

SPECIFICATIONS

1. LCD CHARACTERISTICS

Type : Color Active Matrix TFT LCD
 Size : 18.1inch (45.97cm)
 Pixel Pitch : 0.2805mm x 0.2805mm
 Pixel Format : 1280 x 1024 pixels
 RGB Stripe Arrangement
 Color Depth : 8-bit, 16 million colors
 Active Video Area : 413mm x 333mm
 Surface Treatment : Anti-Glare, Hard Coating (3H)
 Backlight Unit : 4 - CCFL (Cold Cathode Fluorescent Lamp)

2. OPTICAL CHARACTERISTICS

2-1. Viewing Angle by Contrast Ratio ≥ 10

Left : 70° typ., 70° min.
 Right : 70° typ., 70° min.
 Top : 45° typ., 45° min.
 Bottom : 45° typ., 45° min.

2-2. Luminance : 160 or 165 cd/m² typ.

2-3. Angle at Half Luminance

Left : 70° min.
 Right : 70° min.
 Top : 45° min.
 Bottom : 45° min.

2-4. Contrast Ratio : 150° 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 : 0~0.714 V
 - a) Color 0, 0 : 0 Vp-p
 - b) Color 7, 0 : 0.467 Vp-p
 - c) Color 15, 0 : 0.714 Vp-p
- 3) Input Impedance : 75 Ω

3-3. Operating Frequency

Horizontal : 31 ~ 80kHz
 Vertical : 58 ~ 85Hz

4. POWER SUPPLY

4-1. Power Adaptor

Input : AC 100~240V, 50/60Hz 1.2A
 Output : DC 12V 5.0A \ominus \oplus

4-2. Power Consumption

MODE	H/V SYNC	VIDEO	POWER CONSUMPTION	LED COLOR
POWER ON (NORMAL)	ON/ON	ACTIVE	less than 60 W	GREEN
STAND-BY	OFF/ON	OFF	less than 5 W	ORANGE
SUSPEND	ON/OFF	OFF	less than 5 W	ORANGE
Sleep Timer Function Active	ON/ON	ON	less than 5 W	Orange Flashing at 0.5Hz
POWER OFF	-	-	less than 5 W	OFF

5. ENVIRONMENT

5-1. Operating Temperature: 10°C~30°C (50°F~95°F)
 (Ambient)

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

5-3. Altitude : 0~10,000ft (3,030m)

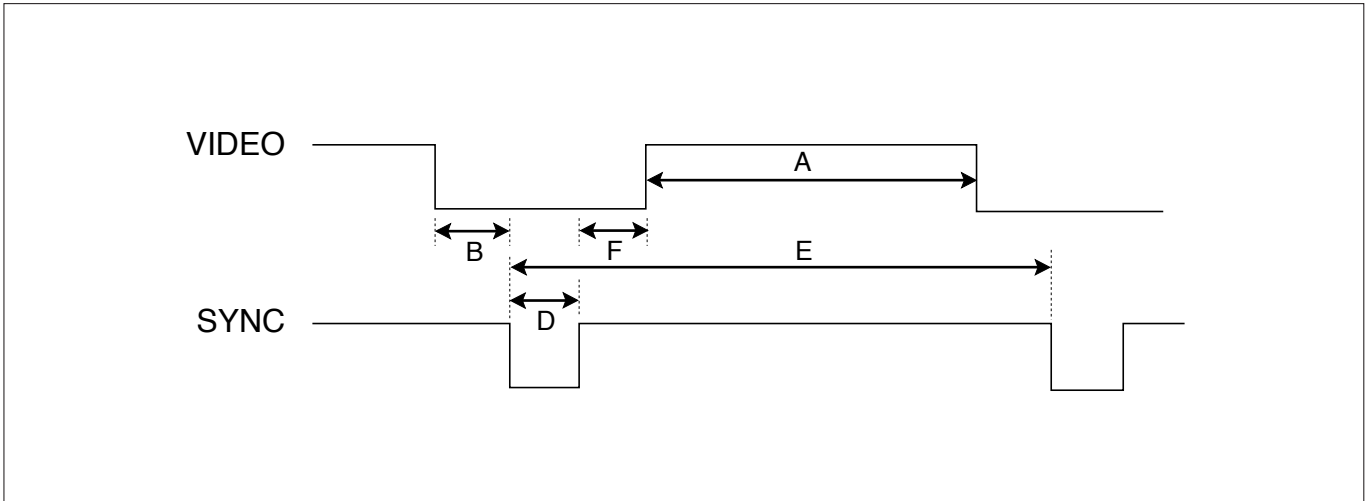
6. DIMENSIONS (with TILT/SWIVEL)

