/TP
		R617	0RJ0332D677	33 OHM 1/10 W 5% 1608 R/TP
		R618	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R619	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R620	0RJ4700D677	470 OHM 1/10 W 5% 1608 R/TP
		R625	0RJ0332D677	33 OHM 1/10 W 5% 1608 R/TP
		R626	0RJ0332D677	33 OHM 1/10 W 5% 1608 R/TP
		R627	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R628	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R629	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R630	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R631	0RJ1001D677	1K OHM 1/10 W 5% 1608 R/TP
		R632	0RJ1001D677	1K OHM 1/10 W 5% 1608 R/TP
		R642	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R643	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R650	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R651	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R652	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R654	0RJ0102D677	10 OHM 1/10 W 5% 1608 R/TP
		R655	0RJ0102D677	10 OHM 1/10 W 5% 1608 R/TP
		R656	0RJ1001D677	1K OHM 1/10 W 5% 1608 R/TP
		R657	0RJ1001D677	1K OHM 1/10 W 5% 1608 R/TP
		R660	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R661	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R662	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R663	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R666	0RJ1001D677	1K OHM 1/10 W 5% 1608 R/TP
		R667	0RJ1001D677	1K OHM 1/10 W 5% 1608 R/TP
		R801	0RJ9101D477	9100 OHM 1/10 W 1% 1608 R/TP
		R802	0RJ1002D477	10K OHM 1/10 W 1% 1608 R/TP
		R803	0RJ3002D477	30K OHM 1/10 W 1% 1608 R/TP
<b>OTHERs</b>				
		X201	6202TST001A	"SX-1 SUNNY ,SMS, 14.31818MHZ"
<b>CONTROL BOARD</b>				
		C1	0CC220CK41A	22PF 1608 50V 5% R/TP NP0
		C10	0CC220CK41A	22PF 1608 50V 5% R/TP NP0
		C11	0CC470CK41A	47PF 1608 50V 5% R/TP NP0
		C12	0CC560CK41A	56PF 1608 50V 5% R/TP NP0
		C13	0CC220CK41A	22PF 1608 50V 5% R/TP NP0
		C14	0CC220CK41A	22PF 1608 50V 5% R/TP NP0
		C15	0CC102CK41A	1000PF 1608 50V 5% R/TP NP0
		C16	0CC102CK41A	1000PF 1608 50V 5% R/TP NP0
		C17	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C18	0CC220CK41A	22PF 1608 50V 5% R/TP NP0
		C19	0CC220CK41A	22PF 1608 50V 5% R/TP NP0
		C2	0CC220CK41A	22PF 1608 50V 5% R/TP NP0
		C20	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C21	0CC470CK41A	47PF 1608 50V 5% R/TP NP0
		C22	0CC470CK41A	47PF 1608 50V 5% R/TP NP0
		C3	0CC470CK41A	47PF 1608 50V 5% R/TP NP0
		C4	0CC220CK41A	22PF 1608 50V 5% R/TP NP0
		C5	0CC220CK41A	22PF 1608 50V 5% R/TP NP0
		C6	0CC102CK41A	1000PF 1608 50V 5% R/TP NP0
		C7	0CC102CK41A	1000PF 1608 50V 5% R/TP NP0

DATE: 2005. 02. 07.				
*S	*AL	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
		C8	0CC102CK41A	1000PF 1608 50V 5% R/TP NP0
		C9	0CC220CK41A	22PF 1608 50V 5% R/TP NP0
		D1	0DS226009AA	KDS226 TP KEC SOT-23 80V 30
		D2	0DS226009AA	KDS226 TP KEC SOT-23 80V 30
		D3	0DS226009AA	KDS226 TP KEC SOT-23 80V 30
		D4	0DS226009AA	KDS226 TP KEC SOT-23 80V 30
		D5	0DS226009AA	KDS226 TP KEC SOT-23 80V 30
		LED1	0DLBE0048AA	BRIGHT LED ELECTRONICS BL-HK
		LED2	0DLBE0048AA	BRIGHT LED ELECTRONICS BL-HK
		R10	0RJ0000D677	0 OHM 1/10 W 5% 1608 R/TP
		R11	0RJ4701D477	4.7K OHM 1/10 W 1% 1608 R/TP
		R12	0RJ2001D477	2K OHM 1/10 W 1% 1608 R/TP
		R13	0RJ3901D477	3.9K OHM 1/10 W 1% 1608 R/TP
		R14	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R15	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R16	0RJ0000D677	0 OHM 1/10 W 5% 1608 R/TP
		R17	0RJ4701D477	4.7K OHM 1/10 W 1% 1608 R/TP
		R18	0RJ2001D477	2K OHM 1/10 W 1% 1608 R/TP
		R19	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R2	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R20	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R21	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R6	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R7	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R8	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R9	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		U3	0IPRPCR001A	"ADA01 CHEMTRONICS SOT26,6P R"
		U4	0IPRPCR001A	"ADA01 CHEMTRONICS SOT26,6P R"
		U5	0IPRPCR001A	"ADA01 CHEMTRONICS SOT26,6P R"
		U6	0IPRPCR001A	"ADA01 CHEMTRONICS SOT26,6P R"
		U7	0IPRPCR001A	"ADA01 CHEMTRONICS SOT26,6P R"
		ZD1	0DZ560009GB	"BZT52C5V6S-(F),LF DIODES R/T"
		ZD2	0DZ560009GB	"BZT52C5V6S-(F),LF DIODES R/T"
		ZD3	0DZ560009GB	"BZT52C5V6S-(F),LF DIODES R/T"
		ZD4	0DZ560009GB	"BZT52C5V6S-(F),LF DIODES R/T"

