



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

COLOR MONITOR SERVICE MANUAL

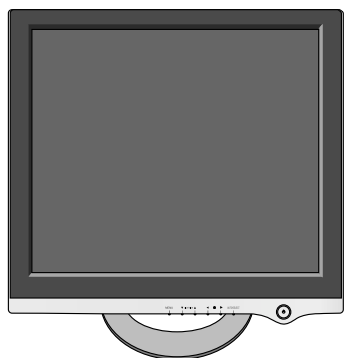
CHASSIS NO. : CL-32

MODEL: FLATRON L1520B(L1520BL-AL**R)

*() **Same model for Service

CAUTION

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



*To apply the **Mstar Chip**.

CONTENTS

SPECIFICATIONS	2	ADJUSTMENT	9
PRECAUTIONS	3	TROUBLESHOOTING GUIDE	10
TIMING CHART	4	PRINTED CIRCUIT BOARD.....	14
OPERATING INSTRUCTIONS	5	EXPLODED VIEW.....	16
WIRING DIAGRAM	6	REPLACEMENT PARTS LIST	18
BLOCK DIAGRAM	7	PIN CONFIGURATION.....	20
DESCRIPTION OF BLOCK DIAGRAM	8	SCHEMATIC DIAGRAM.....	21

SPECIFICATIONS

1. LCD CHARACTERISTICS

Type : TFT XGA LCD Module
 Size : 352.0(H) x 263.5(V) x 14.0(T)
 Pixel Pitch : 0.297mm x 0.297mm
 Color Depth : 6bits(with FRC)/ 16M colors
 Active Video Area : 15.0inch
 (304.128 x 228.096)
 Surface Treatment : Anti-Glare, Hard Coating (3H)
 Backlight Unit : Top/Bottom edge side 2CCFL
 Electrical Interface : LVDS interface

2. OPTICAL CHARACTERISTICS

2-1. Viewing Angle by Contrast Ratio ≥ 10
 Left : 55° min. Right : 55° min.
 Top : 40° min. Bottom : 40° min.

2-2. Luminance
 : 200(min.), 250(typ.) at Center point

2-3. Contrast Ratio :250(min.), 350(typ.)

3. SIGNAL (Refer to the Timing Chart)

3-1. Sync Signal
 1) Type : Separate Sync. (Horizontal & Vertical)
 2) Input Voltage Level : Low=0~0.8V, High=2.1~5.5V
 3) Sync Polarity : Positive or Negative

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 Ω

3-3. Operating Frequency
 Horizontal : 30 ~ 63kHz
 Vertical : 56 ~ 75Hz

4. POWER SUPPLY

4-1. Power
 100-240V~, 50/60Hz 0.6A

4-2. Power Consumption

MODE	H/V SYNC	VIDEO	POWER CONSUMPTION	LED COLOR
POWER ON (NORMAL)	ON/ON	ACTIVE	less than 25 W	BLUE
STAND-BY	OFF/ON	OFF	less than 3 W	AMBER
SUSPEND	ON/OFF	OFF	less than 3 W	AMBER
DPM OFF	-	-	less than 3 W	AMBER

5. ENVIRONMENT

5-1. Operating Temperature: 10°C~35°C (50°F~95°F)
 (Ambient)

5-2. Relative Humidity : 10%~80%
 (Non-condensing)

5-3. MTBF : 50,000 Hours (Min.)
 Lamp Life : 40,000 Hours (Min.)

6. DIMENSIONS (with TILT/SWIVEL)

FullUp Position

Width : 363.8mm (14.32")
 Depth : 220mm (8.66")
 Height : 330.7mm (13.02")



Folded Position

Width : 363.8mm (14.32")
 Depth : 113.7mm (8.66")
 Height : 358mm (14.09")




7. WEIGHT (with TILT/SWIVEL)

Net. Weight : 3.2kg (7.05 lbs)
 Gross Weight : 5.5kg (12.13 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  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.

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.

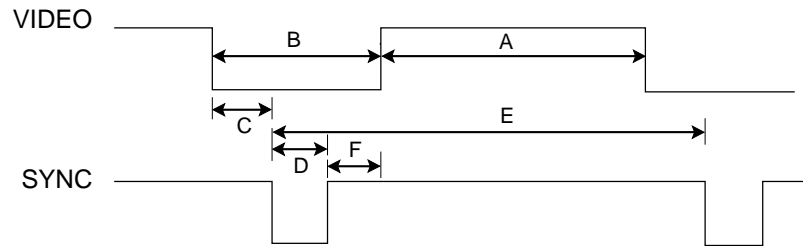
TAKE CARE DURING HANDLING THE LCD MODULE WITH BACKLIGHT UNIT.

- 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.)

CAUTION

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

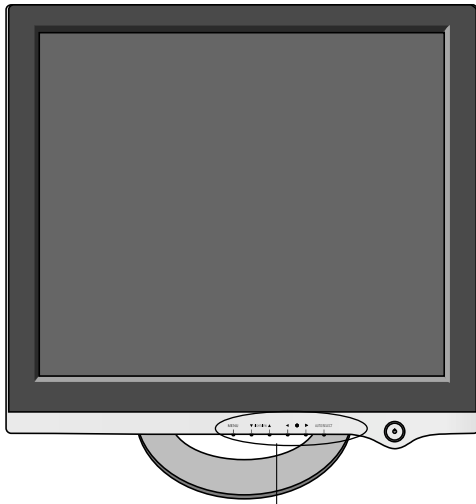
TIMING CHART



MODE	H / V	Sync Polarity	Dot Clock	Frequency	Total Period (E)	Video Active Time (A)	Blanking Time (B)	Sync Duration (D)	Back Porch (F)	Front Porch (C)	Resolution
1	H (Pixels)	+	25.175	31.468 KHz	800	640	160	96	48	16	640 x 350
	V (Lines)	-		70.0 Hz	449	350	99	2	60	37	
2	H (Pixels)	-	28.322	31.468 KHz	900	720	180	108	55	17	720 x 400 (TEXT)
	V (Lines)	+		70.0 Hz	449	400	49	2	34	13	
3	H (Pixels)	-	25.175	31.469 KHz	800	640	160	96	48	16	640 x 480
	V (Lines)	-		60.0 Hz	525	480	45	2	33	10	
4	H (Pixels)	-	30.24	35.00 KHz	864	640	224	64	96	64	640 x 480
	V (Lines)	-		66.67 Hz	525	480	45	3	39	3	
5	H (Pixels)	-	31.5	37.861 KHz	832	640	192	40	128	24	640 x 480
	V (Lines)	-		72.8 Hz	520	480	40	3	28	9	
6	H (Pixels)	-	31.5	37.50 KHz	840	640	200	64	120	16	640 x 480
	V (Lines)	-		75.0 Hz	500	480	20	3	16	1	
7	H (Pixels)	+	36.0	35.156KHz	1024	800	224	72	128	24	800 x 600
	V (Lines)	+		56.25 Hz	625	600	25	2	22	1	
8	H (Pixels)	+	40.0	37.879 KHz	1056	800	256	128	88	40	800 x 600
	V (Lines)	+		60.3 Hz	628	600	28	4	23	1	
9	H (Pixels)	+	50.0	48.077 KHz	1040	800	240	120	64	56	800 x 600
	V (Lines)	+		72.188 Hz	666	600	66	6	23	37	
10	H (Pixels)	+	49.5	46.875 KHz	1056	800	256	80	160	16	800 x 600
	V (Lines)	+		75.0 Hz	625	600	25	3	21	1	
11	H (Pixels)	-	57.2832	49.725 KHz	1152	832	320	64	224	32	832 x 624 (MAC)
	V (Lines)	-		74.55 Hz	667	624	43	3	39	1	
12	H (Pixels)	-	65	48.363 KHz	1344	1024	320	136	160	24	1024 x 768
	V (Lines)	-		60.0 Hz	806	768	38	6	29	3	
13	H (Pixels)	-	75	56.476 KHz	1328	1024	304	136	144	24	1024 x 768
	V (Lines)	-		70.0 Hz	806	768	38	6	29	3	
14	H (Pixels)	+	78.75	60.023 KHz	1312	1024	288	96	176	16	1024 x 768
	V (Lines)	+		75.0 Hz	800	768	32	3	28	1	

OPERATING INSTRUCTIONS

FRONT VIEW



See front control panel

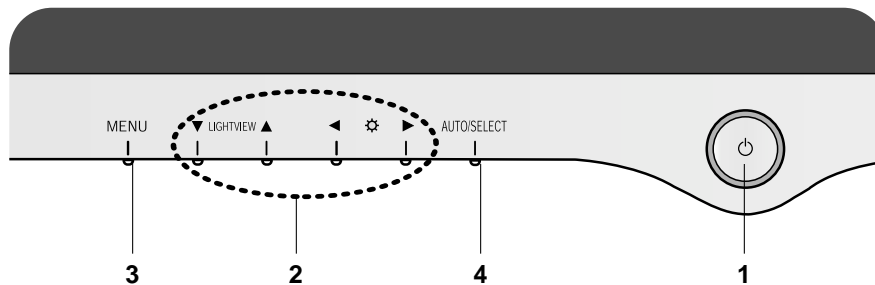
REAR VIEW



D-sub Connect

Power Connect

Front Control Panel



1. Power Button

Use this button to turn the display on or off.

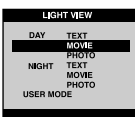
<Power (DPMS) Indicator>

This Indicator lights up blue when the display operates normally. If the display is in DPM (Energy Saving) mode, this indicator color changes to amber.

2. ▲▼/◀▶ Button

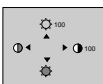
Use these buttons to choose or adjust items in the On Screen Display.

▼ LightView ▲



This function optimizes the brightness, contrast or color value to the surrounding conditions and settings and enables you to enjoy the most suitable picture by adjusting the surroundings (DAY/NIGHT/USER MODE).

- TEXT: For viewing letters
- MOVIE: For viewing movies
- PHOTO: For viewing pictures or the photographs
- USER MODE: This function memorizes the manual adjustment -Brightness, Contrast and Color value on the On Screen Display.



Bring up Contrast and Brightness adjustment.

◀◀◀◀ → → → → MENU

3. Menu Button

Use this button to enter or exit the On Screen Display.