Width : 432.0mm (17.01")
 Depth : 247.1mm (9.73")
 Height : 446.6mm (17.58")

7. WEIGHT (with TILT/SWIVEL)

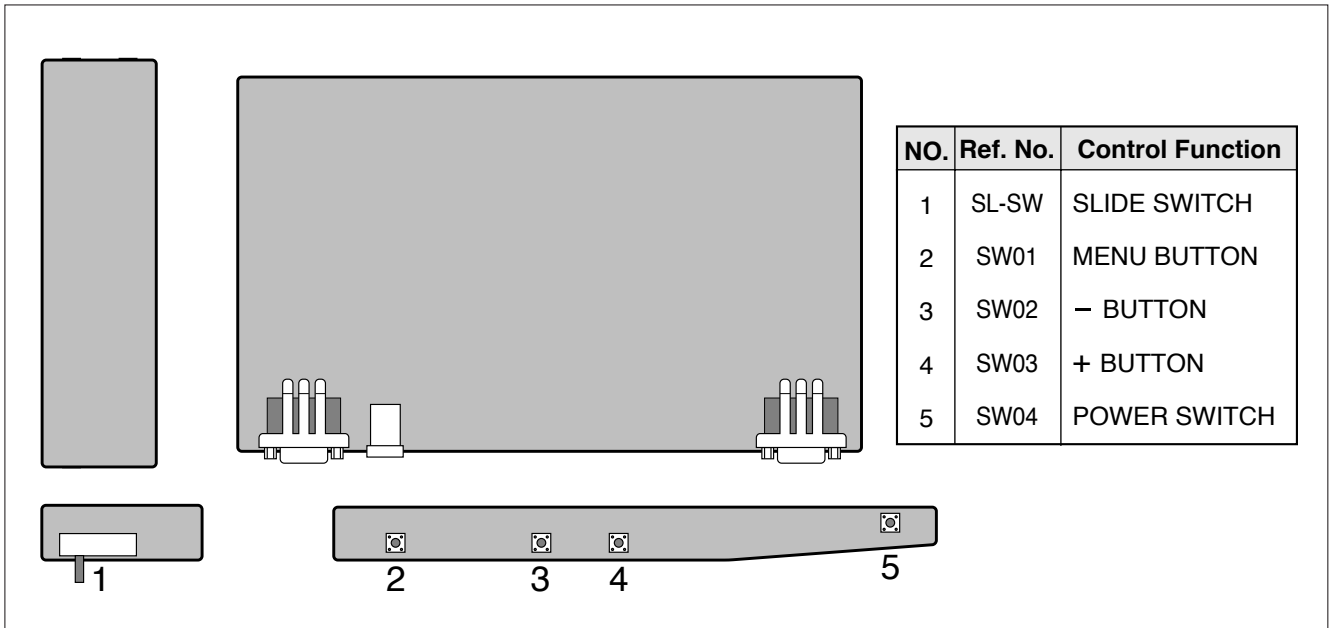
Net Weight : 9.2kg (20.28 lbs)
 Gross Weight : 12.9kg (28.44 lbs)

