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COLOR MONITOR SERVICE MANUAL

CHASSIS NO. : CL-32

MODEL: FLATRON L1510S (L1510SL-ALR)**

*() **Same model for Service

CAUTION

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



*To apply the Mstar Chip.

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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	GREEN
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)

Width : 356mm (14.01")
 Depth : 151.7mm (5.97")
 Height : 359.8mm (14.16")

7. WEIGHT (with TILT/SWIVEL)

Net. Weight : 4.0kg (8.82 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 \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

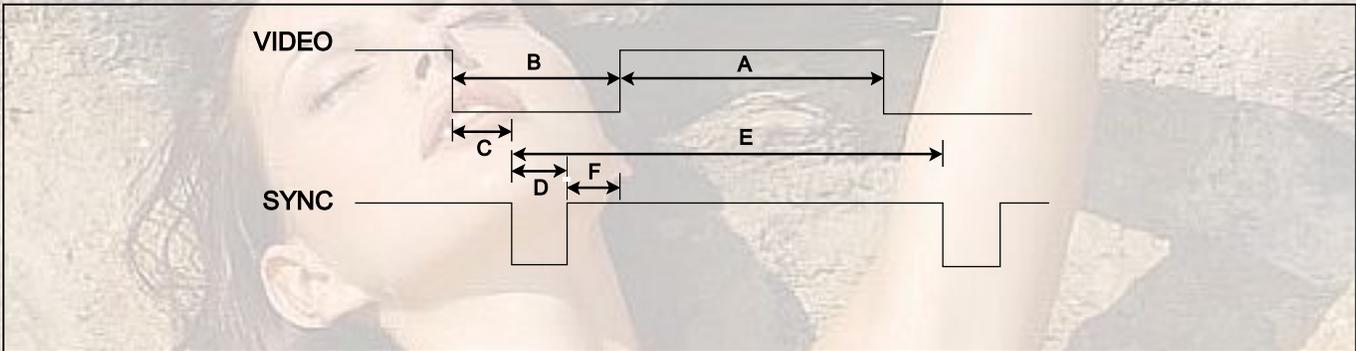
Please use only a plastic screwdriver to protect yourself from shock hazard during service operation.

\triangle WARNING

BE CAREFUL ELECTRIC SHOCK !

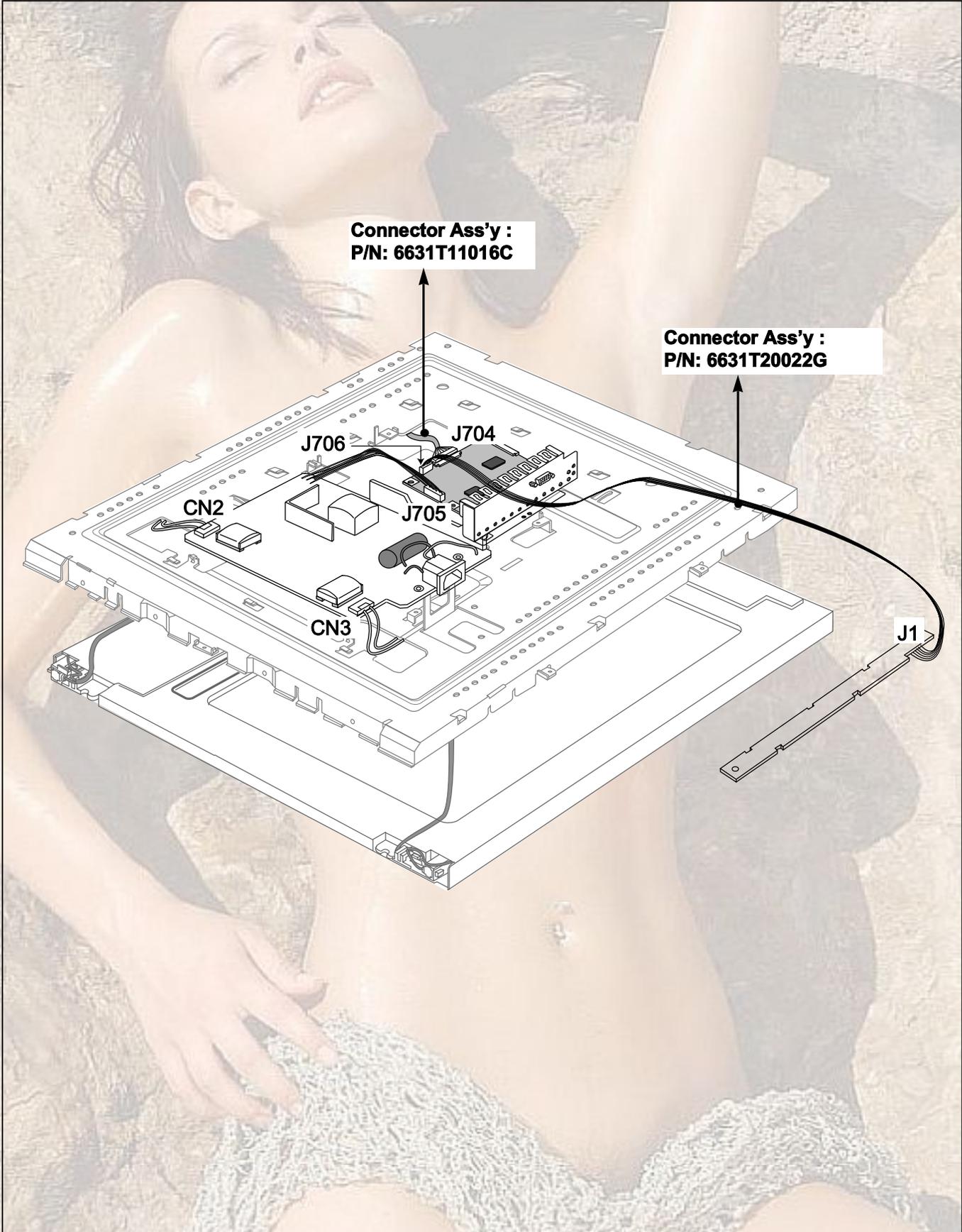
- If you want to replace with the new backlight (CCFL) or inverter circuit, must disconnect the AC adapter because high voltage appears at inverter circuit about 650Vrms.
- Handle with care wires or connectors of the inverter circuit. If the wires are pressed cause short and may burn or take fire.