4. AUTO/SELECT Button

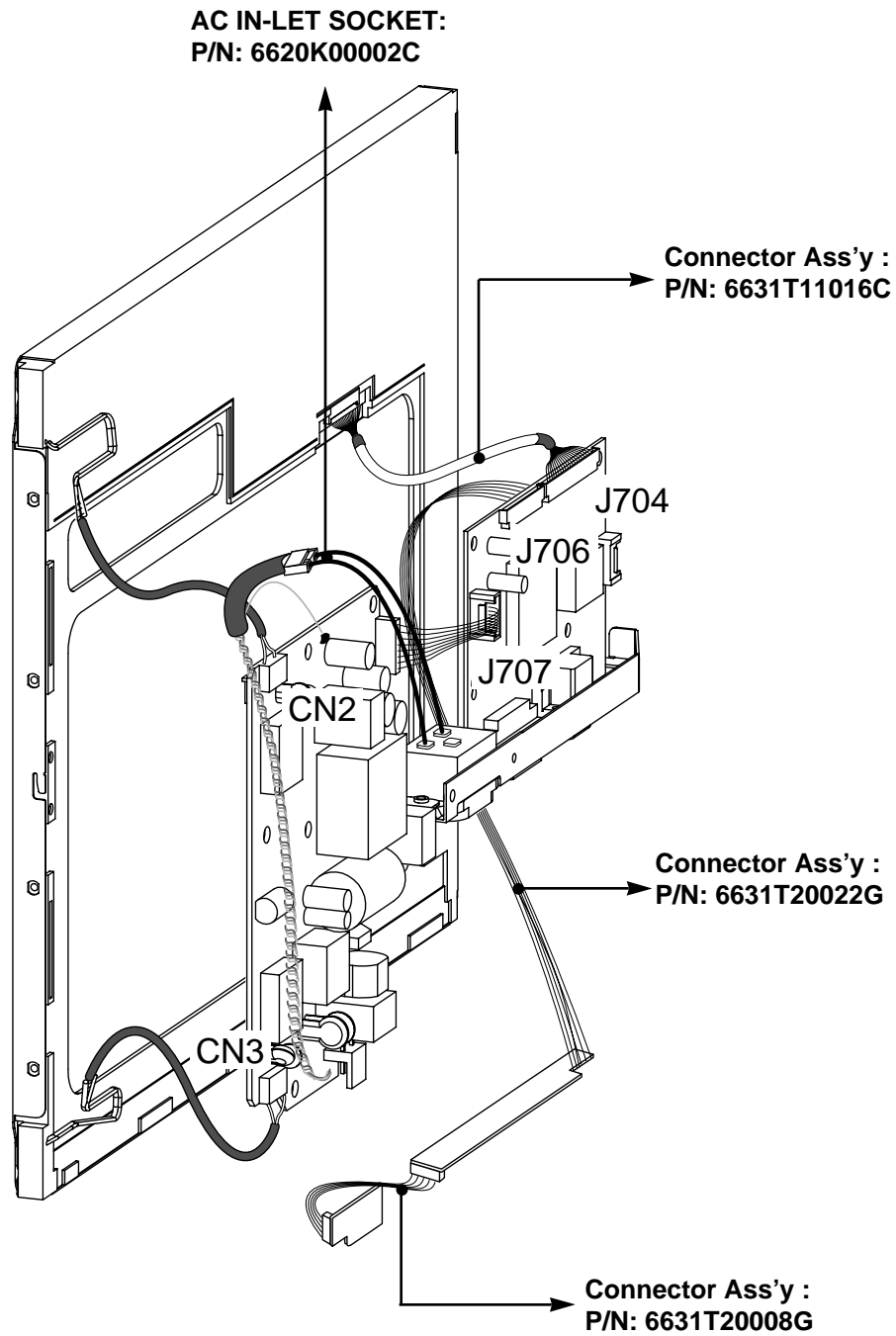
Use this button to enter a selection in the On Screen Display.

PROCESSING
AUTO CONFIGURATION

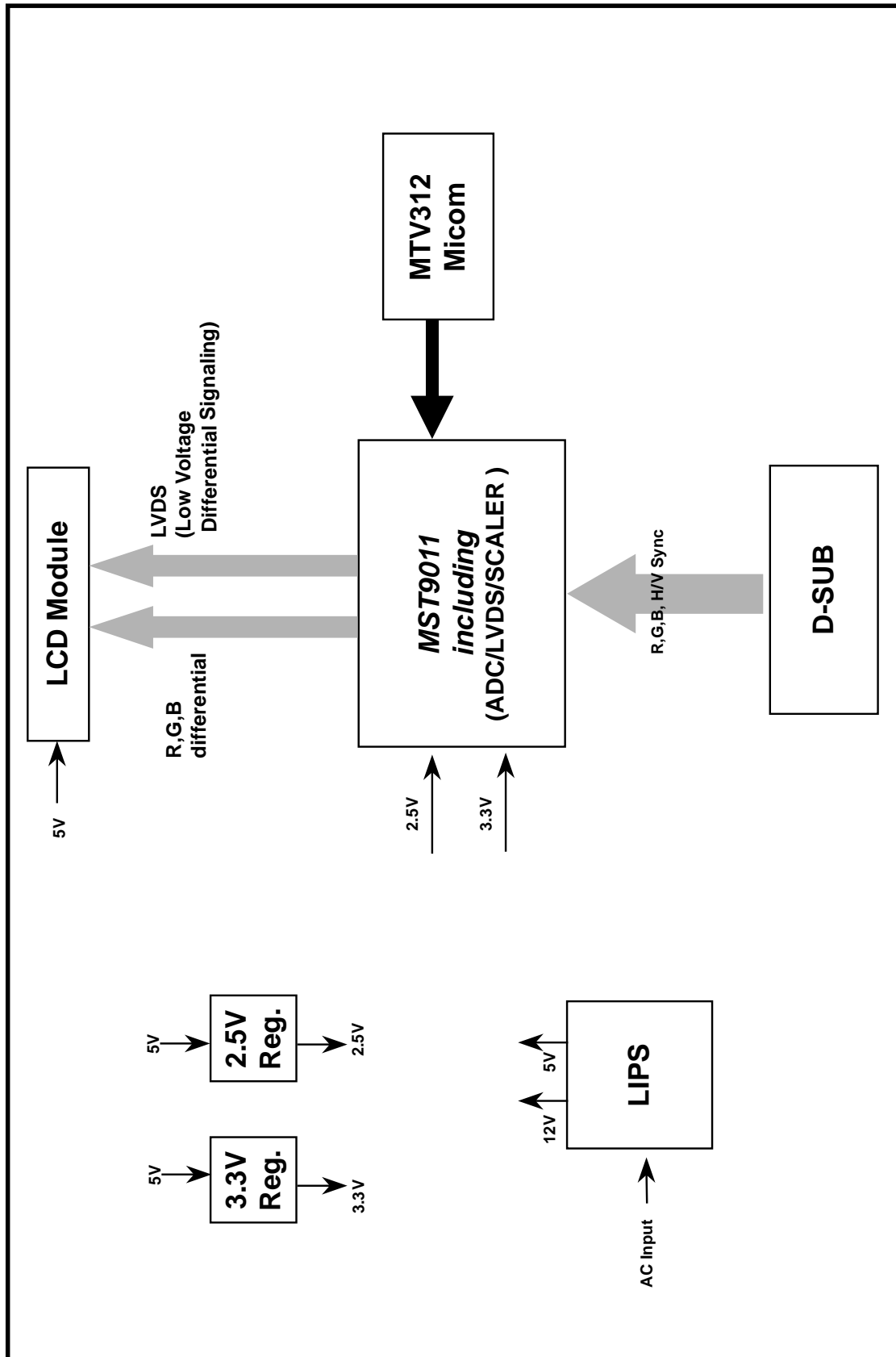
When adjusting your display settings, always press the **AUTO/SELECT** button before entering the On Screen Display(OSD). This will automatically adjust your display image to the ideal settings for the current screen resolution size (display mode).

The best display mode is **1024x768/60Hz**.

WIRING DIAGRAM



BLOCK DIAGRAM



DESCRIPTION OF BLOCK DIAGRAM

1. Video Controller Part & Display Data Transmitter Part.(MST9011)

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 80MHz.

This part consists of the Scaler.

The Scaler gets the video signal converted analog to digital, interpolates input to 1024 x 768 resolution signal and outputs 8-bit R, G, B signal to transmitter.

Especially pre-amp / ADC / Video controller/ Transmitter are merged to one chip "MST9011" by MSTAR.

This part transmit digital signal from the Scaler to the receiver of module.

2. Micom Part

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.

3. Power Part

This part consists of the one 3.3V and one 2.5 regulators to convert power which is provided 5V in LIPS Board.

5V is provided for LCD Panel and Micom part.

Also, 5V is converted 3.3V and 2.5V by regulator. Converted power is provided for IC in the main board.

ADJUSTMENT

Windows EDID V1.0 User Manual

Operating System: MS Windows 98, 2000, XP

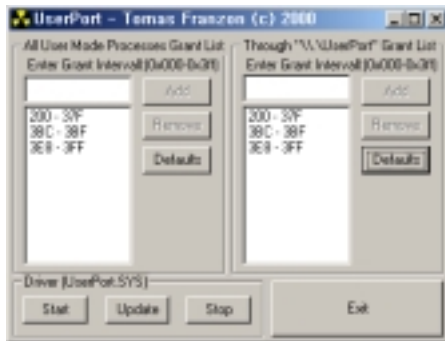
Port Setup: Windows 98 => Don't need setup

Windows 2000, XP => Need to Port Setup.

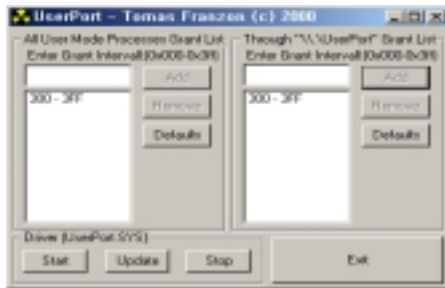
This program is available to LCD Monitor only.

1. Port Setup

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



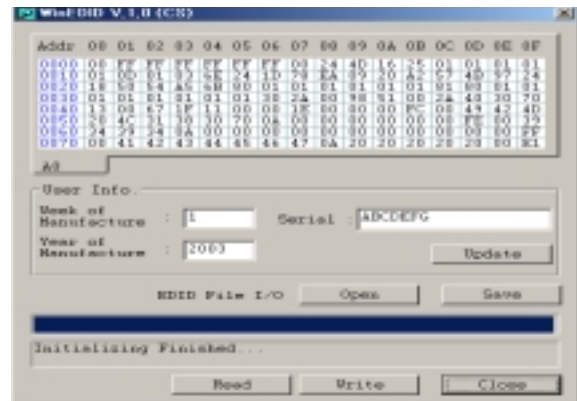
- Remove all default number
- Add 300-3FF



- Click Start button.
- Click Exit button.