TIMING CHART

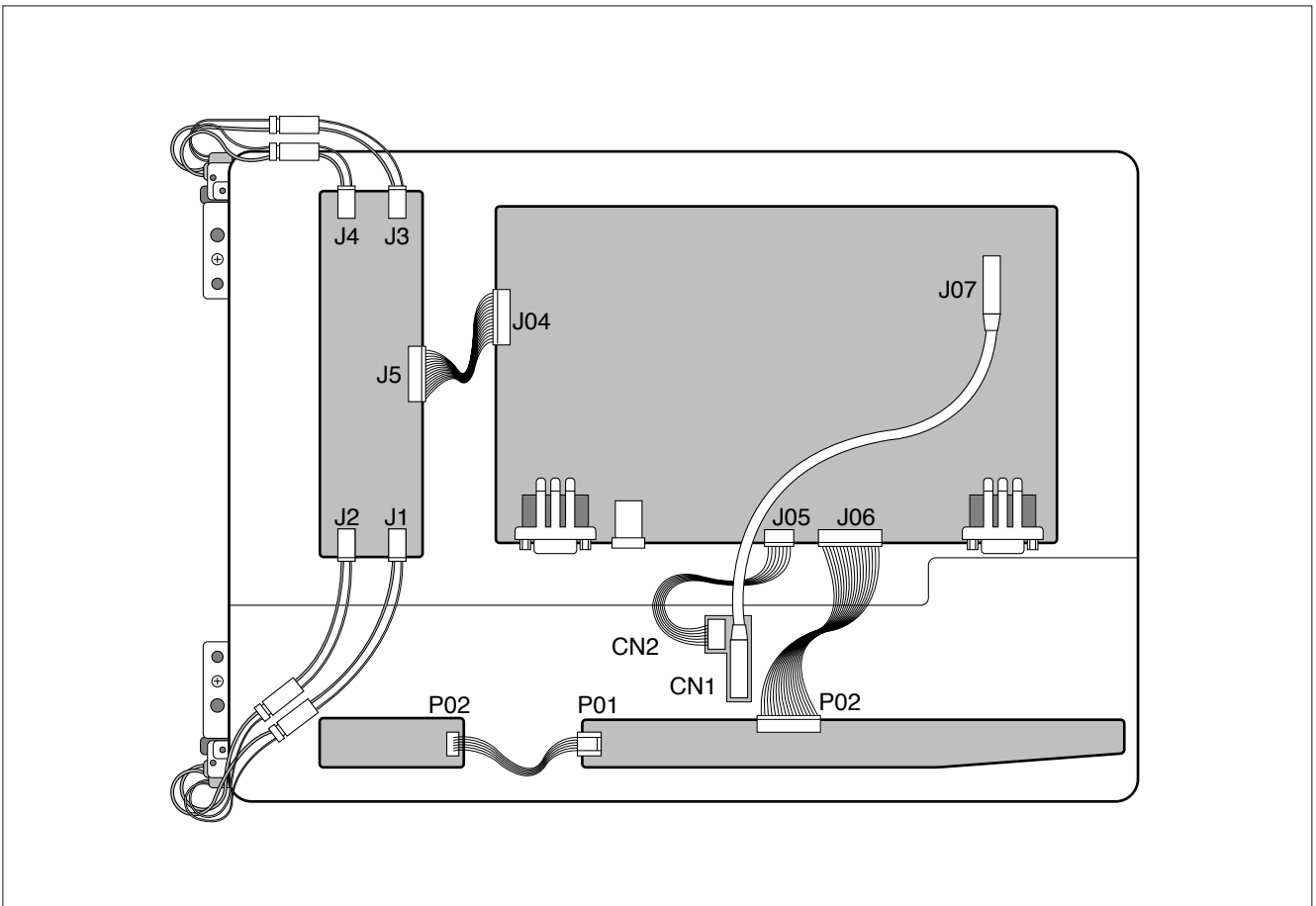


MODE		FACTORY PRESET MODE																	
		MARK	MODE 1	MODE 2	MODE 3	MODE 4	MODE 5	MODE 6	MODE 7	MODE 8	MODE 9	MODE 10	MODE 11	MODE 12	MODE 13	MODE 14	MODE 15	MODE 16	
H O R I Z O N T A L	Sync Polarity		+	-	-	-	-	+	+	+	+/-	-	-	+	+/-	+/-	+	+	
	Dot Clock	MHz	25.175	25.175	31.5	36.0	28.321	40.0	49.5	56.25	57.283	65.0	78.75	94.5	100.0	92.978	108.0	135.0	
	Frequency	kHz	31.469	31.469	37.50	43.269	31.468	37.879	46.875	53.674	49.725	48.363	60.123	68.677	68.681	61.805	63.981	79.976	
	Total Period	Pixels	E	800	800	840	832	900	1056	1056	1048	1152	1344	1312	1376	1456	1504	1688	1688
	Video Active Time	Pixels	A	640	640	640	640	720	800	800	800	832	1024	1024	1024	1152	1152	1280	1280
	Front Porch	Pixels	B	16	16	16	56	18	40	16	32	32	24	16	48	32	18	48	16
	Sync Duration	Pixels	D	96	96	64	56	108	128	80	64	64	136	96	96	128	134	112	144
	Back Porch	Pixels	F	48	48	120	80	54	88	160	152	224	160	176	208	144	200	248	248
V E R T I C A L	Sync Polarity		-	-	-	-	+	+	+	+	+/-	-	-	+	+/-	+/-	+	+	