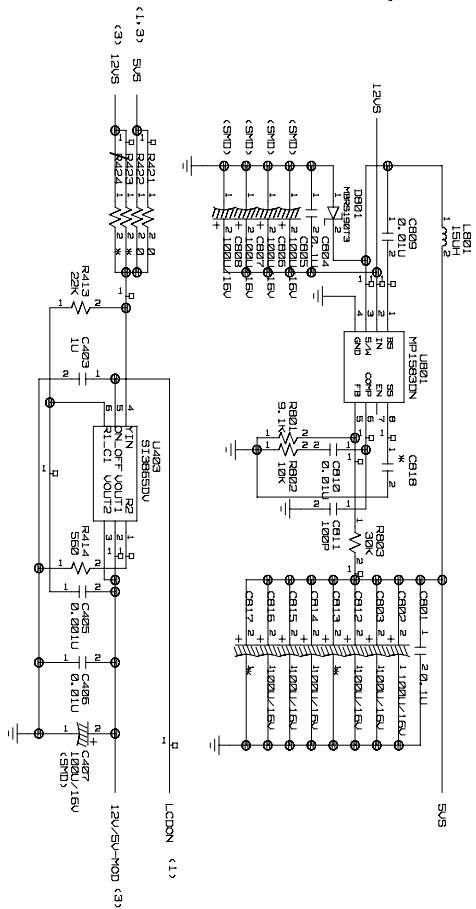
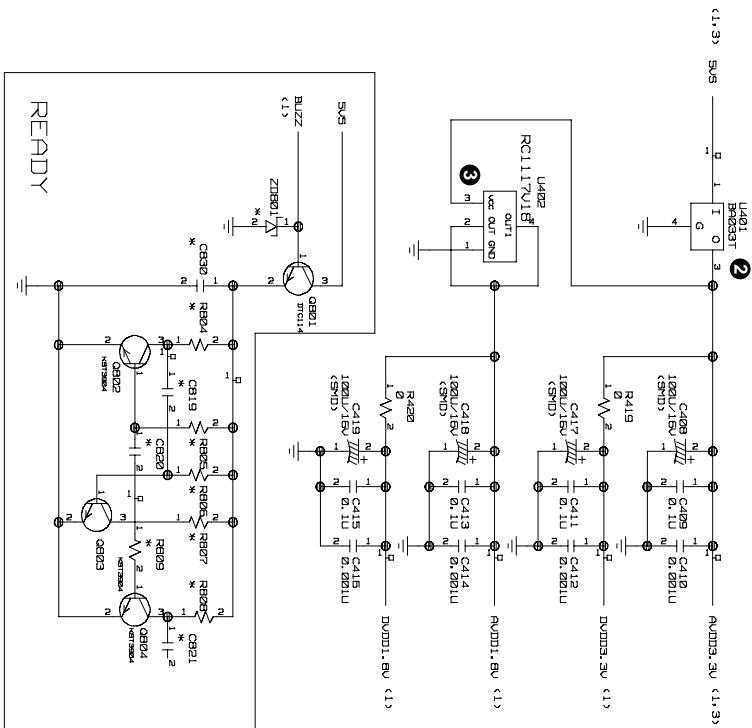
# SCHEMATIC DIAGRAM