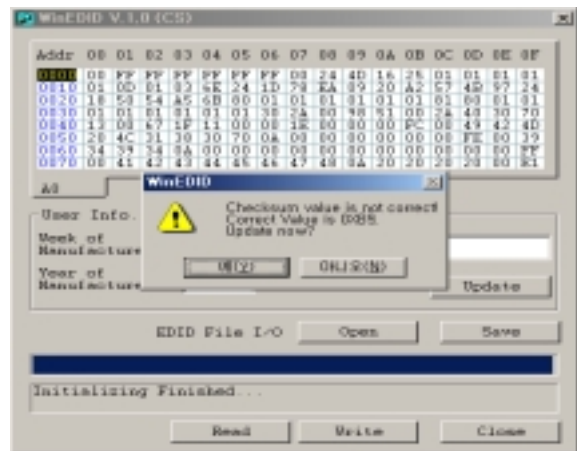
2. EDID Read & Write

1) Run WinEDID.exe



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

- Input User Info Data
- Click "Update" button
- Click "Write" button



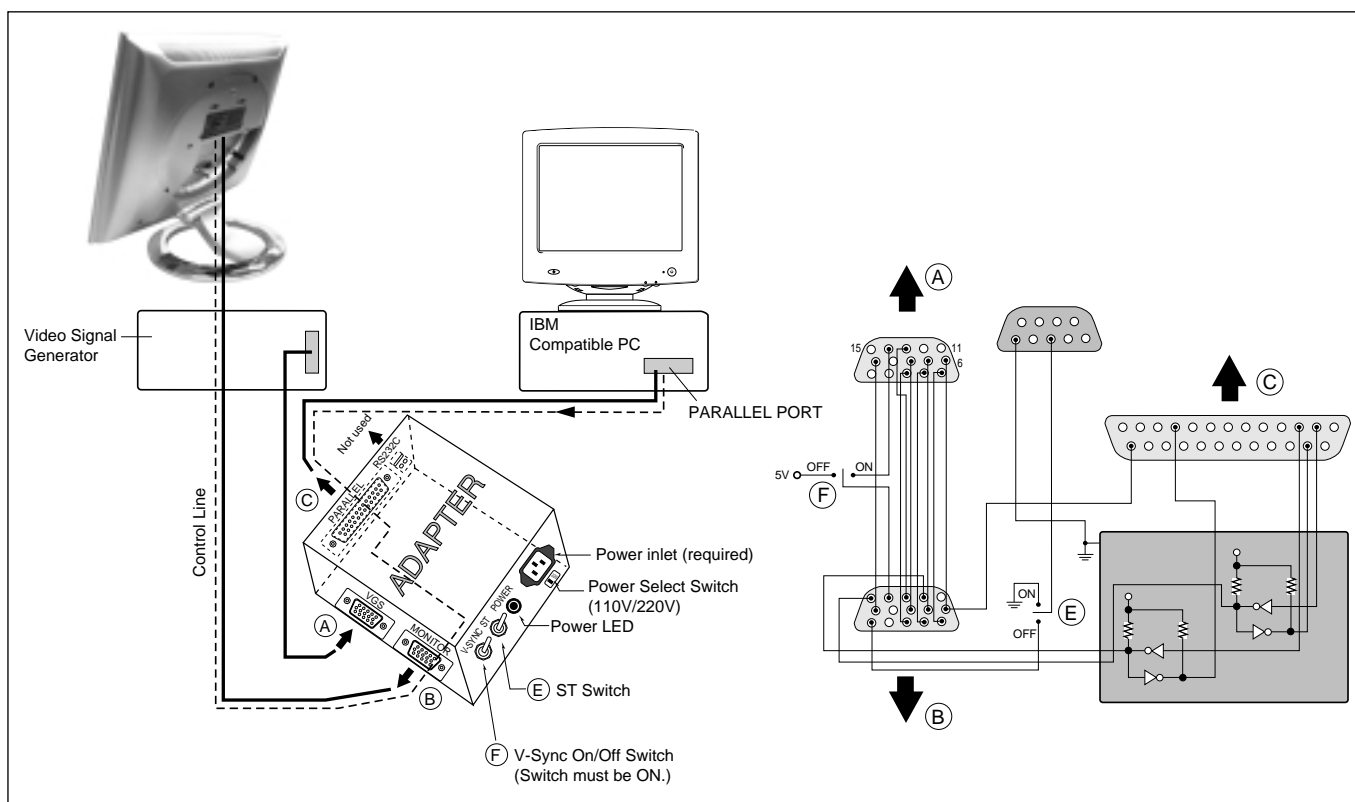


Figure 1. Cable Connection

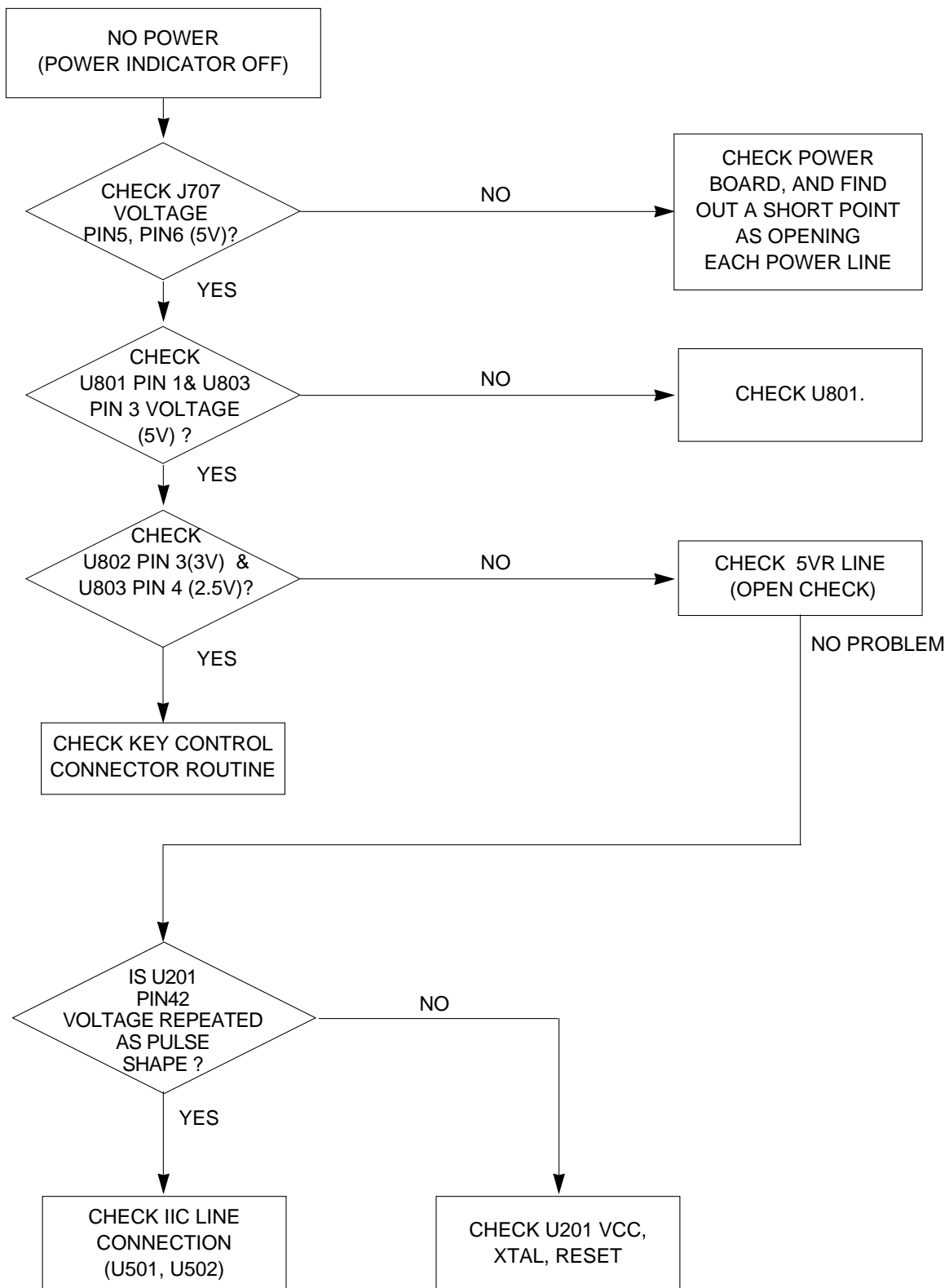
SERVICE OSD

- When entering Service mode: You can check the OSD as described below by pressing down the power key and the menu key while the power is off.

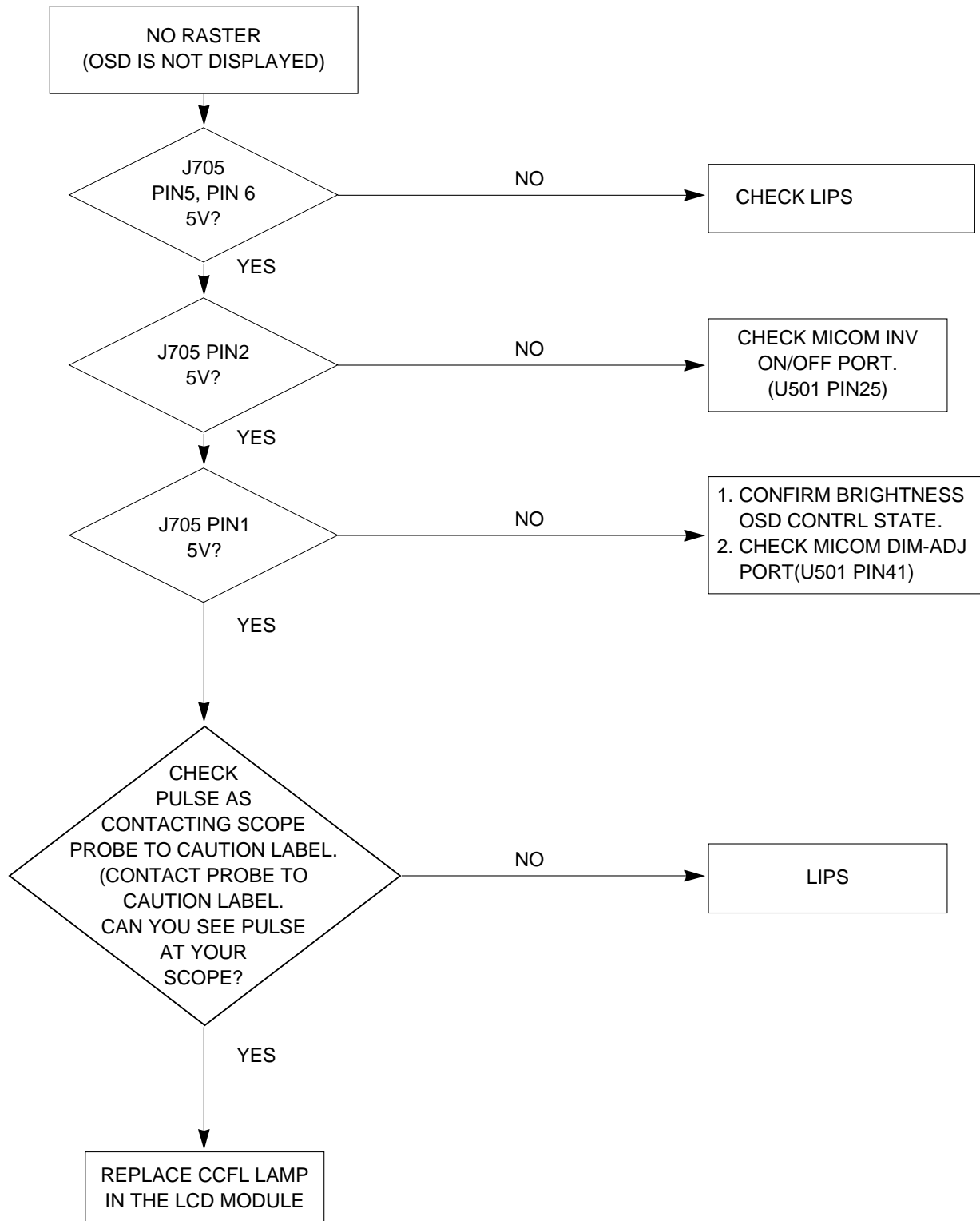
1. MODULE : Whenever you press the left/right key, the module applied to the current model will be displayed. When the module applied to the current set is displayed, turn the power on and off to execute all module settings.
2. ADC OFFSET/ADC GAIN : Adjusts the offset and gain values that are the basis of the color coordination value. The result differs according to the pattern and video card signal level. These two menus are not used separately but executed when the ADC CAL is executed.
3. ADC CAL.: Carried out when adjusting the color coordination.
4. ELAPSED CLEAR: Resets the usage time after monitor assembly to "0".
5. ELAPSED TIME: Displays the usage time after the monitor is shipped out. When executing the ELAPSED CLEAR menu, this will be shown as "0".
6. VERSION: Displays the MICOM version of the set by model name, version name and date.