TIMING CHART

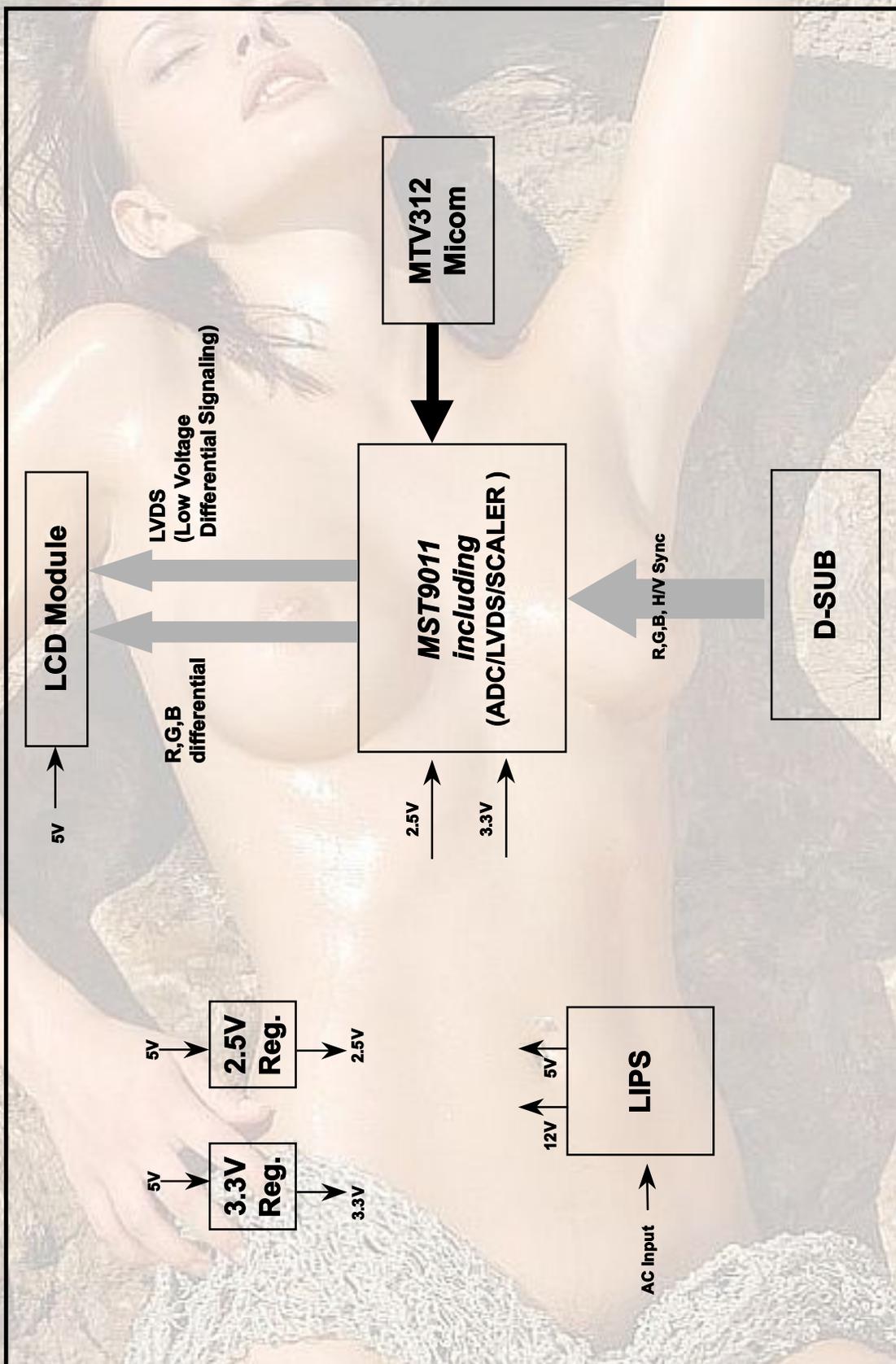


MODE	H / V	Sync Polarity	Dot Clock	Frequency	Total Period (E)	Video Active Time (A)	Blanking Time (B)	Sync Duration (D)	Back Porch (F)	Front Porch (C)	Resolution
1	H (Pixels)	+	25.175	31.468 KHz	800	640	160	96	48	16	640 x 350
	V (Lines)	-		70.0 Hz	449	350	99	2	60	37	
2	H (Pixels)	-	28.322	31.468 KHz	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	

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

All adjustment are thoroughly checked and corrected when the monitor leaves the factory, but sometimes several minor adjustment may be required.

Adjustment should be following procedure and after warming up for a minimum of 10 minutes.

Alignment appliances and tools.

- IBM Compatible PC
- Programmable Signal Generator.
(eg. VG-819 made by Astrodesign Co.)
- E(E)PROM with each mode data saved.
- Alignment Adapter and Software.

1. Adjustment for Factory Preset Mode

- 1) Run alignment program for L1510SL on the IBM compatible PC.
- 2) Select EEPROM All Init. command and Enter.
- 3) Display cross hatch pattern at Mode 1.
- 4) Select EDID WRITE command and Enter.

2. Adjustment for White Balance

- 1) Display color 0,0 pattern at Mode 12.
- 2) Set External Bright to MAX position and Contrast to MAX Position.
- 3) Select PRESET START → BIAS CAL command and Enter.
- 4) No attempt to manually adjust, BIAS data is automatically adjusted and saved to the EEPROM.
- 5) Display color 15,0 pattern at Mode 13.
- 6) Select DRIVE CAL command and Enter.
- 7) Color 1 (9300K) and Color 2 (6500K) are automatically adjusted and saved to the EEPROM.
- 8) Select PRESET EXIT command and Enter.

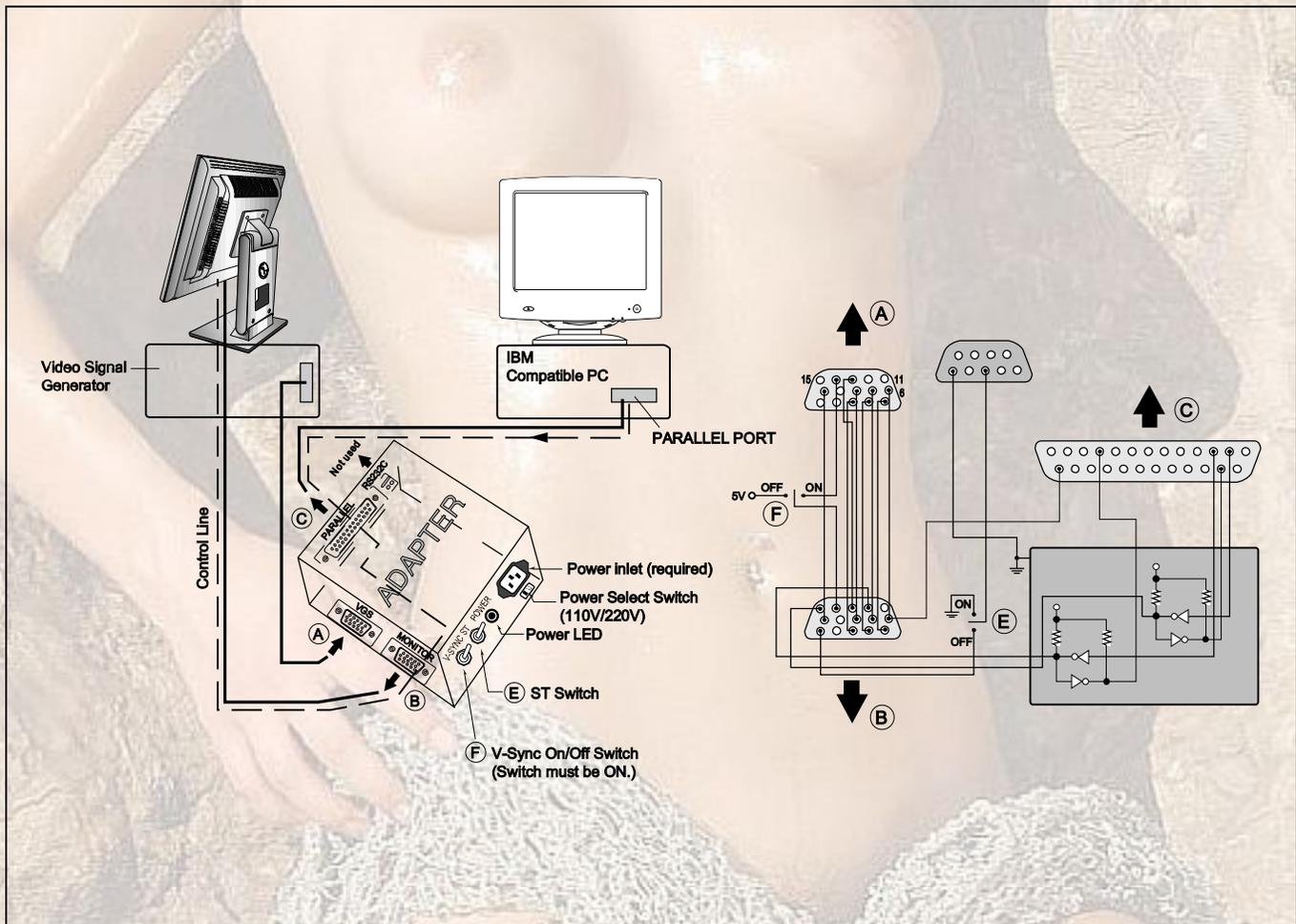
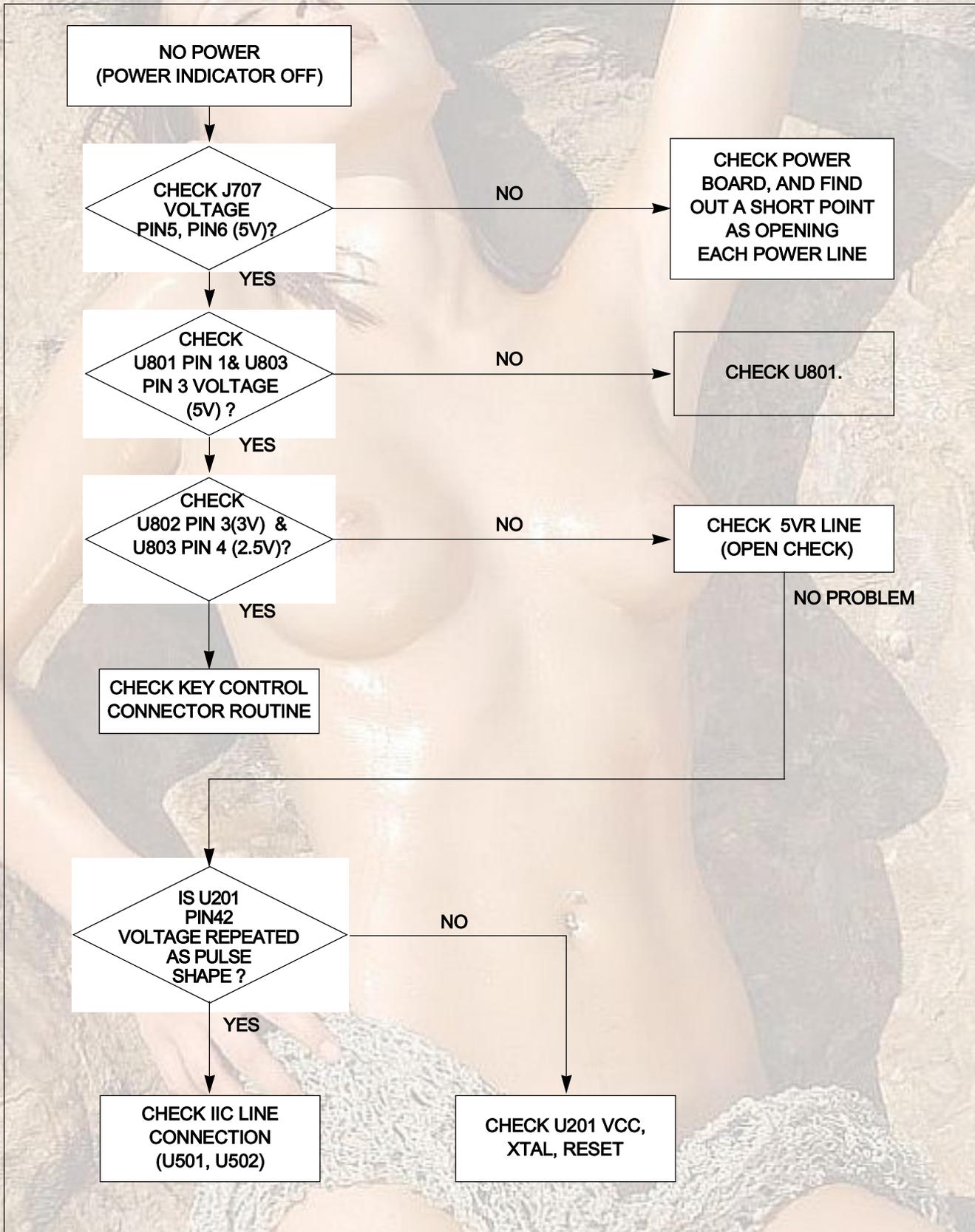