## 1. SCALER



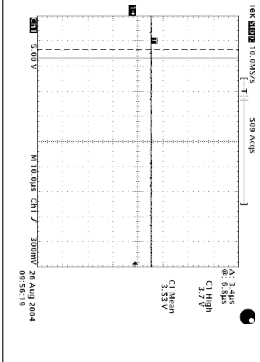
## 2.DC/DC POWER

# 2 L1780UN/L1980UN  
DC/DC POWER

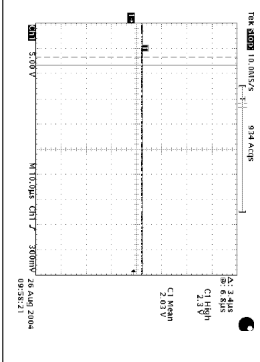


### WAVE FORM

2 U401-#3

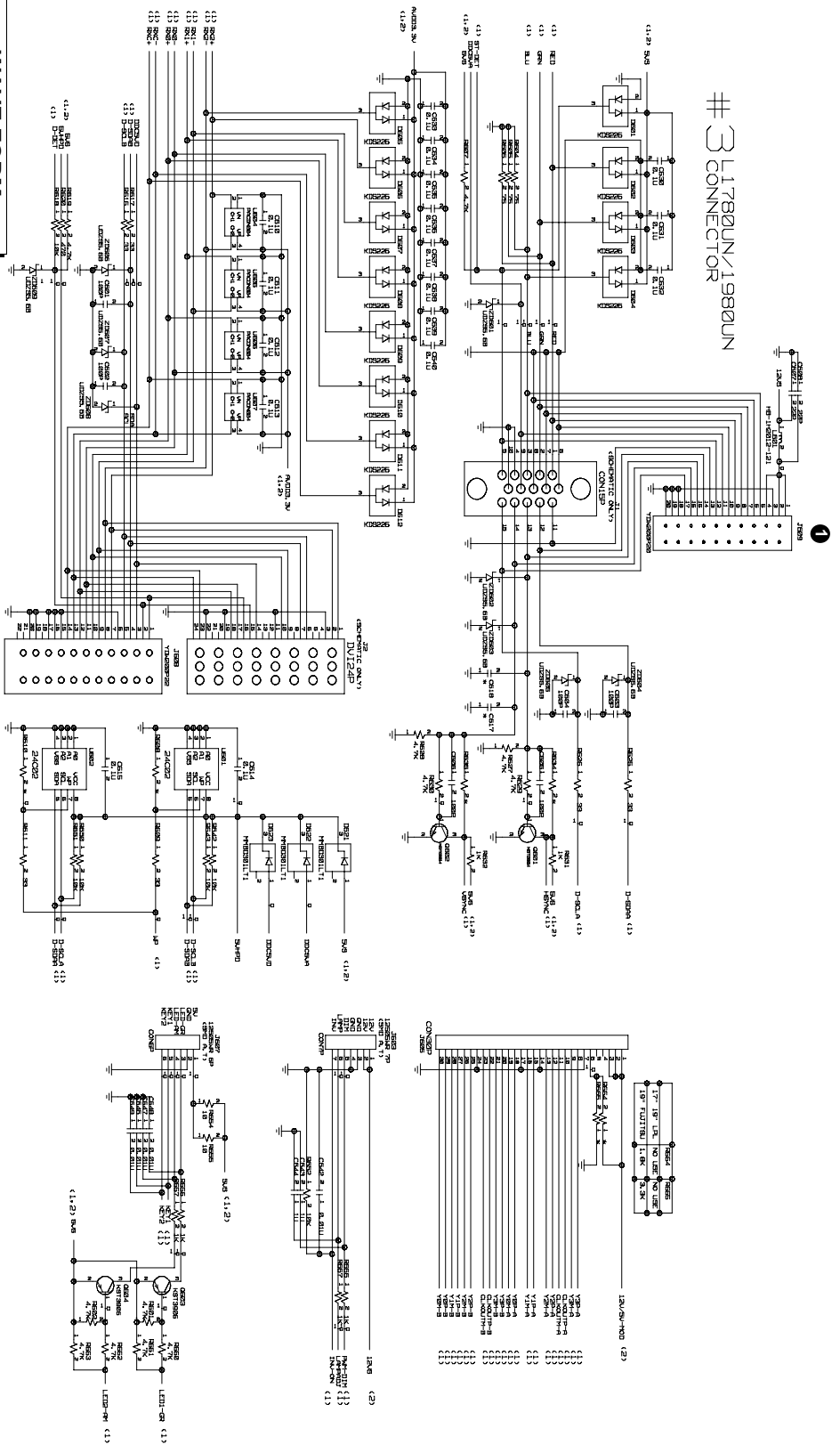


3 U402-#3