TROUBLESHOOTING GUIDE

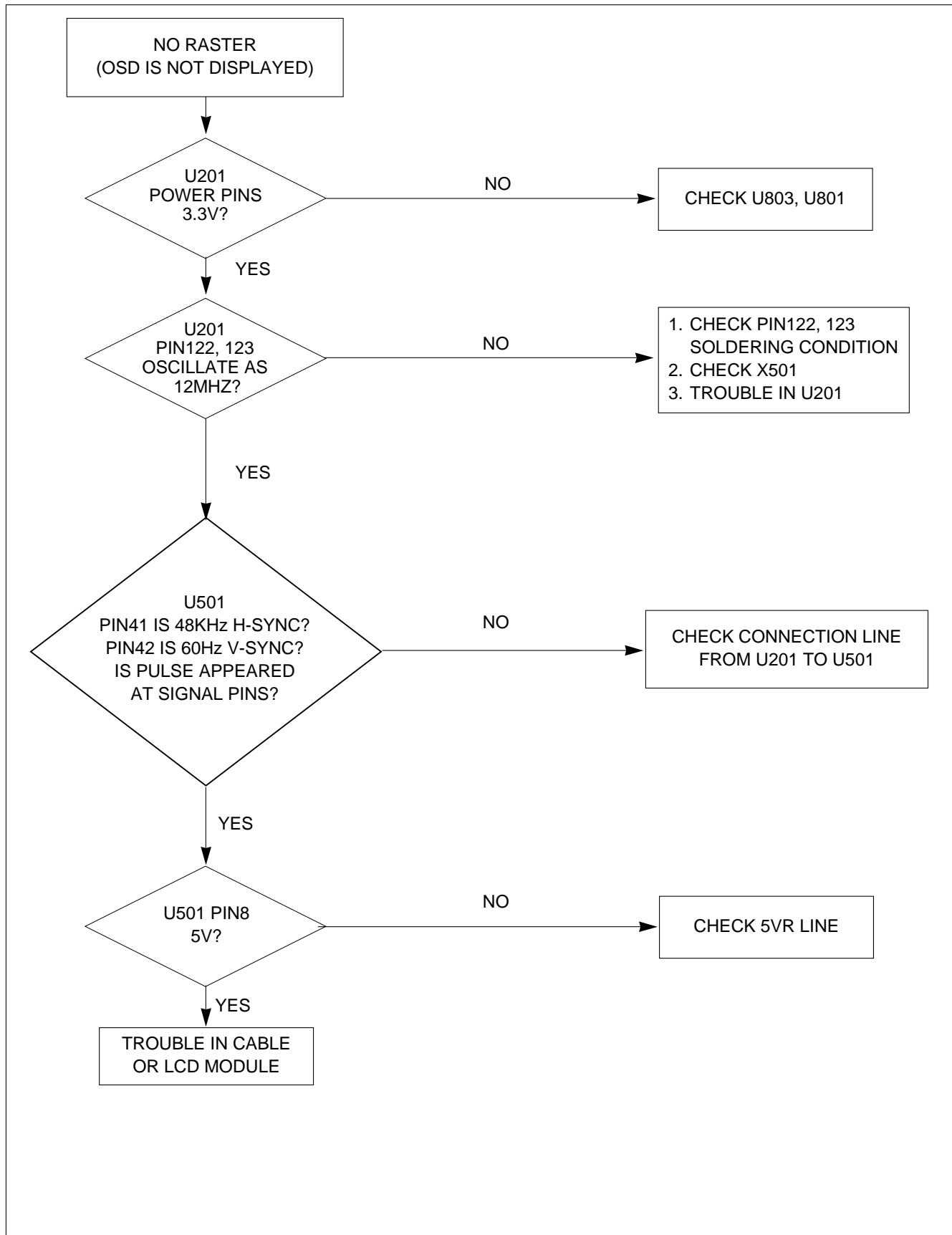
1. NO POWER



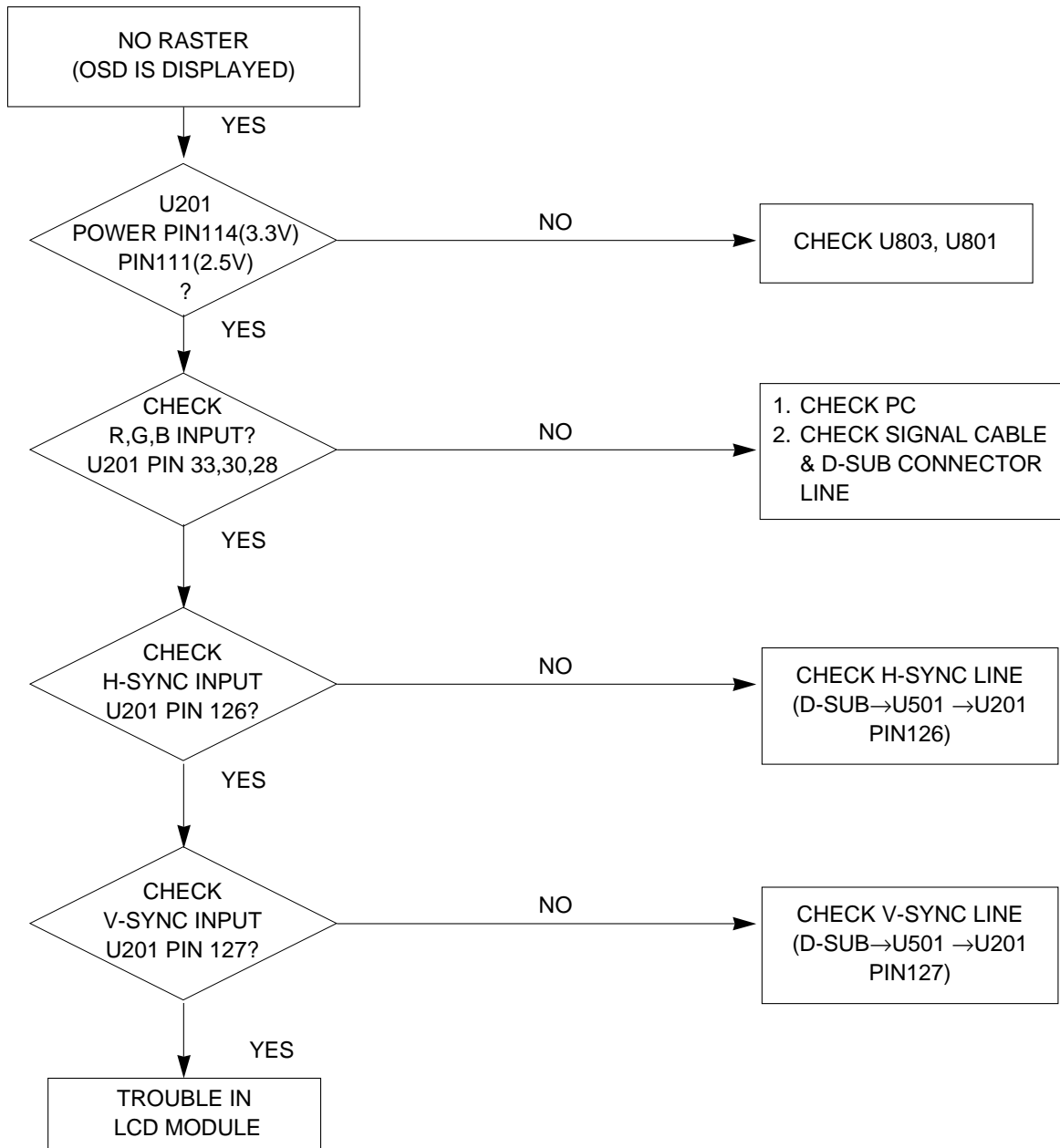
2. NO RASTER (OSD IS NOT DISPLAYED) – LIPS