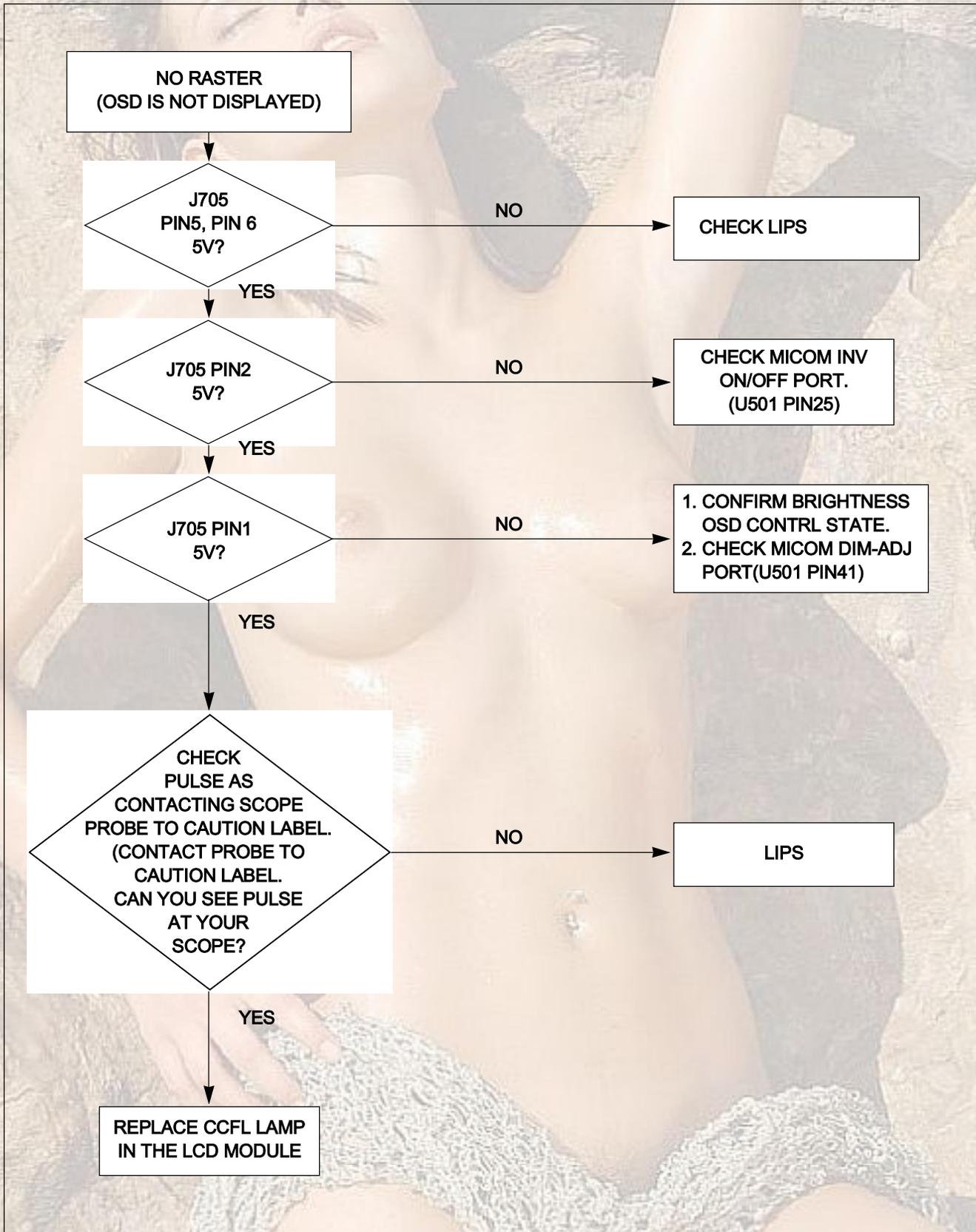
Figure 1. Cable Connection

TROUBLESHOOTING GUIDE

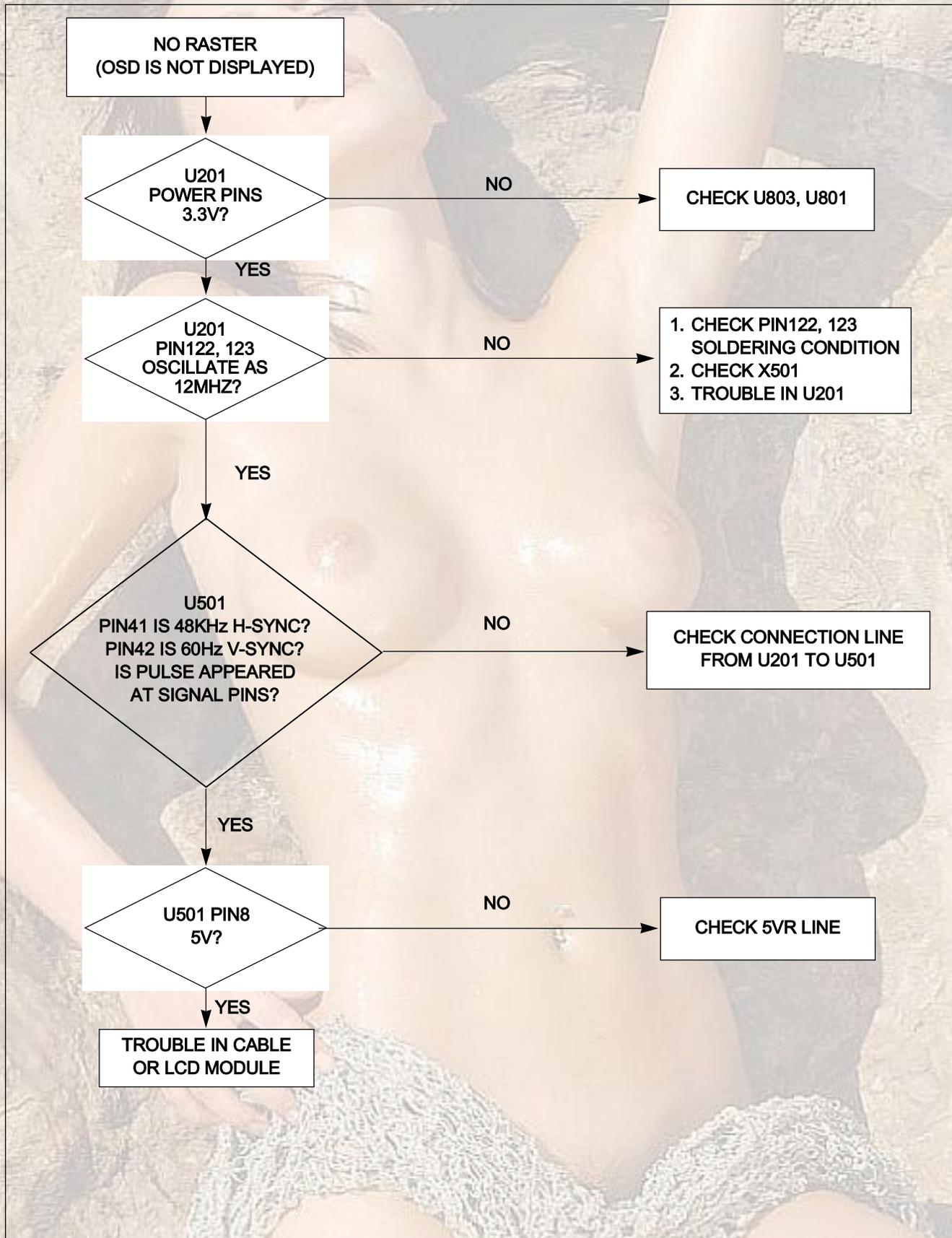
1. NO POWER



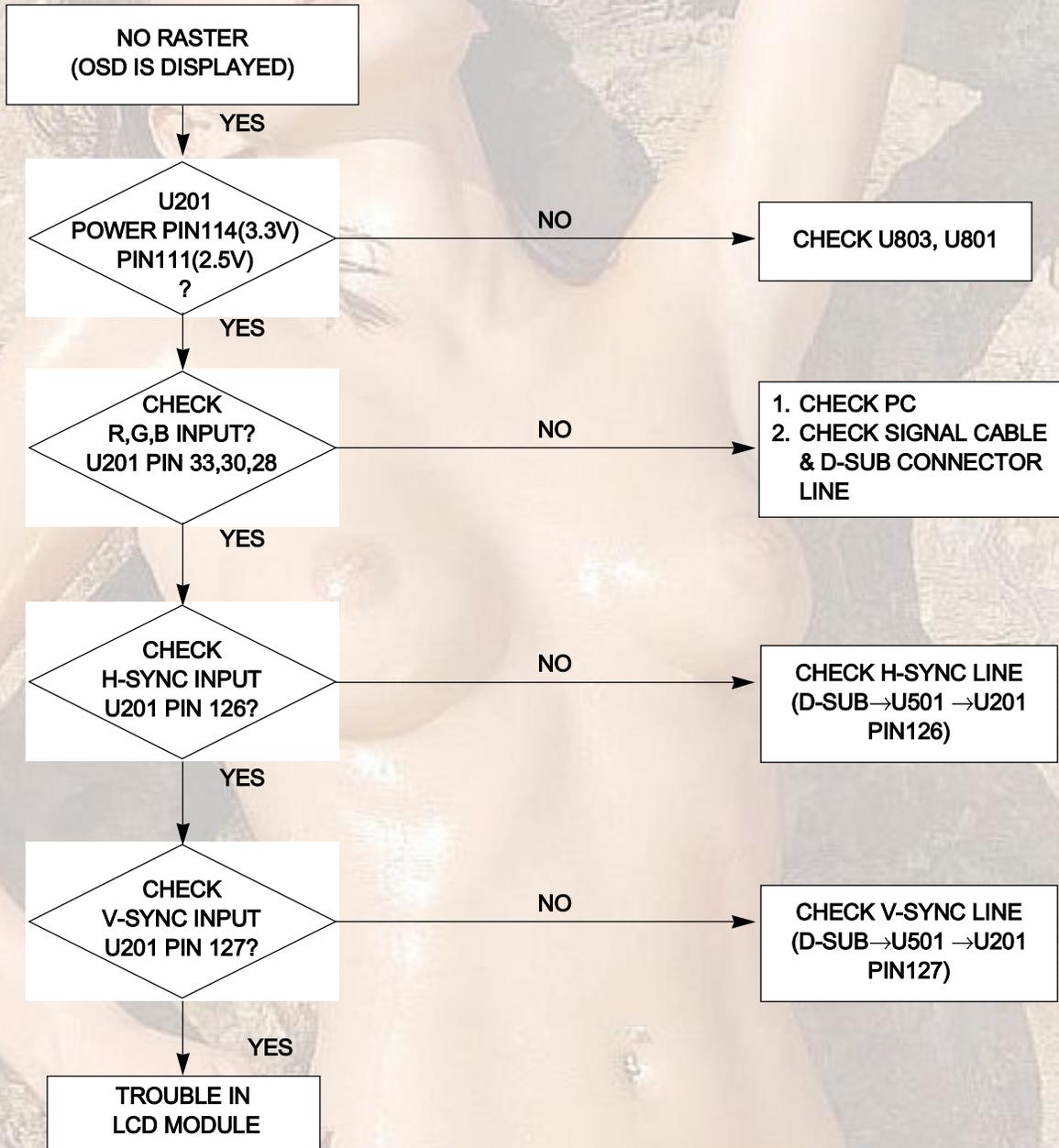
2. NO RASTER (OSD IS NOT DISPLAYED) – LIPS