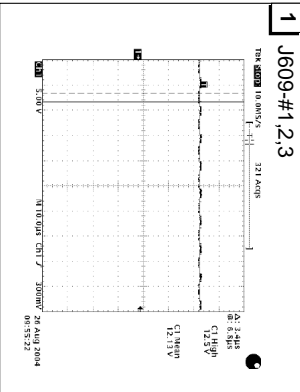


### 3. CONNECTOR

# 3 L1780UN/1980UN

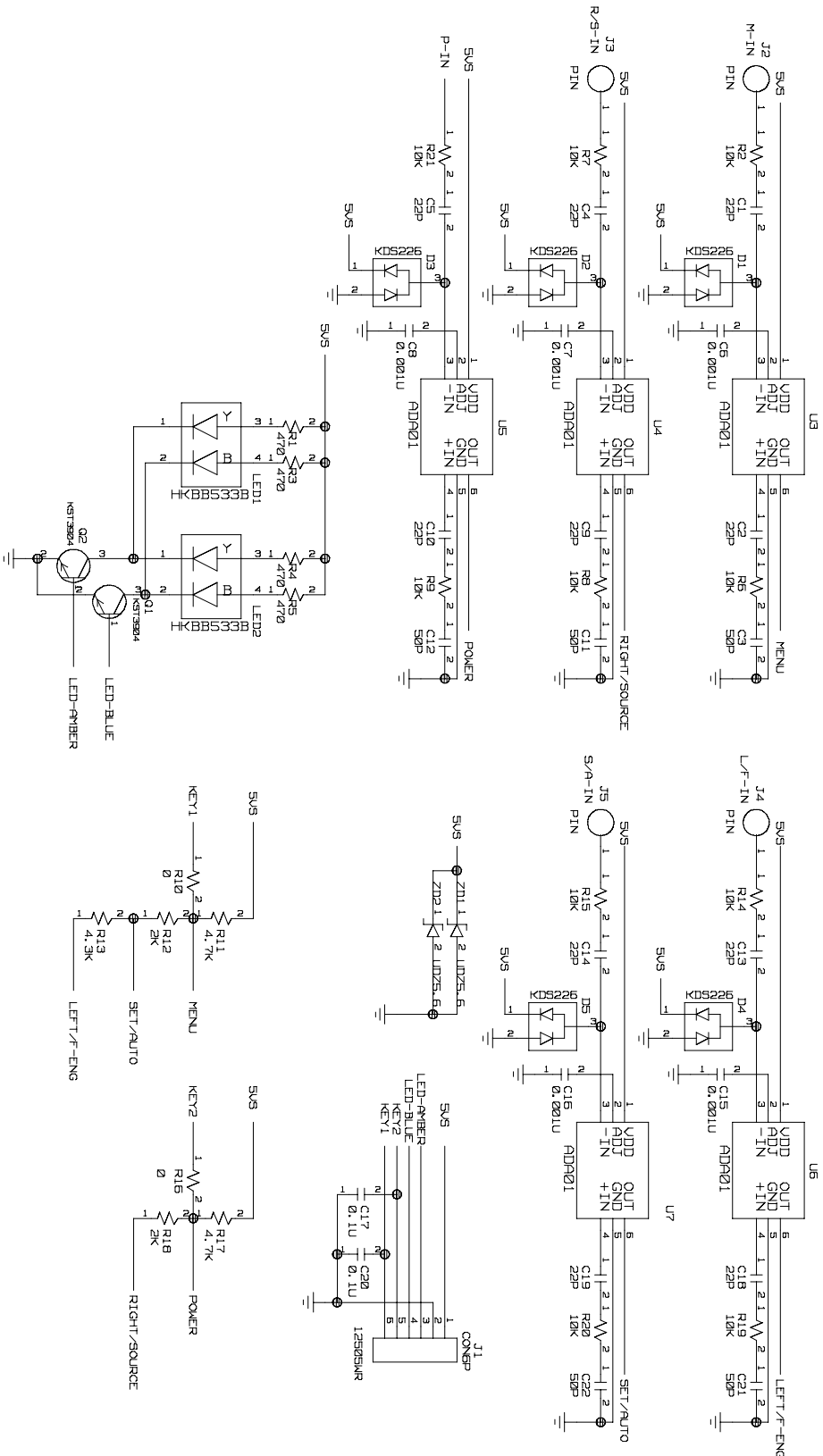


WAVE FORM



# 4. KEY

# 1 L1780UN/1980UN KEY



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