3. NO RASTER (OSD IS NOT DISPLAYED) – MST9011

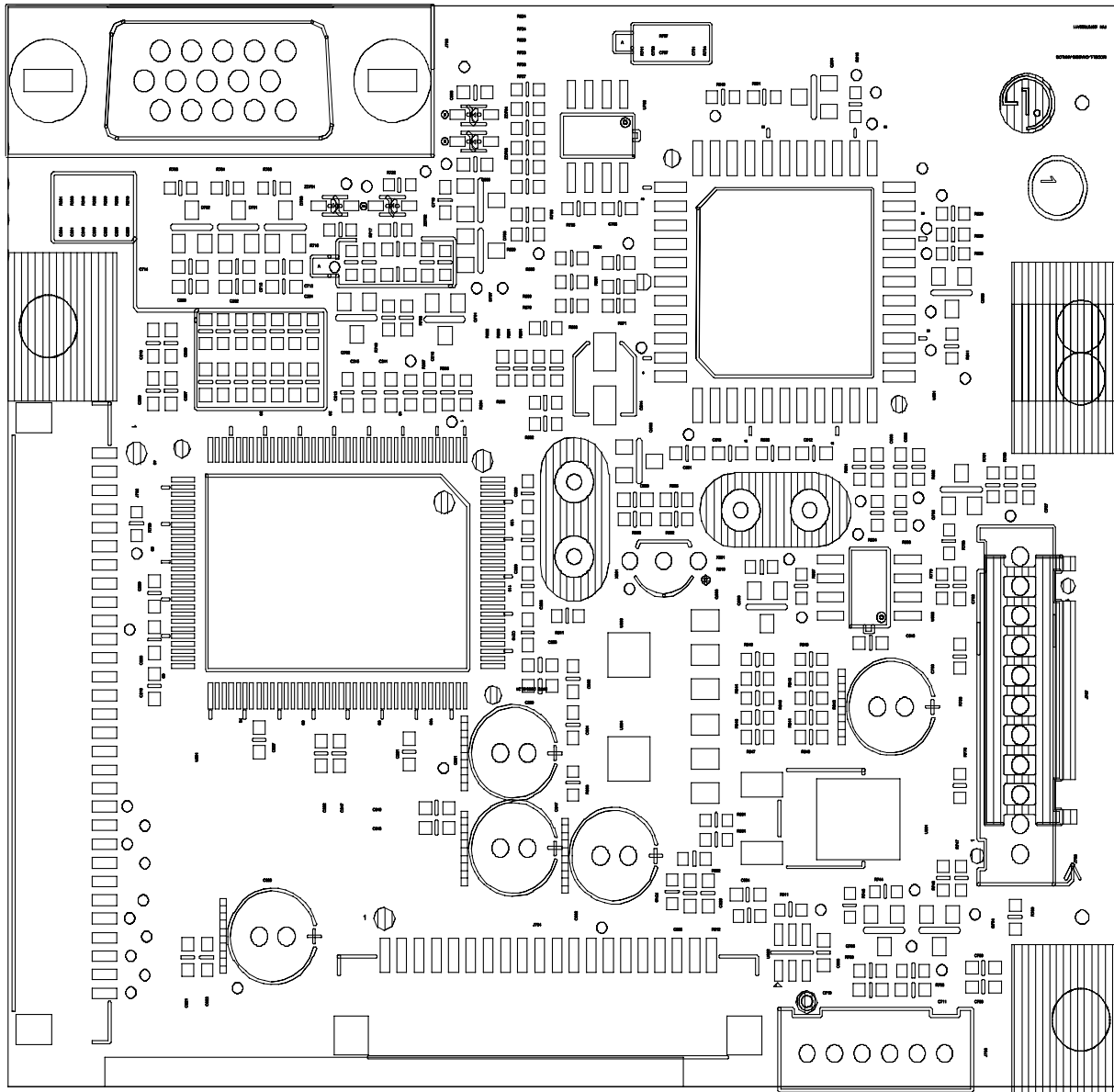


4. NO RASTER (OSD IS DISPLAYED) – MST9011

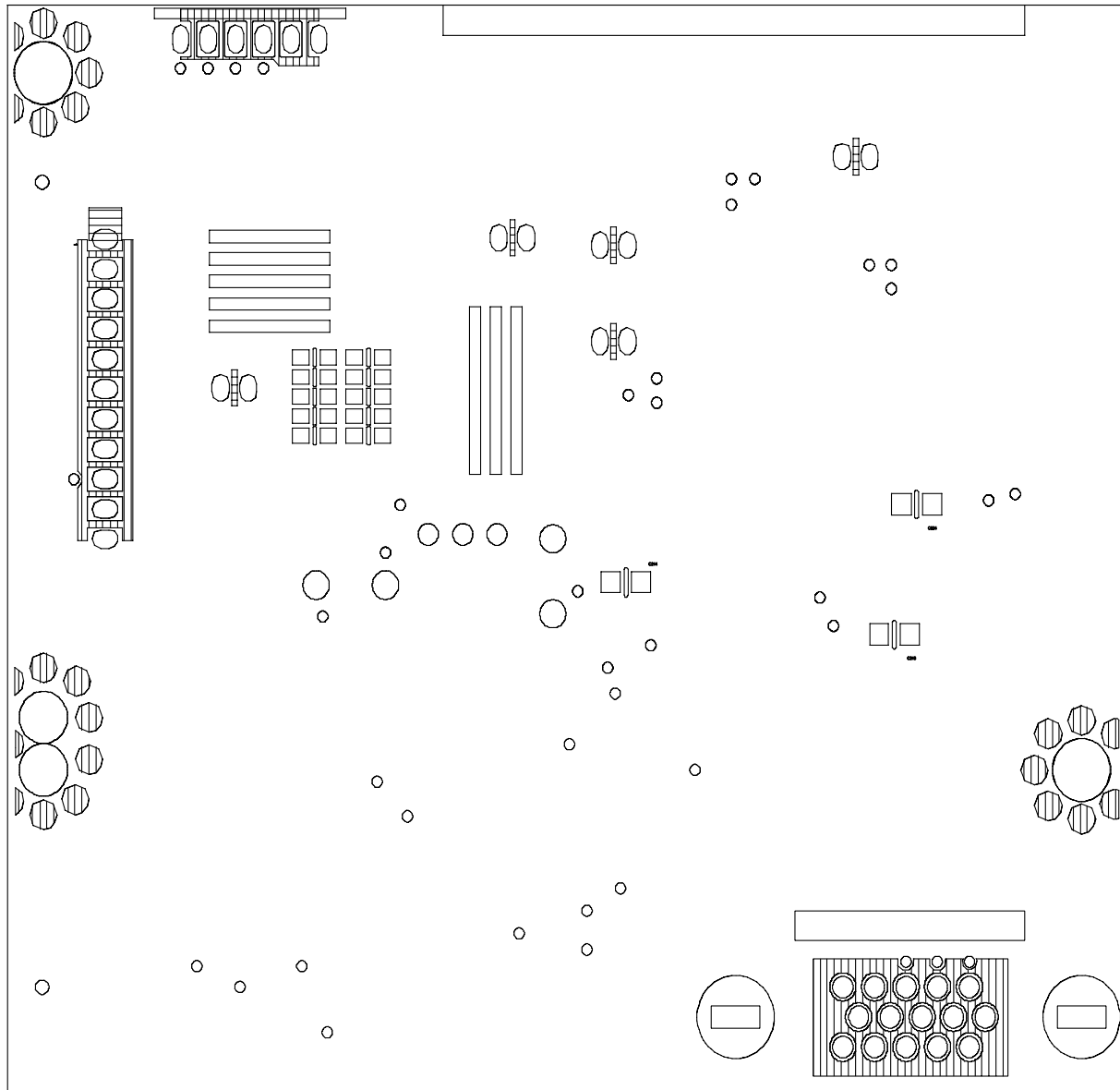


PRINTED CIRCUIT BOARD

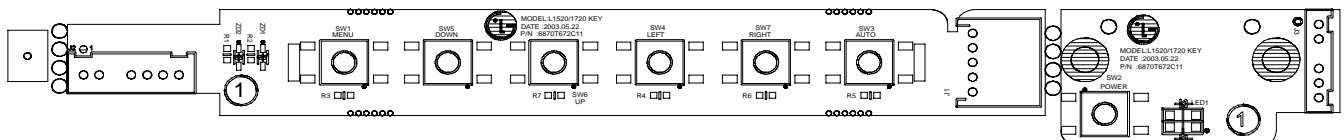
1. MAIN BOARD (Component Side)



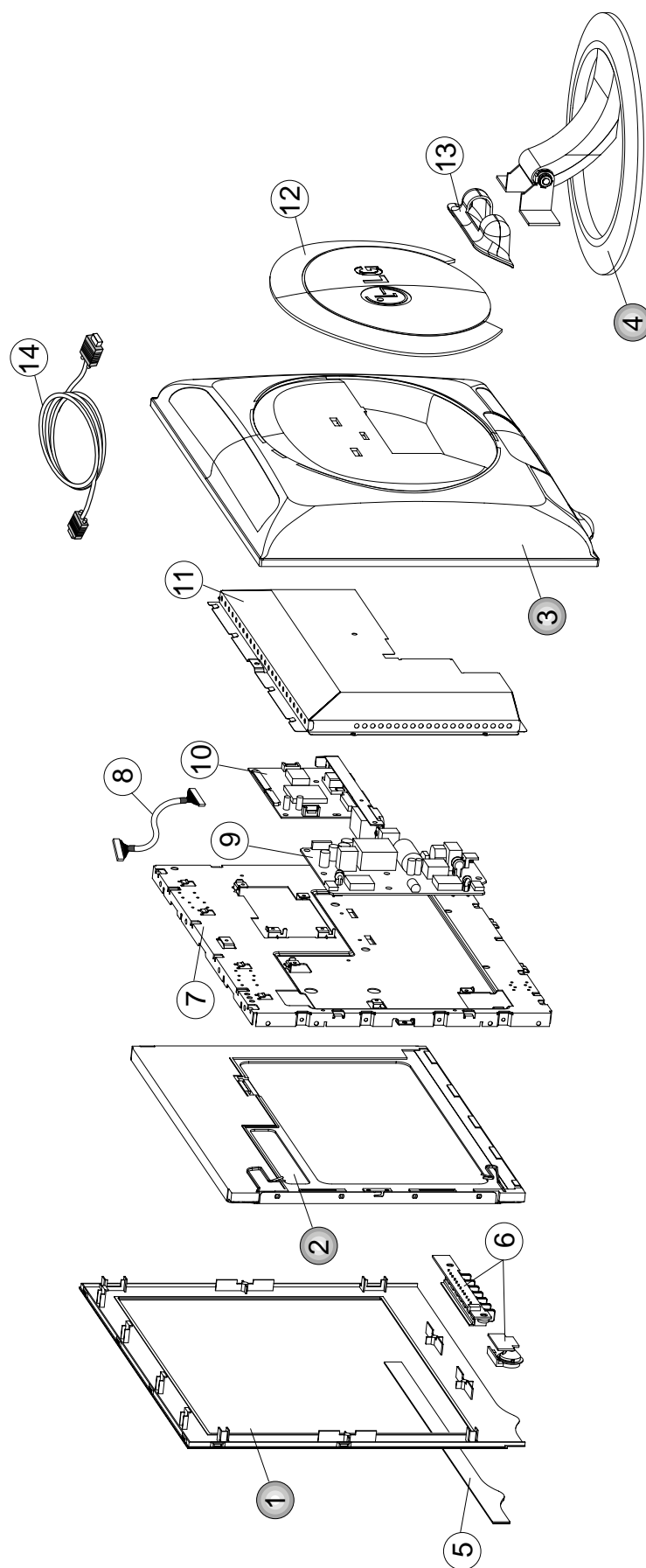
2. MAIN BOARD (Solder Side)



3.CONTROL BOARD (Component Side)



EXPLODED VIEW




EXPLODED VIEW PARTS LIST

Ref. No.	Part No.	Description
1	3091TKL085A	CABINET ASSEMBLY, L1520 BRAND
2	6304FLP068A	LCD(LIQUID CRYSTAL DISPLAY), LM150X06-A4C3 LG PHILPS TFT COLOR LPL
3	3809TKL058A	BACK COVER ASSEMBLY, L1520. SILVER SPRAY
4	3043TKK133A	TILT SWIVEL ASSEMBLY L1520BL . SILVER+CR
5	3550TKK395A	COVER, L1520 PIECE DECO
6	6871TST436A	PWB(PCB) ASSEMBLY, SUB, L1520BL CONTROL TOTAL BRAND CL-32
7	4951TKS112A	METAL ASSEMBLY, FRAME L1520BL
8	6631T11016C	CONNECTOR ASSEMBLY, 20P H-H 100MM UL20276 I/FACE CABLE LB500K
9	6871TPT234F	PWB(PCB) ASSEMBLY, POWER, 1520 POWER TOTAL POWERNET 15" LIPS
10	6871TMT462A	PWB(PCB) ASSEMBLY, MAIN, L1520BL ALRDR BRAND CL-32 TOTAL
11	4951TKK141A	METAL ASSEMBLY, SHIELD CKD(NT)
12	3550TKK397A	COVER, L1520. BACK CAP
13	3550TKK399A	COVER, L1520. HINGE CAP
14	6850TD9004D	CABLE, D-SUB, UL20276-9C(5.8MM) DT 1560MM GRAY(85964) LB500L DM
	or 6850TD9004A	CABLE, D-SUB, UL20276-9C(5.8MM) DT 1870MM GRAY(85964) LB500K DM

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: 2003. 6. 14.				
*S	*AL	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
MAIN BOARD				
CAPACITORS				
		C201	0CC180CK41A	18PF 1608 50V 5% R/TP NP0
		C202	0CC180CK41A	18PF 1608 50V 5% R/TP NP0
		C203	0CC180CK41A	18PF 1608 50V 5% R/TP NP0
		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
		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
		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
		C230	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C231	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C232	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C233	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C240	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C501	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C502	0CC101CK41A	100PF 1608 50V 5% R/TP NP0
		C503	0CC101CK41A	100PF 1608 50V 5% R/TP NP0
		C505	0CC101CK41A	100PF 1608 50V 5% R/TP NP0
		C506	0CC101CK41A	100PF 1608 50V 5% R/TP NP0
		C512	0CC180CK41A	18PF 1608 50V 5% R/TP NP0
		C513	0CC030CK01A	3PF 1608 50V 0.25 PF R/TP NP0
		C514	0CH8106F611	10UF 16V M 85STD(CYL) R/TP
		C516	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C550	0CC102CK41A	1000PF 1608 50V 5% R/TP NP0
		C703	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C707	0CC680CK41A	68PF 1608 50V 5% R/TP NP0
		C708	0CK103CK51A	0.01UF 1608 50V 10% R/TP B(Y5)
		C709	0CK103CK51A	0.01UF 1608 50V 10% R/TP B(Y5)
		C710	0CK103CK51A	0.01UF 1608 50V 10% R/TP B(Y5)
		C711	0CK103CK51A	0.01UF 1608 50V 10% R/TP B(Y5)
		C712	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C713	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C714	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C715	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C727	0CK105CD56A	1UF 1608 10V 10% R/TP X7R
		C730	0CC101CK41A	100PF 1608 50V 5% R/TP NP0
		C731	0CC680CK41A	68PF 1608 50V 5% R/TP NP0