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

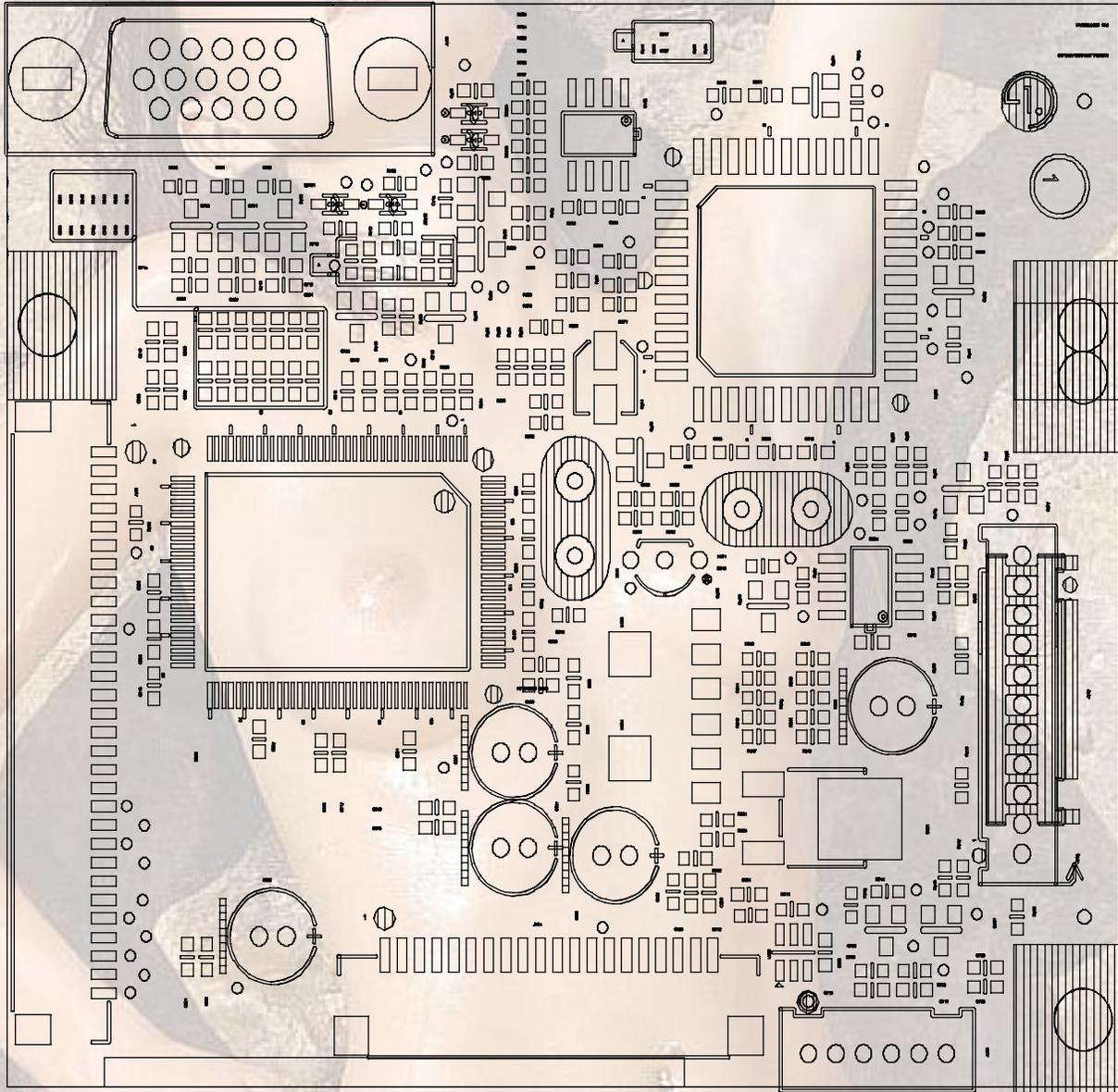


4. NO RASTER (OSD IS DISPLAYED) – MST9011

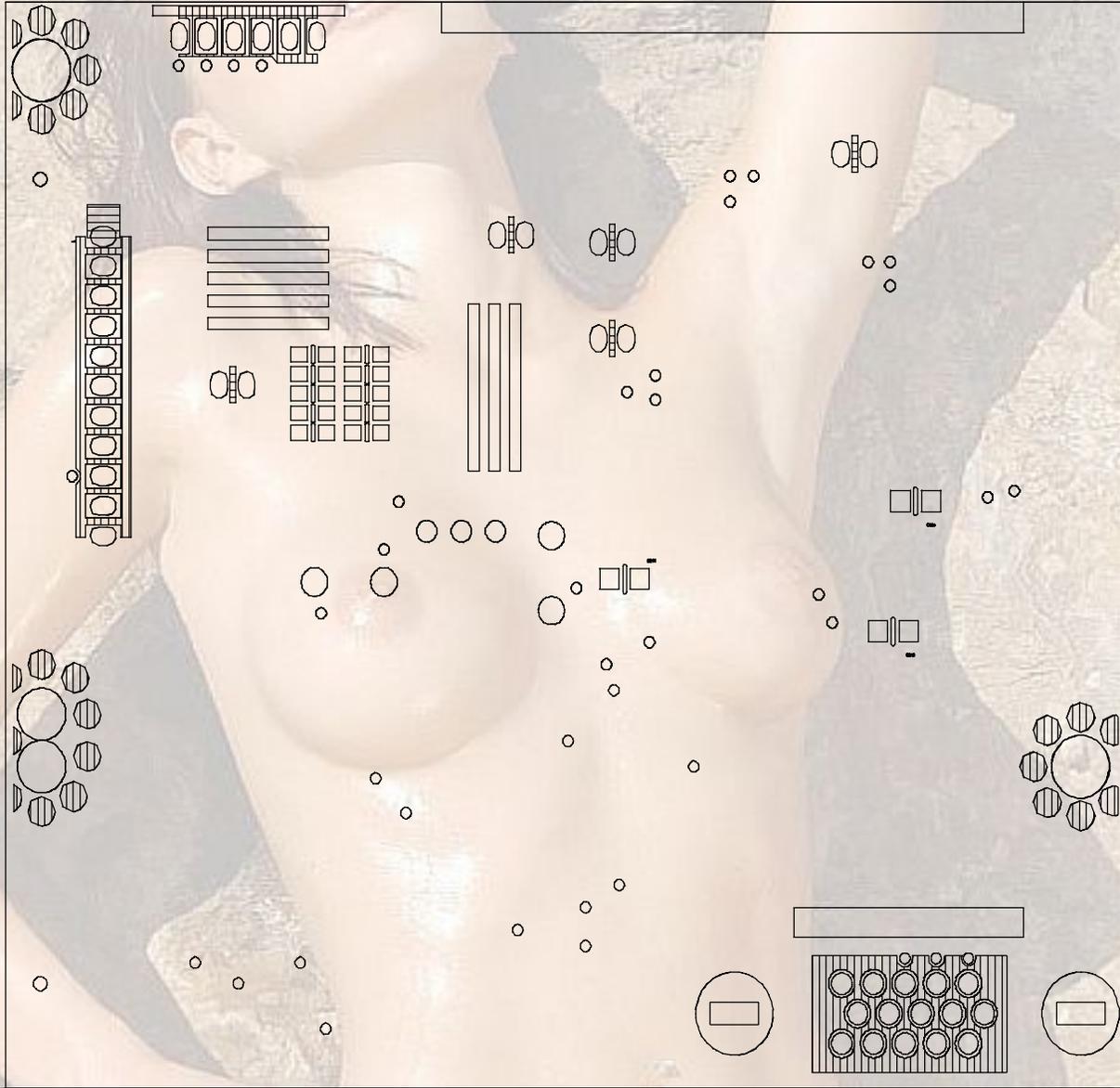


PRINTED CIRCUIT BOARD

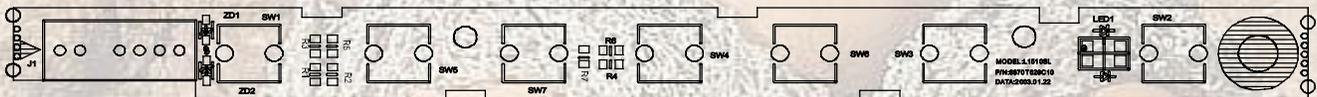
1. MAIN BOARD (Component Side)



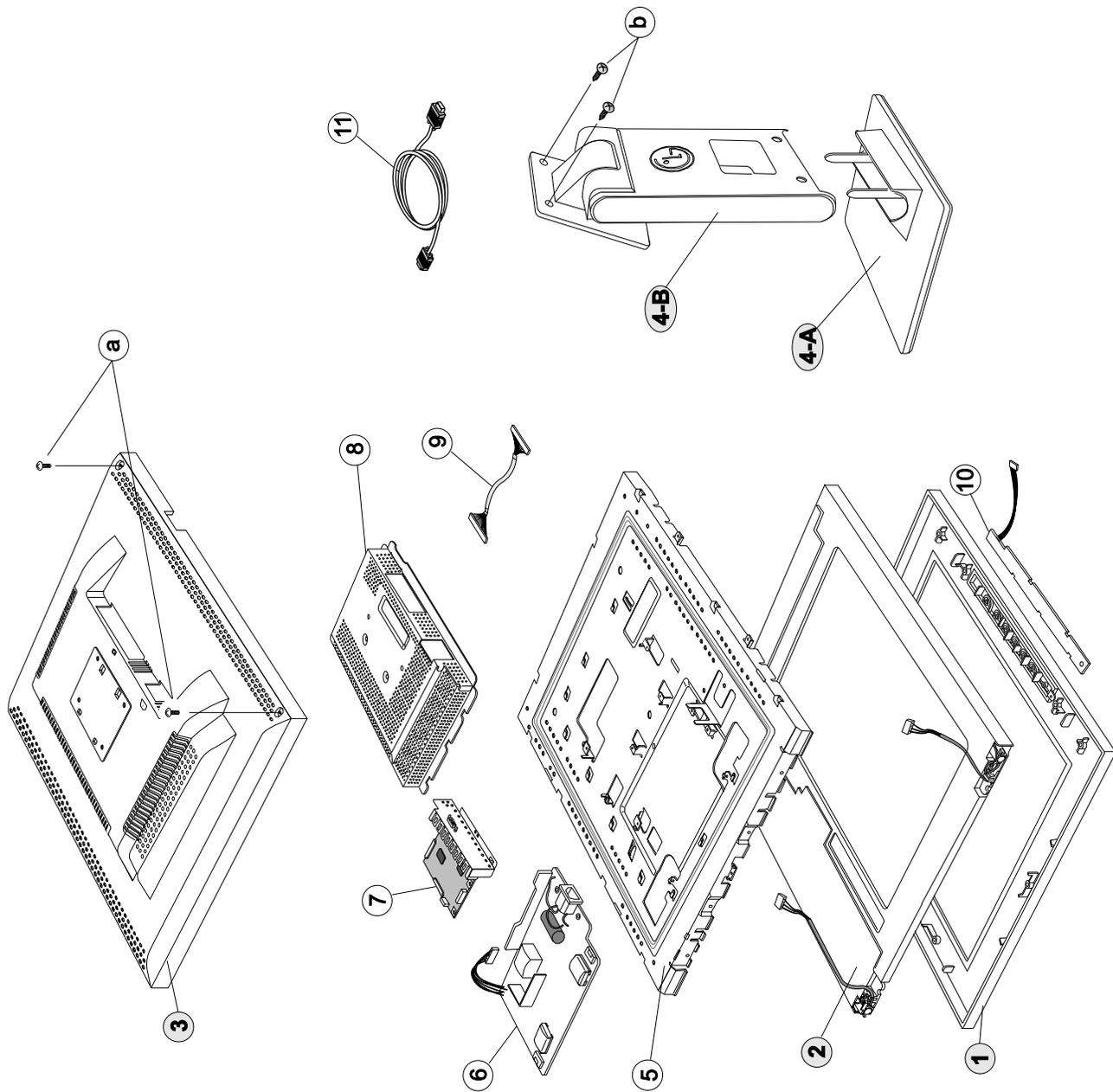
2. MAIN BOARD (Solder Side)