	Frequency	Hz	70.8	59.94	75.0	85.0	70.8	60.32	75.0	85.061	74.55	60.0	75.03	84.997	75.062	65.96	65.02	75.035	
	Total Period	Lines	E	449	525	500	509	449	628	625	631	667	806	800	808	915	937	1066	1066
	Video Active Time	Lines	A	350	480	480	480	400	600	600	600	624	768	768	768	870	900	1024	1024
	Front Porch	Lines	B	38	10	1	1	12	1	1	1	1	3	1	1	3	2	1	1
	Sync Duration	Lines	D	2	2	3	3	2	4	3	3	3	6	3	3	3	4	3	3
	Back Porch	Lines	F	59	33	16	25	35	23	21	27	39	29	28	36	39	31	38	38
Resolution			640 X 350 71Hz	640 X 480 60Hz	640 X 480 75Hz	640 X 480 85Hz	720 X 400 71Hz	800 X 600 60Hz	800 X 600 75Hz	800 X 600 85Hz	832 X 624 75Hz	1024 X 768 60Hz	1024 X 768 75Hz	1024 X 768 85Hz	1152 X 870 75Hz	1152 X 900 65Hz	1280 X 1024 65Hz	1280 X 1024 75Hz	

CONTROL LOCATIONS



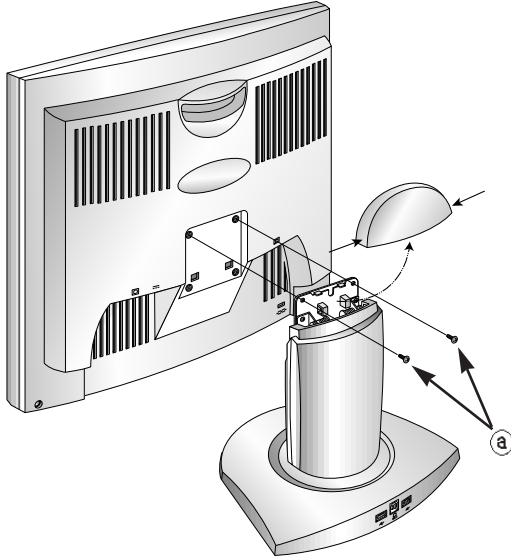
WIRING DIAGRAM



DISASSEMBLY

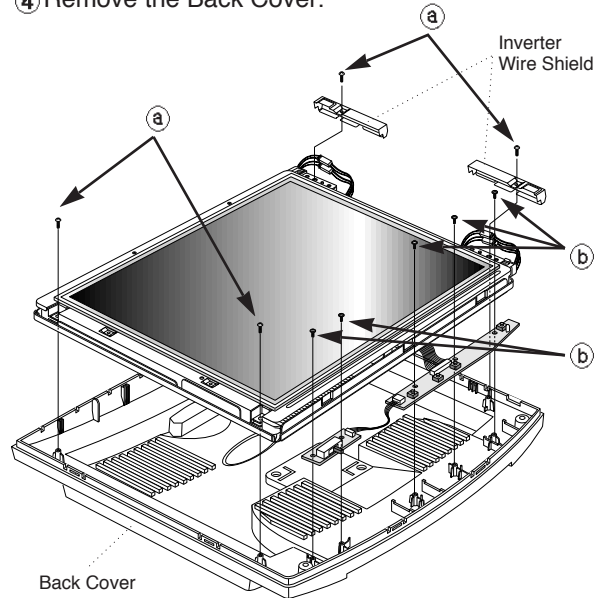
1. TILT/SWIVEL REMOVAL

- ① Remove Hinge Cover (Push the tilt cover both side).
- ② Remove two screws (a).
- ③ Remove the Tilt/swivel.