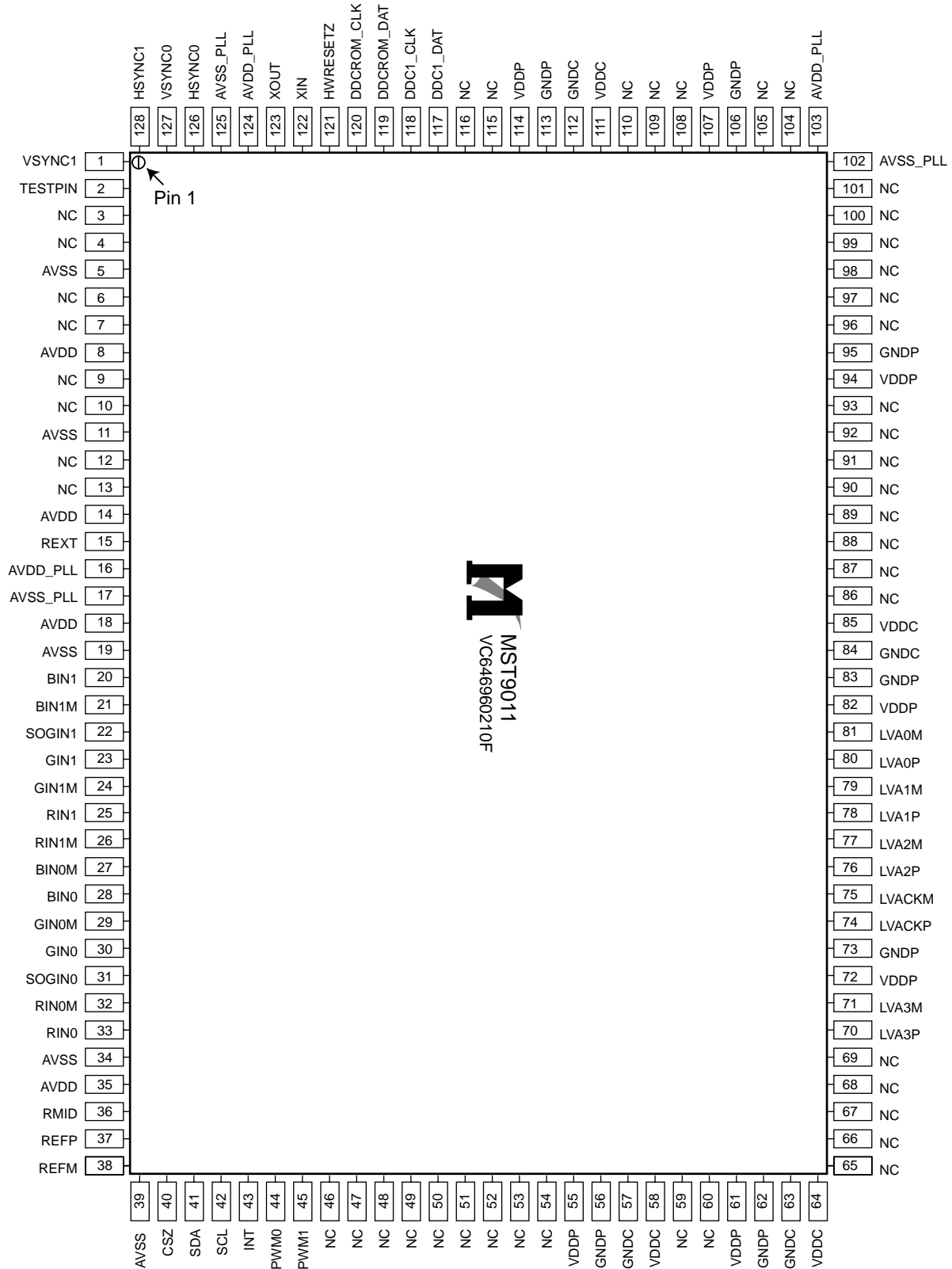
DATE: 2003. 6. 14.				
*S	*AL	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
		C732	0CK103CK51A	0.01UF 1608 50V 10% R/TP B(Y5)
		C760	0CE107EF610	100UF KMG,RD 16V 20% FL BULK
		C801	0CK103CK51A	0.01UF 1608 50V 10% R/TP B(Y5)
		C802	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C803	0CK105CD56A	1UF 1608 10V 10% R/TP X7R
		C804	0CC102CK41A	1000PF 1608 50V 5% R/TP NP0
		C817	0CE107EF610	100UF KMG,RD 16V 20% FL BULK
		C818	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C819	0CK103CK51A	0.01UF 1608 50V 10% R/TP B(Y5)
		C820	0CE107EF610	100UF KMG,RD 16V 20% FL BULK
		C821	0CK103CK51A	0.01UF 1608 50V 10% R/TP B(Y5)
		C822	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C828	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C829	0CK103CK51A	0.01UF 1608 50V 10% R/TP B(Y5)
		C831	0CE107EF610	100UF KMG,RD 16V 20% FL BULK
		C832	0CE107EF610	100UF KMG,RD 16V 20% FL BULK
DIODEs				
		D701	0DS226009AA	KDS226 TP KEC SOT-23 80V 300
		D702	0DS226009AA	KDS226 TP KEC SOT-23 80V 300
		D703	0DS226009AA	KDS226 TP KEC SOT-23 80V 300
		D706	0DS226009AA	KDS226 TP KEC SOT-23 80V 300
		D707	0DD184009AA	KDS184 TP KEC - 85V - - - 300
		ZD701	0DZ560009GB	BZT52C5V6S DIODES R/TP SOD323
		ZD702	0DZ560009GB	BZT52C5V6S DIODES R/TP SOD323
		ZD703	0DZ560009GB	BZT52C5V6S DIODES R/TP SOD323
		ZD704	0DZ560009GB	BZT52C5V6S DIODES R/TP SOD323
ICs				
		U201	0IPRPM3003A	MST9011 ANALOG MSTAR 128P LQF
		U501	0IZZTSZ281A	MYSON 44P PLCC ST OPT L1520BL
		U502	0ISG240860B	M24C08W6 SGS-THOMSON 8SOP R/T
		U702	0ICS240213A	CAT24WC02J-TE13 8P SOP TP 2K
		U801	0IPMGKE011A	KIA78D33F KEC DPAK R/TP 3.3V
		U802	0TFV180023A	VISHAY SI3865DV R/TP TSOP-6 8
		U803	0IPMGNS001D	LM1117MPX-2.5 NATIONAL SEMICO
TRANSISTOR				
		Q502	0TR390409AE	FAIRCHILD KST3904(LGEMTF) TP
		Q503	0IKE704200H	KIA7042AP TO-92 TP 4.2 VOLT.
		Q504	0TR390409AE	FAIRCHILD KST3904(LGEMTF) TP
		Q505	0TR390409AE	FAIRCHILD KST3904(LGEMTF) TP
		Q506	0TR390409AE	FAIRCHILD KST3904(LGEMTF) TP
		Q701	0TR390409AE	FAIRCHILD KST3904(LGEMTF) TP
		Q702	0TR390409AE	FAIRCHILD KST3904(LGEMTF) TP
		Q703	0TR390609FA	KST3906-MTF TP SAMSUNG SOT23
		Q704	0TR390609FA	KST3906-MTF TP SAMSUNG SOT23
		Q705	0TR390409AE	FAIRCHILD KST3904(LGEMTF) TP

DATE: 2003. 6. 14.				
*S	*AL	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
RESISTORS				
		R201	0RJ1500D677	150 OHM 1/10 W 5% 1608 R/TP
		R202	0RJ1500D677	150 OHM 1/10 W 5% 1608 R/TP
		R203	0RJ1500D677	150 OHM 1/10 W 5% 1608 R/TP
		R204	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R205	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R207	0RJ4700D677	470 OHM 1/10 W 5% 1608 R/TP
		R208	0RJ1500D677	150 OHM 1/10 W 5% 1608 R/TP
		R209	0RJ1500D677	150 OHM 1/10 W 5% 1608 R/TP
		R210	0RJ1500D677	150 OHM 1/10 W 5% 1608 R/TP
		R240	0RJ1500D677	150 OHM 1/10 W 5% 1608 R/TP
		R501	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R502	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R504	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R509	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R510	0RJ4700D677	470 OHM 1/10 W 5% 1608 R/TP
		R511	0RJ4700D677	470 OHM 1/10 W 5% 1608 R/TP
		R515	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R520	0RJ1003D677	100K OHM 1/10 W 5% 1608 R/TP
		R522	0RJ1000D677	100 OHM 1/10 W 5% 1608 R/TP
		R523	0RJ0332D677	33 OHM 1/10 W 5% 1608 R/TP
		R524	0RJ0332D677	33 OHM 1/10 W 5% 1608 R/TP
		R525	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R528	0RJ1000D677	100 OHM 1/10 W 5% 1608 R/TP
		R529	0RJ1000D677	100 OHM 1/10 W 5% 1608 R/TP
		R530	0RJ1000D677	100 OHM 1/10 W 5% 1608 R/TP
		R531	0RJ1000D677	100 OHM 1/10 W 5% 1608 R/TP
		R532	0RJ3301D677	3.3K OHM 1/10 W 5% 1608 R/TP
		R533	0RJ0332D677	33 OHM 1/10 W 5% 1608 R/TP
		R534	0RJ0332D677	33 OHM 1/10 W 5% 1608 R/TP
		R535	0RJ3301D677	3.3K OHM 1/10 W 5% 1608 R/TP
		R537	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R540	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R541	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R551	0RJ4702D677	47000 OHM 1/10 W 5% 1608 R/TP
		R571	0RJ1000D677	100 OHM 1/10 W 5% 1608 R/TP
		R581	0RJ1000D677	100 OHM 1/10 W 5% 1608 R/TP
		R590	0RJ1000D677	100 OHM 1/10 W 5% 1608 R/TP
		R591	0RJ1000D677	100 OHM 1/10 W 5% 1608 R/TP
		R592	0RJ1000D677	100 OHM 1/10 W 5% 1608 R/TP
		R593	0RJ1000D677	100 OHM 1/10 W 5% 1608 R/TP
		R701	0RJ0752D677	75 OHM 1/10 W 5% 1608 R/TP
		R703	0RJ0752D677	75 OHM 1/10 W 5% 1608 R/TP
		R705	0RJ1501D677	1.5K OHM 1/10 W 5% 1608 R/TP
		R706	0RJ0752D677	75 OHM 1/10 W 5% 1608 R/TP
		R707	0RJ0682D677	68 OHM 1/10 W 5% 1608 R/TP
		R708	0RJ4700D677	470 OHM 1/10 W 5% 1608 R/TP
		R709	0RJ1001D677	1K OHM 1/10 W 5% 1608 R/TP
		R716	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R717	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R722	0RJ1000D677	100 OHM 1/10 W 5% 1608 R/TP
		R723	0RJ0332D677	33 OHM 1/10 W 5% 1608 R/TP
		R724	0RJ0332D677	33 OHM 1/10 W 5% 1608 R/TP
		R725	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R726	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R727	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R733	0RJ1001D677	1K OHM 1/10 W 5% 1608 R/TP
		R734	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R735	0RJ0000D677	0 OHM 1/10 W 5% 1608 R/TP
		R740	0RJ1001D677	1K OHM 1/10 W 5% 1608 R/TP
		R741	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R744	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP

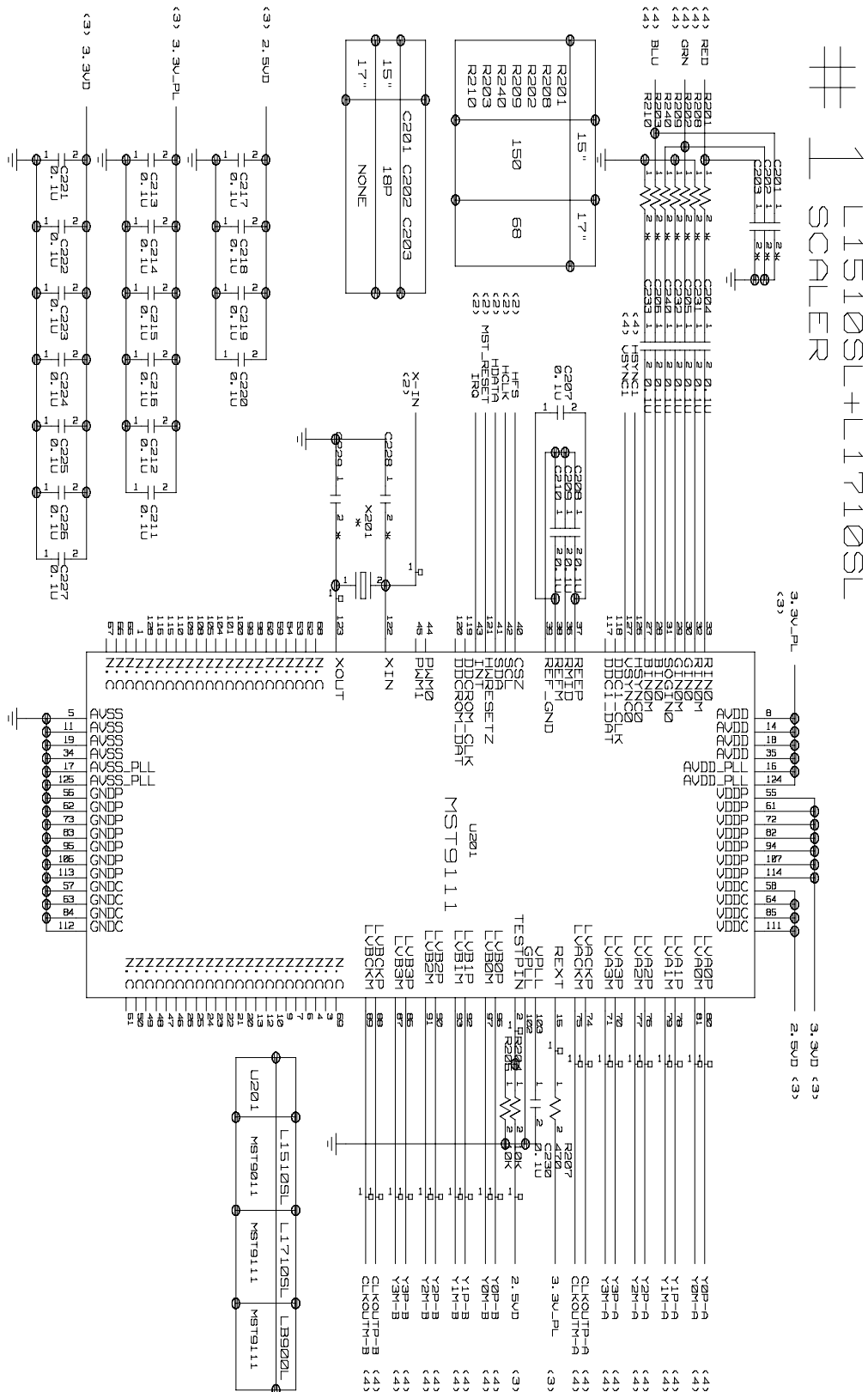
DATE: 2003. 6. 14.				
*S	*AL	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
		R745	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R747	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R748	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R749	0RJ0000D677	0 OHM 1/10 W 5% 1608 R/TP
		R750	0RJ1001D677	1K OHM 1/10 W 5% 1608 R/TP
		R751	0RJ1001D677	1K OHM 1/10 W 5% 1608 R/TP
		R753	0RJ1001D677	1K OHM 1/10 W 5% 1608 R/TP
		R779	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R802	0RJ0000D677	0 OHM 1/10 W 5% 1608 R/TP
		R803	0RJ0000D677	0 OHM 1/10 W 5% 1608 R/TP
		R811	0RJ2202D677	22K OHM 1/10 W 5% 1608 R/TP
		R812	0RJ5600D677	560 OHM 1/10 W 5% 1608 R/TP
		R840	0RJ0471D677	4.7 OHM 1/10 W 5% 1608 R/TP
		R841	0RJ0471D677	4.7 OHM 1/10 W 5% 1608 R/TP
		R842	0RJ0471D677	4.7 OHM 1/10 W 5% 1608 R/TP
		R843	0RJ0471D677	4.7 OHM 1/10 W 5% 1608 R/TP
		R844	0RJ0471D677	4.7 OHM 1/10 W 5% 1608 R/TP
		R845	0RJ0471D677	4.7 OHM 1/10 W 5% 1608 R/TP
		R846	0RJ0471D677	4.7 OHM 1/10 W 5% 1608 R/TP
		R847	0RJ0471D677	4.7 OHM 1/10 W 5% 1608 R/TP
		R848	0RJ0471D677	4.7 OHM 1/10 W 5% 1608 R/TP
		R849	0RJ0471D677	4.7 OHM 1/10 W 5% 1608 R/TP
OTHERs				
		X501	6212AA2004A	HC-49U TXC 12.0MHZ +/- 30 PPM
CONTROL BOARD				
		R1	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R2	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R3	0RJ1501D677	1.5K OHM 1/10 W 5% 1608 R/TP
		R4	0RJ1501D677	1.5K OHM 1/10 W 5% 1608 R/TP
		R5	0RJ3301D677	3.3K OHM 1/10 W 5% 1608 R/TP
		R6	0RJ3301D677	3.3K OHM 1/10 W 5% 1608 R/TP
		R7	0RJ9101D677	9.1K OHM 1/10 W 5% 1608 R/TP
		SW1	6600R00004A	JTP1138A6EM JEIL 12VDC 50MA S
		SW2	6600R00004A	JTP1138A6EM JEIL 12VDC 50MA S
		SW3	6600R00004A	JTP1138A6EM JEIL 12VDC 50MA S
		SW4	6600R00004A	JTP1138A6EM JEIL 12VDC 50MA S
		SW5	6600R00004A	JTP1138A6EM JEIL 12VDC 50MA S
		SW6	6600R00004A	JTP1138A6EM JEIL 12VDC 50MA S
		SW7	6600R00004A	JTP1138A6EM JEIL 12VDC 50MA S
		ZD1	0DZ560009GB	BZT52C5V6S DIODES R/TP SOD323
		ZD2	0DZ560009GB	BZT52C5V6S DIODES R/TP SOD323