3. CONTROL BOARD (Component Side)



EXPLODED VIEW



EXPLODED VIEW PARTS LIST

Ref. No.	Part No.	Description
1	3091TKL055S	CABINET ASSEMBLY, L1510SL BRAND 3090TKL038
2	6304FLP025A	LCD(LIQUID CRYSTAL DISPLAY), LM150X06-A3M1 LG PHILIPS TFT COLOR 15.0 INCH XGA LVDS SMM
3	3809TKL026Y	BACK COVER ASSEMBLY, L1510SL 3808TKL029
4-A	3043TKK097A	TILT SWIVEL ASSEMBLY LB500J . (BASE)
4-B	3043TKK092A	TILT SWIVEL ASSEMBLY LB500J . .
5	4951TKS091R	METAL ASSEMBLY, FRAME MAIN (L1510SL,LPL P4)
6	6871TPT242B	PWB(PCB) ASSEMBLY, POWER, 15" LPL(L1510SL) POWER TOTAL SPI FSP017-2PI02
	or 6871TPT234D	PWB(PCB) ASSEMBLY, POWER, L1510SL POWER TOTAL POWERNET PWI1510LG 12V/1.2A 5V/1A LIPS FOR L-CHASSIS LPL
	or 6871TPT235B	PWB(PCB) ASSEMBLY, POWER, L1510SL POWER TOTAL SANKEN 3L038WK
	or 6871TPT236B	PWB(PCB) ASSEMBLY, POWER, ADP-30EP POWER TOTAL DELTA L1510SL LIPS
7	3313TL5061A	MAIN TOTAL ASSEMBLY, L1510SL BRAND CL-32
8	4950TKK424F	METAL, SHIELD REAR(LB504N)
9	6631T11016C	CONNECTOR ASSEMBLY, 20P H-H 100MM UL20276 I/FACE CABLE LB500K
10	6871TST383A	PWB(PCB) ASSEMBLY, SUB, L1510SL CONTROL TOTAL BRAND CL-32
11	6850TD9004D	CABLE, D-SUB, UL20276-9C(5.8MM) DT 1560MM GRAY(85964) LB500L DM
a	332-068U	SCREW, PPB+3*8 (MSWR/FZMW1)
b	332-105H	SCREW, DRAWING, D4.0 L12.0 MSWR/BK -

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. 3. 3.				
*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

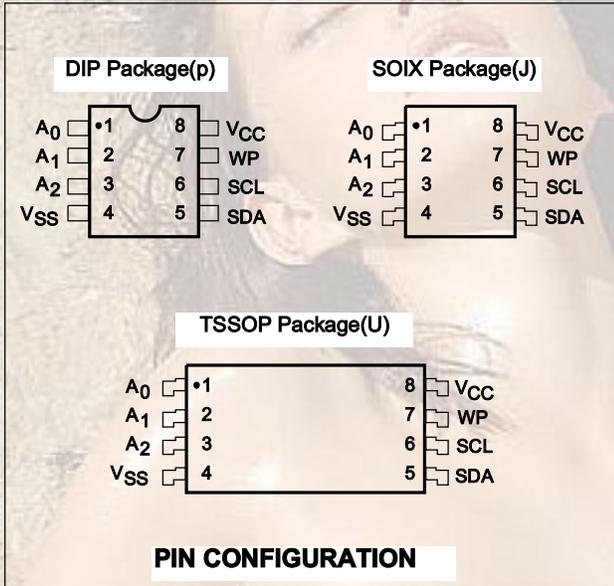
DATE: 2003. 3. 3.				
*S	*AL	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
		C732	0CK103CK51A	0.01UF 1608 50V 10% R/TP B(Y5)
		C760	0CE107EF610	"100UF KMG,RD 16V 20% FL BULK"
		C801	0CK103CK51A	0.01UF 1608 50V 10% R/TP B(Y5)
		C802	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C803	0CK105CD56A	1UF 1608 10V 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	0IZZTSZ250B	MYSON 44P PLCC ST OTP L1510SL
		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. 3. 3.			
*S	*AL	LOC. NO.	PART NO. DESCRIPTION / SPECIFICATION
RESISTORS			
		R201	ORJ1500D677 150 OHM 1/10 W 5% 1608 R/TP
		R202	ORJ1500D677 150 OHM 1/10 W 5% 1608 R/TP
		R203	ORJ1500D677 150 OHM 1/10 W 5% 1608 R/TP
		R204	ORJ1002D677 10K OHM 1/10 W 5% 1608 R/TP
		R205	ORJ1002D677 10K OHM 1/10 W 5% 1608 R/TP
		R207	ORJ4700D677 470 OHM 1/10 W 5% 1608 R/TP
		R208	ORJ1500D677 150 OHM 1/10 W 5% 1608 R/TP
		R209	ORJ1500D677 150 OHM 1/10 W 5% 1608 R/TP
		R210	ORJ1500D677 150 OHM 1/10 W 5% 1608 R/TP
		R240	ORJ1500D677 150 OHM 1/10 W 5% 1608 R/TP
		R501	ORJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
		R502	ORJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
		R504	ORJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
		R509	ORJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
		R510	ORJ4700D677 470 OHM 1/10 W 5% 1608 R/TP
		R511	ORJ4700D677 470 OHM 1/10 W 5% 1608 R/TP
		R515	ORJ1002D677 10K OHM 1/10 W 5% 1608 R/TP
		R520	ORJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
		R522	ORJ1000D677 100 OHM 1/10 W 5% 1608 R/TP
		R523	ORJ0332D677 33 OHM 1/10 W 5% 1608 R/TP
		R524	ORJ0332D677 33 OHM 1/10 W 5% 1608 R/TP
		R525	ORJ1002D677 10K OHM 1/10 W 5% 1608 R/TP
		R528	ORJ1000D677 100 OHM 1/10 W 5% 1608 R/TP
		R529	ORJ1000D677 100 OHM 1/10 W 5% 1608 R/TP
		R530	ORJ1000D677 100 OHM 1/10 W 5% 1608 R/TP
		R531	ORJ1000D677 100 OHM 1/10 W 5% 1608 R/TP
		R532	ORJ3301D677 3.3K OHM 1/10 W 5% 1608 R/TP
		R533	ORJ0332D677 33 OHM 1/10 W 5% 1608 R/TP
		R534	ORJ0332D677 33 OHM 1/10 W 5% 1608 R/TP
		R535	ORJ3301D677 3.3K OHM 1/10 W 5% 1608 R/TP
		R537	ORJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
		R540	ORJ1002D677 10K OHM 1/10 W 5% 1608 R/TP
		R541	ORJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
		R551	ORJ4702D677 4700 OHM 1/10 W 5% 1608 R/TP
		R571	ORJ1000D677 100 OHM 1/10 W 5% 1608 R/TP
		R581	ORJ1000D677 100 OHM 1/10 W 5% 1608 R/TP
		R590	ORJ1000D677 100 OHM 1/10 W 5% 1608 R/TP
		R591	ORJ1000D677 100 OHM 1/10 W 5% 1608 R/TP
		R592	ORJ1000D677 100 OHM 1/10 W 5% 1608 R/TP
		R593	ORJ1000D677 100 OHM 1/10 W 5% 1608 R/TP
		R701	ORJ0752D677 75 OHM 1/10 W 5% 1608 R/TP
		R703	ORJ0752D677 75 OHM 1/10 W 5% 1608 R/TP
		R705	ORJ1000D677 100 OHM 1/10 W 5% 1608 R/TP
		R706	ORJ0752D677 75 OHM 1/10 W 5% 1608 R/TP
		R707	ORJ0682D677 68 OHM 1/10 W 5% 1608 R/TP
		R708	ORJ4700D677 470 OHM 1/10 W 5% 1608 R/TP
		R709	ORJ4700D677 470 OHM 1/10 W 5% 1608 R/TP
		R716	ORJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
		R717	ORJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
		R722	ORJ1000D677 100 OHM 1/10 W 5% 1608 R/TP
		R723	ORJ0332D677 33 OHM 1/10 W 5% 1608 R/TP
		R724	ORJ0332D677 33 OHM 1/10 W 5% 1608 R/TP
		R725	ORJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
		R726	ORJ1002D677 10K OHM 1/10 W 5% 1608 R/TP
		R727	ORJ1002D677 10K OHM 1/10 W 5% 1608 R/TP
		R733	ORJ1001D677 1K OHM 1/10 W 5% 1608 R/TP
		R734	ORJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
		R735	ORJ0000D677 0 OHM 1/10 W 5% 1608 R/TP
		R740	ORJ1001D677 1K OHM 1/10 W 5% 1608 R/TP
		R741	ORJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
		R744	ORJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP

DATE: 2003. 3. 3.			
*S	*AL	LOC. NO.	PART NO. DESCRIPTION / SPECIFICATION
		R745	ORJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
		R747	ORJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
		R748	ORJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
		R749	ORJ0000D677 0 OHM 1/10 W 5% 1608 R/TP
		R750	ORJ1001D677 1K OHM 1/10 W 5% 1608 R/TP
		R751	ORJ1001D677 1K OHM 1/10 W 5% 1608 R/TP
		R753	ORJ1001D677 1K OHM 1/10 W 5% 1608 R/TP
		R779	ORJ1002D677 10K OHM 1/10 W 5% 1608 R/TP
		R802	ORJ0000D677 0 OHM 1/10 W 5% 1608 R/TP
		R803	ORJ0000D677 0 OHM 1/10 W 5% 1608 R/TP
		R811	ORJ2202D677 22K OHM 1/10 W 5% 1608 R/TP
		R812	ORJ5600D677 560 OHM 1/10 W 5% 1608 R/TP
		R840	ORJ0471D677 4.7 OHM 1/10 W 5% 1608 R/TP
		R841	ORJ0471D677 4.7 OHM 1/10 W 5% 1608 R/TP
		R842	ORJ0471D677 4.7 OHM 1/10 W 5% 1608 R/TP
		R843	ORJ0471D677 4.7 OHM 1/10 W 5% 1608 R/TP
		R844	ORJ0471D677 4.7 OHM 1/10 W 5% 1608 R/TP
		R845	ORJ0471D677 4.7 OHM 1/10 W 5% 1608 R/TP
		R846	ORJ0471D677 4.7 OHM 1/10 W 5% 1608 R/TP
		R847	ORJ0471D677 4.7 OHM 1/10 W 5% 1608 R/TP
		R848	ORJ0471D677 4.7 OHM 1/10 W 5% 1608 R/TP
		R849	ORJ0471D677 4.7 OHM 1/10 W 5% 1608 R/TP
OTHERs			
		X501	6212AA2004A HC-49U TXC 12.0MHZ +/- 30 PPM
CONTROL BOARD			
		LED1	0DLBE0028AA BRIGHT LED ELECTRONICS BL-HKB
		R1	ORJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
		R2	ORJ4701D677 4.7K OHM 1/10 W 5% 1608 R/TP
		R3	ORJ1501D677 1.5K OHM 1/10 W 5% 1608 R/TP
		R4	ORJ1501D677 1.5K OHM 1/10 W 5% 1608 R/TP
		R5	ORJ3301D677 3.3K OHM 1/10 W 5% 1608 R/TP
		R6	ORJ3301D677 3.3K OHM 1/10 W 5% 1608 R/TP
		R7	ORJ9101D677 9.1K OHM 1/10 W 5% 1608 R/TP
		SW1	140-058E SKHV10910B LGEC NON 12V 20A H
		SW2	140-058E SKHV10910B LGEC NON 12V 20A H
		SW3	140-058E SKHV10910B LGEC NON 12V 20A H
		SW4	140-058E SKHV10910B LGEC NON 12V 20A H
		SW5	140-058E SKHV10910B LGEC NON 12V 20A H
		SW6	140-058E SKHV10910B LGEC NON 12V 20A H
		SW7	140-058E SKHV10910B LGEC NON 12V 20A H
		ZD1	0DZ560009GB BZT52C5V6S DIODES R/TP SOD323
		ZD2	0DZ560009GB BZT52C5V6S DIODES R/TP SOD323