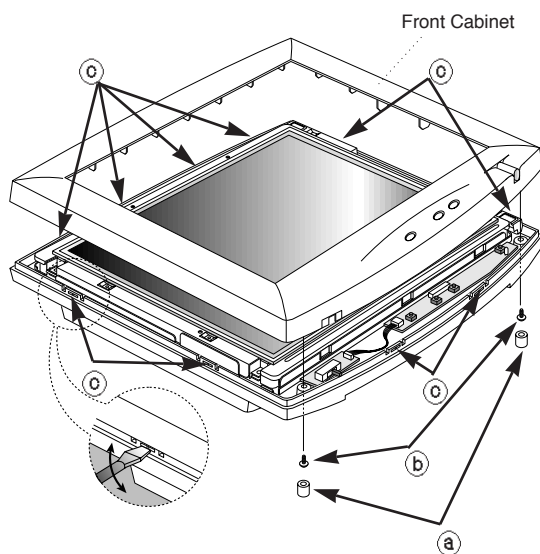
3. INVERTER WIRE SHIELD & BACK COVER REMOVAL

- ① Remove four screws (a).
- ② Remove two Inverter Wire Shield.
- ③ Remove five screws (b).
- ④ Remove the Back Cover.



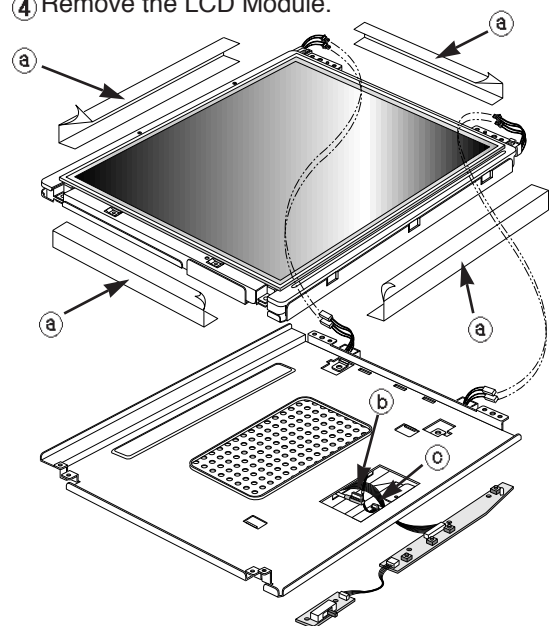
2. FRONT CABINET REMOVAL

- ① Remove two screws cap (a).
- ② Remove two screws (b).
- ③ Release ten latches (c).
- ④ Remove the Front Cabinet.



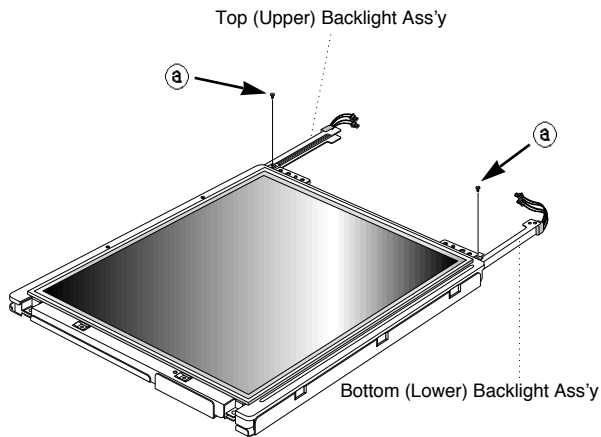
4. LCD MODULE REMOVAL

- ① Remove four Aluminum Tapes (a).
- ② Disconnect J1, J2, J3 and J4.
- ③ Disconnect FPC Cable (b), and Module Power Connector (c).
- ④ Remove the LCD Module.