PIN CONFIGURATION

MST9011 ANALOG MSTAR 128P

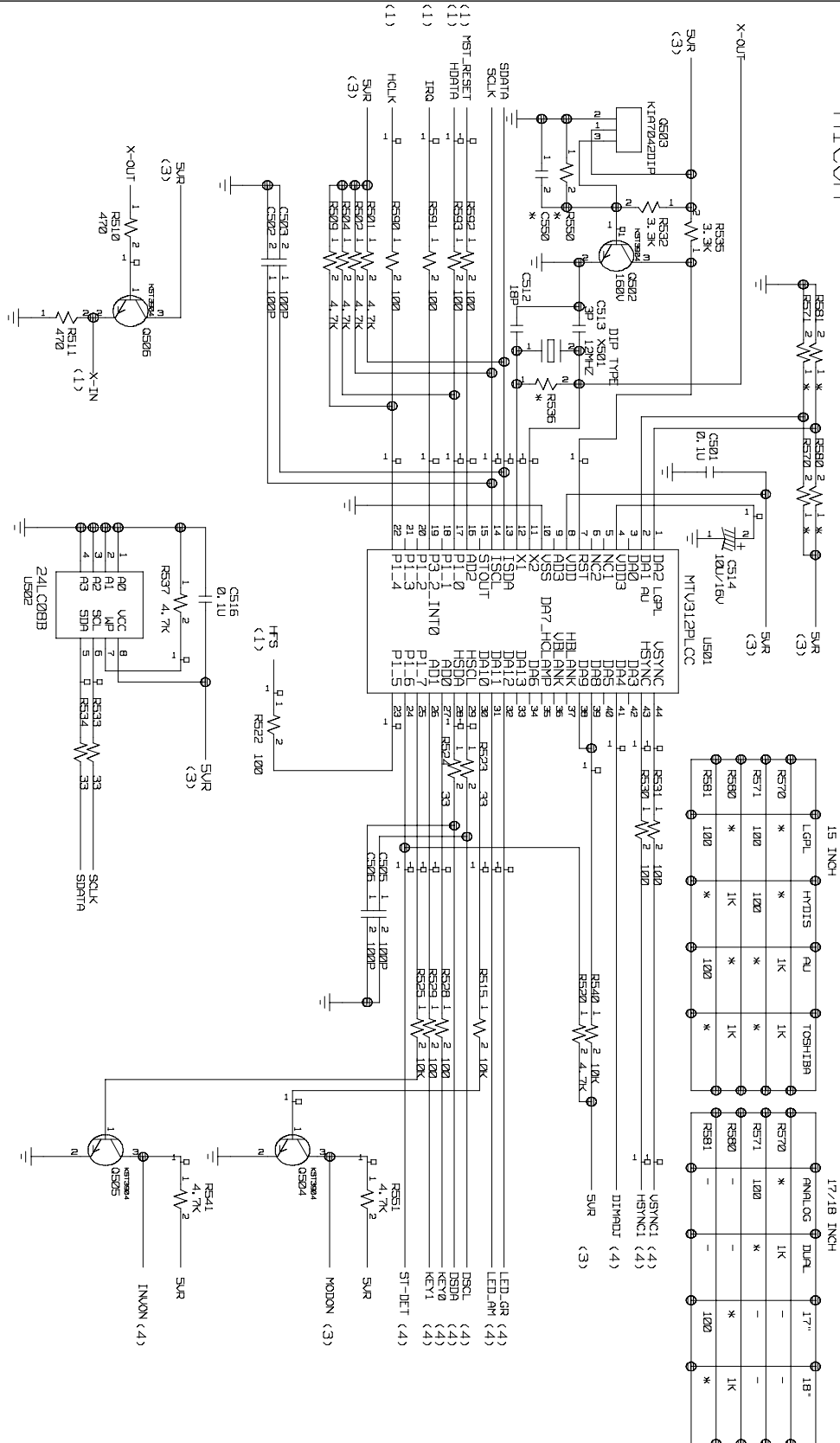


1. SCALER

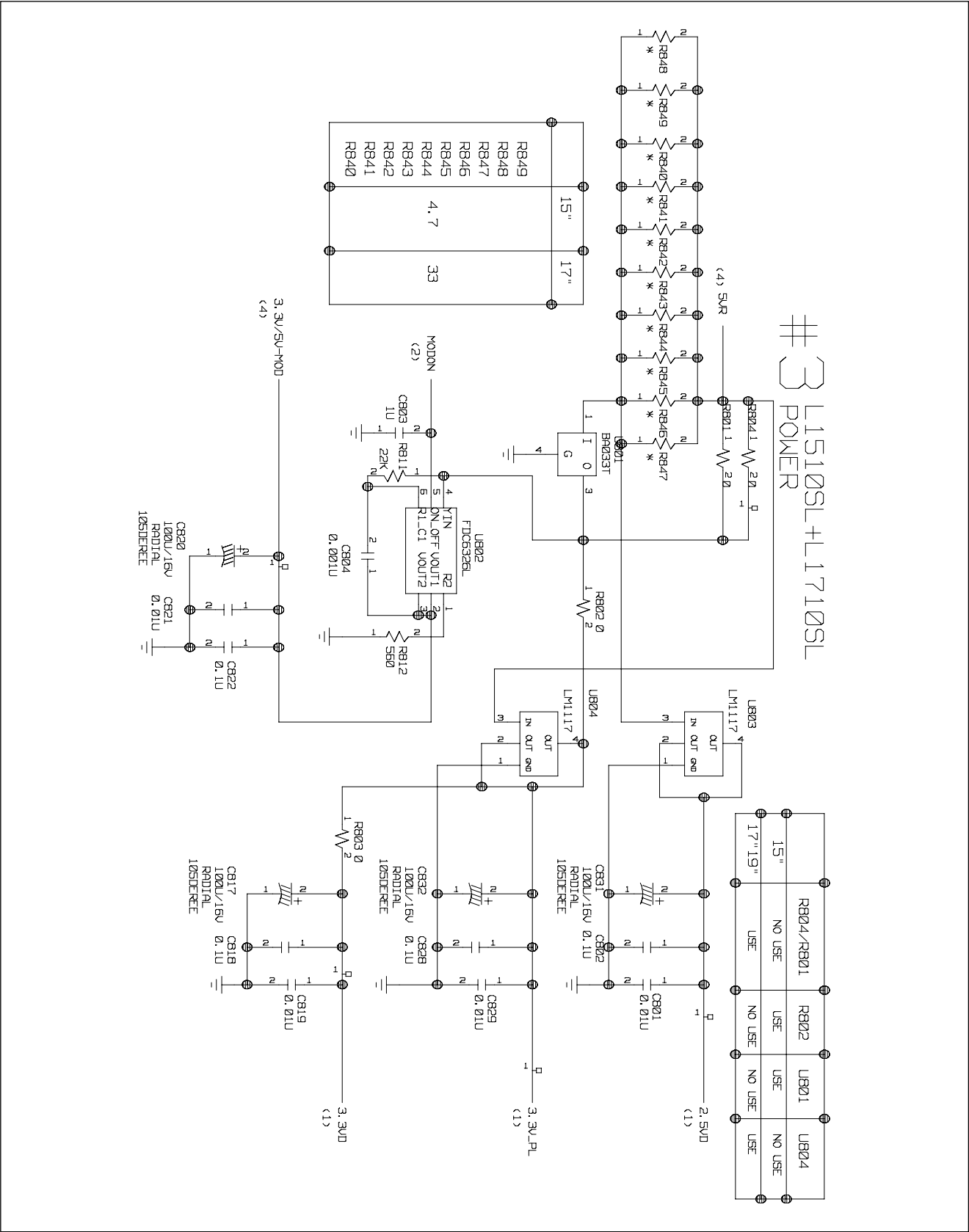


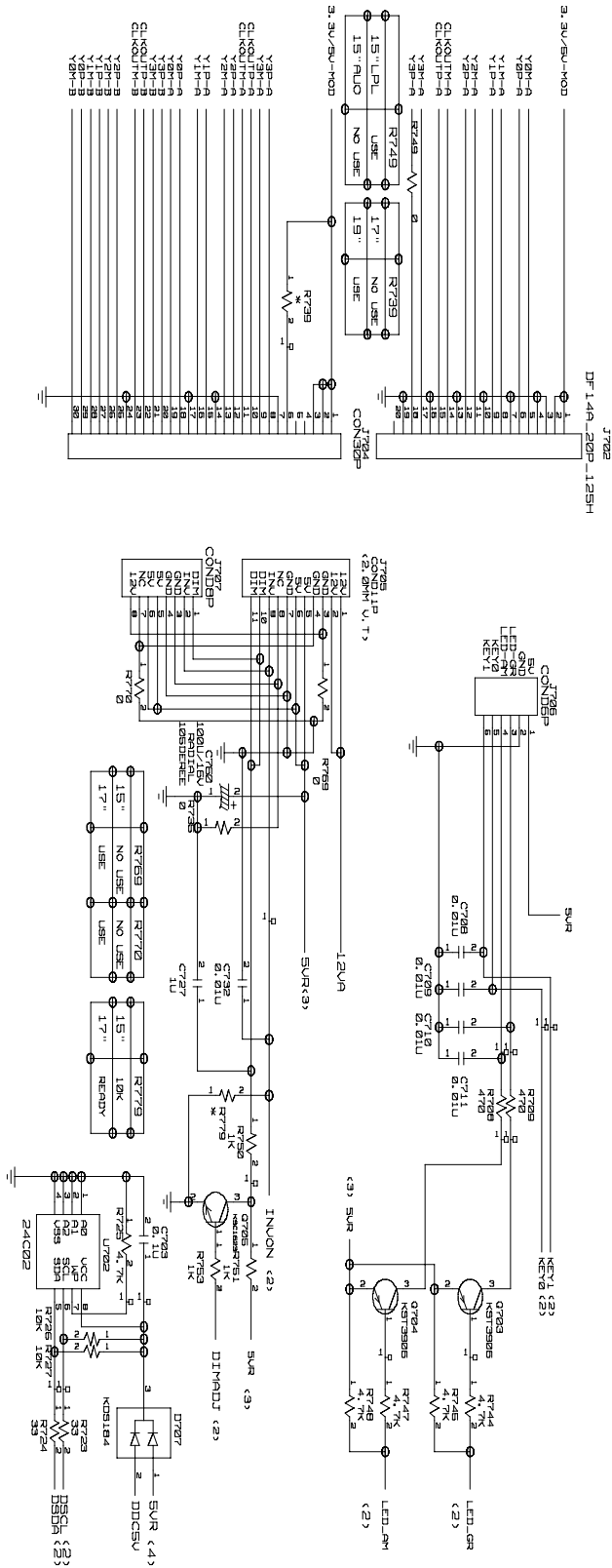
2. MICOM

#2 L1510SL+L1710SL
MICOM

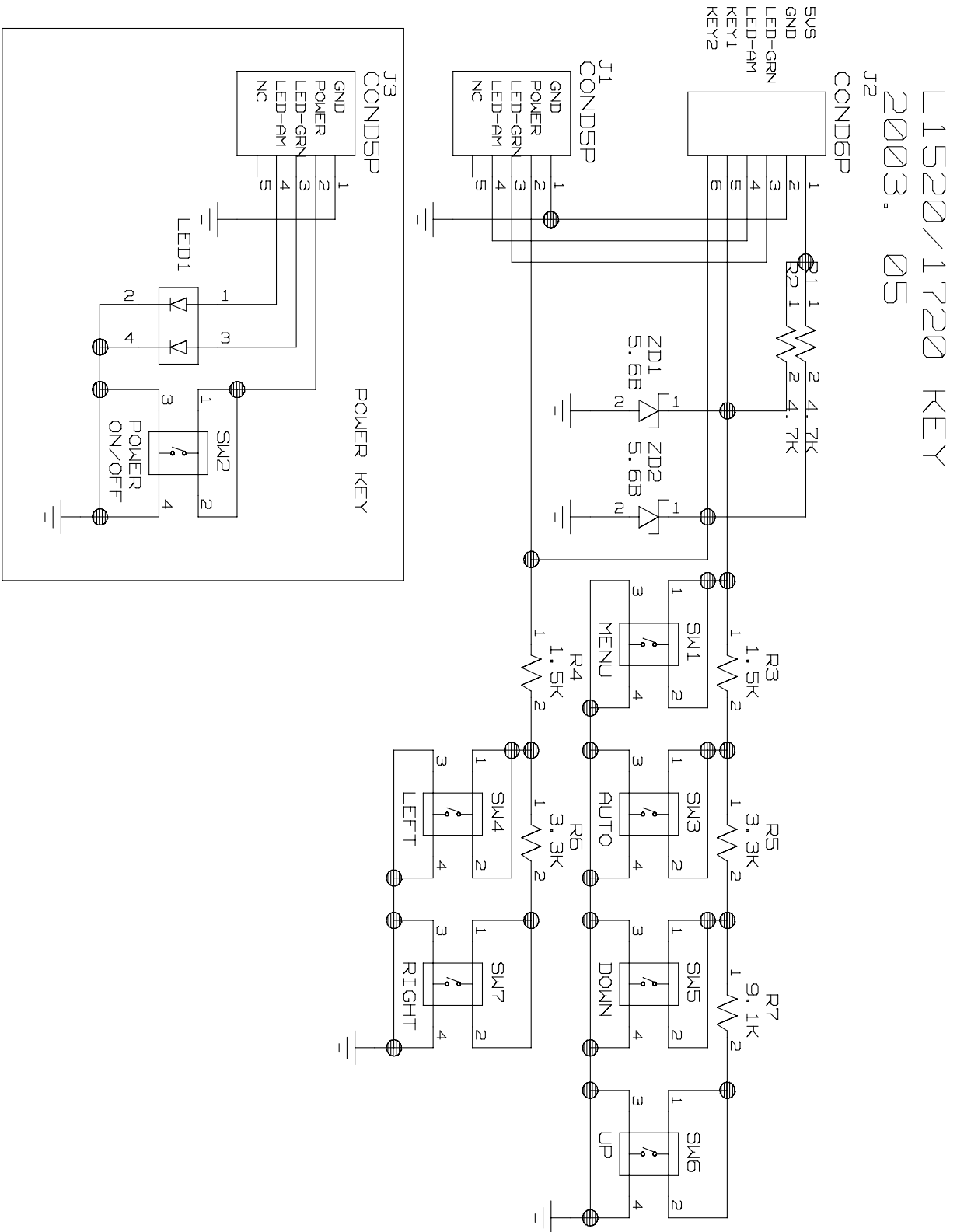


3. POWER



1510SL+1710SL
CONNECTOR & JACKS

5.KEY





P/NO : 3828TSL097A

Jun. 2003
Printed in Korea