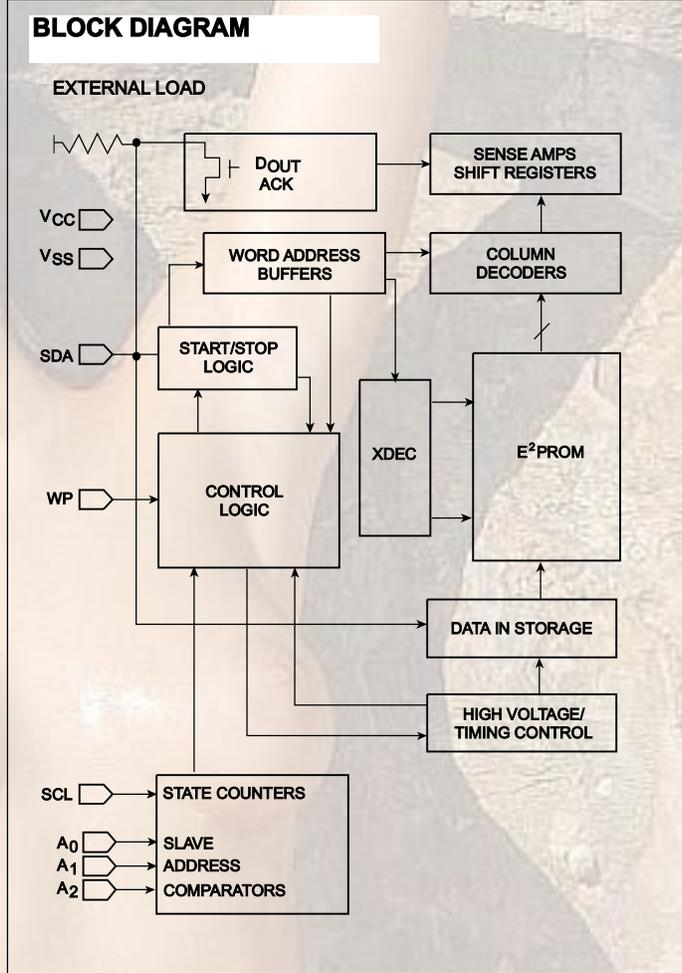
PIN CONFIGURATION

CAT24WC02J-TE13 8P

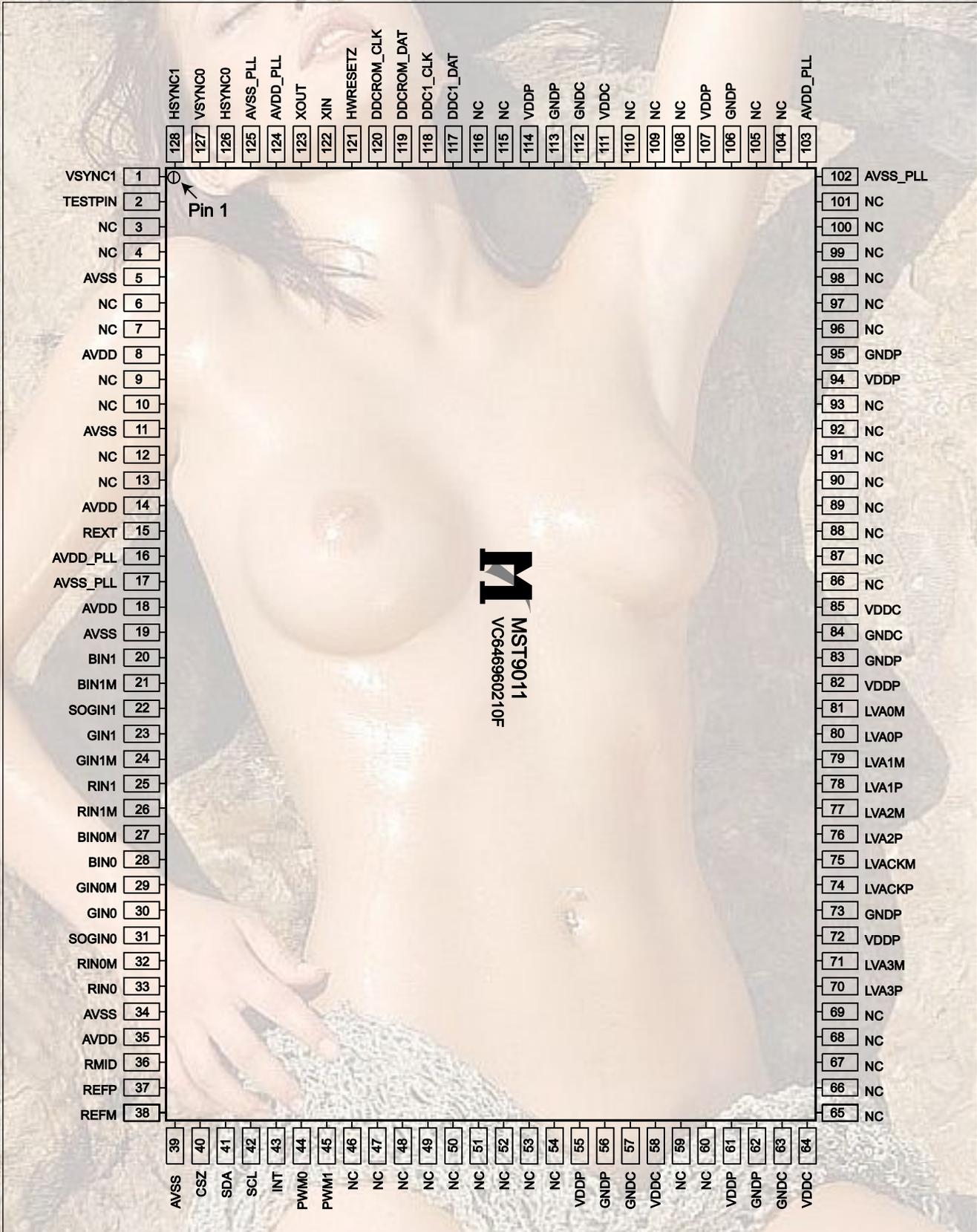


PIN FUNCTION

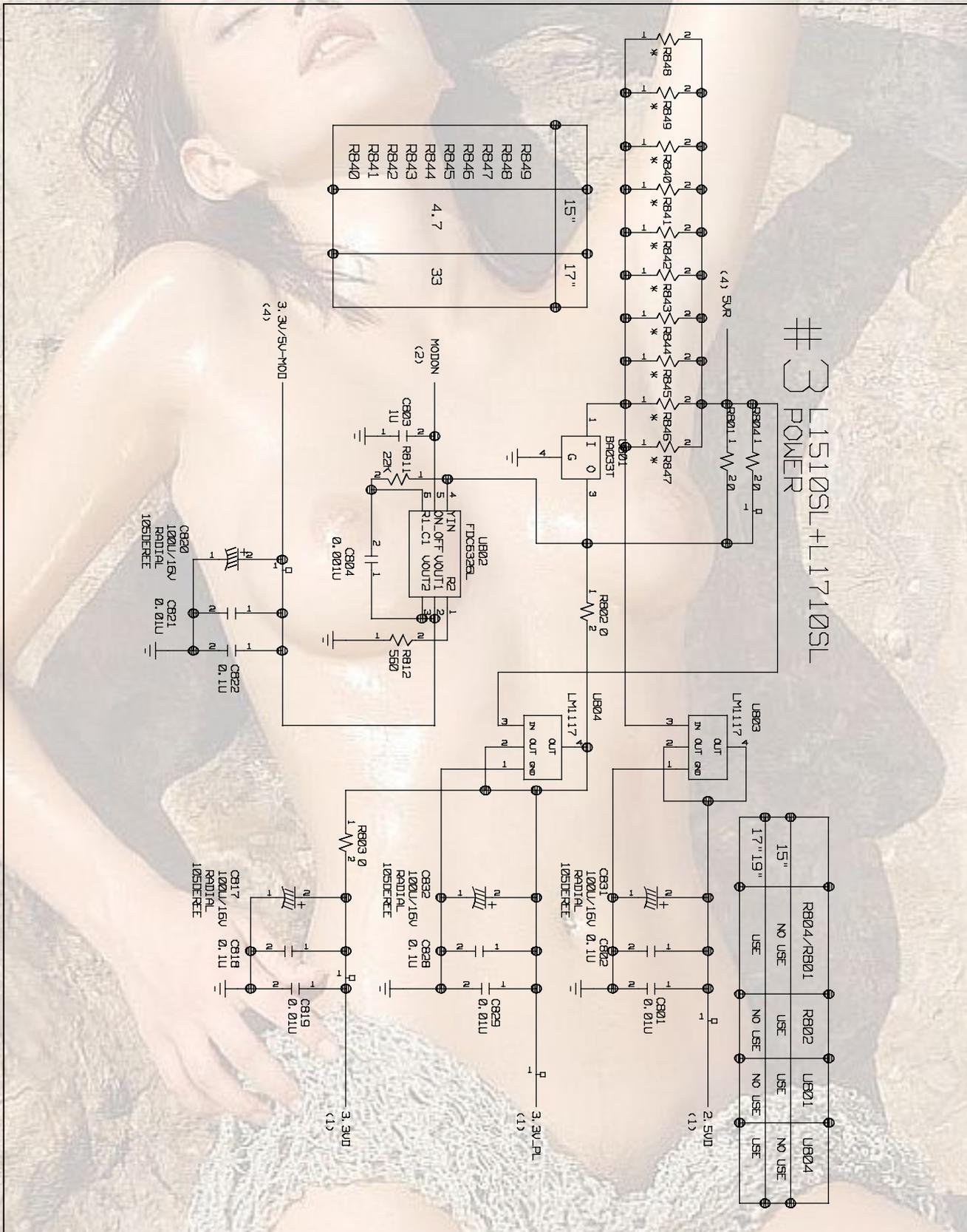
Pin Name	Function
A ₀ , A ₁ , A ₂	Device Address Inputs
SDA	Serial Data/Address
SCL	Serial Clock
WP	Write Protect
V _{cc}	+1.8V to + 6.0V power Supply
V _{ss}	Ground



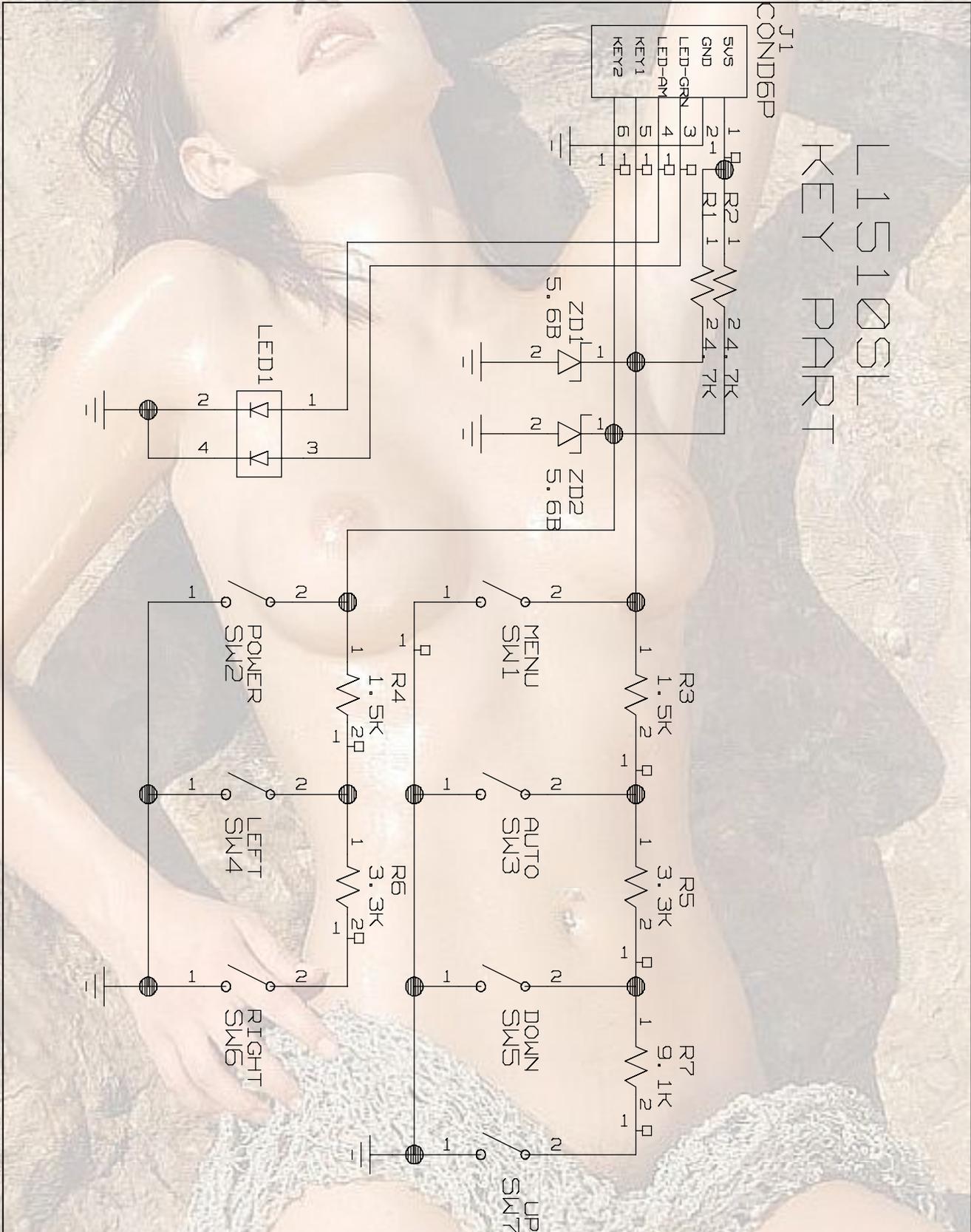
MST9011 ANALOG MSTAR 128P



3. POWER



5. KEY PART





P/NO : 3828TSL083S

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