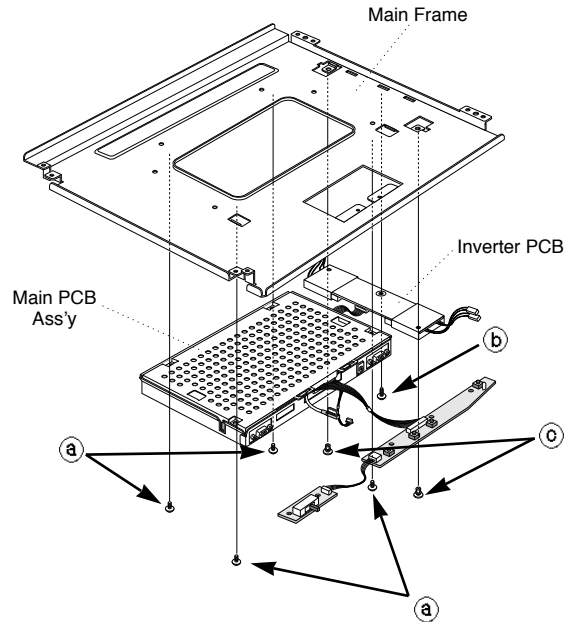
5. BACKLIGHT REMOVAL

- ① Remove two screws (a).
- ② Remove the Backlight from the LCD Module.



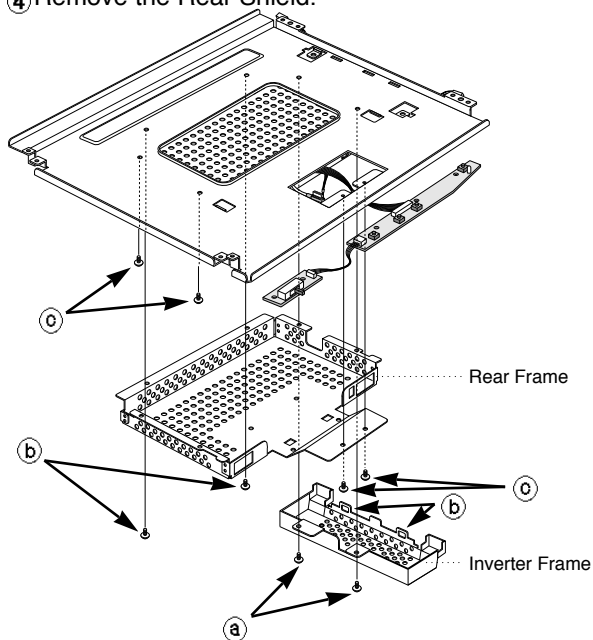
7. MAIN FRAME REMOVAL

- ① Remove four screws (a).
- ② Remove screw (b).
- ③ Remove two fixers (c).
- ④ Divide the Main PCB Ass'y.



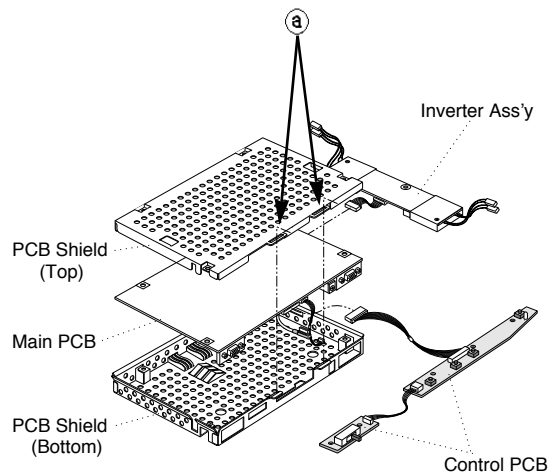
6. INVERTER FRAME & REAR SHIELD REMOVAL

- ① Remove two screws (a).
- ② Release two latches (b).
- ② Remove the Inverter Shield.
- ③ Remove six screws (c).
- ④ Remove the Rear Shield.

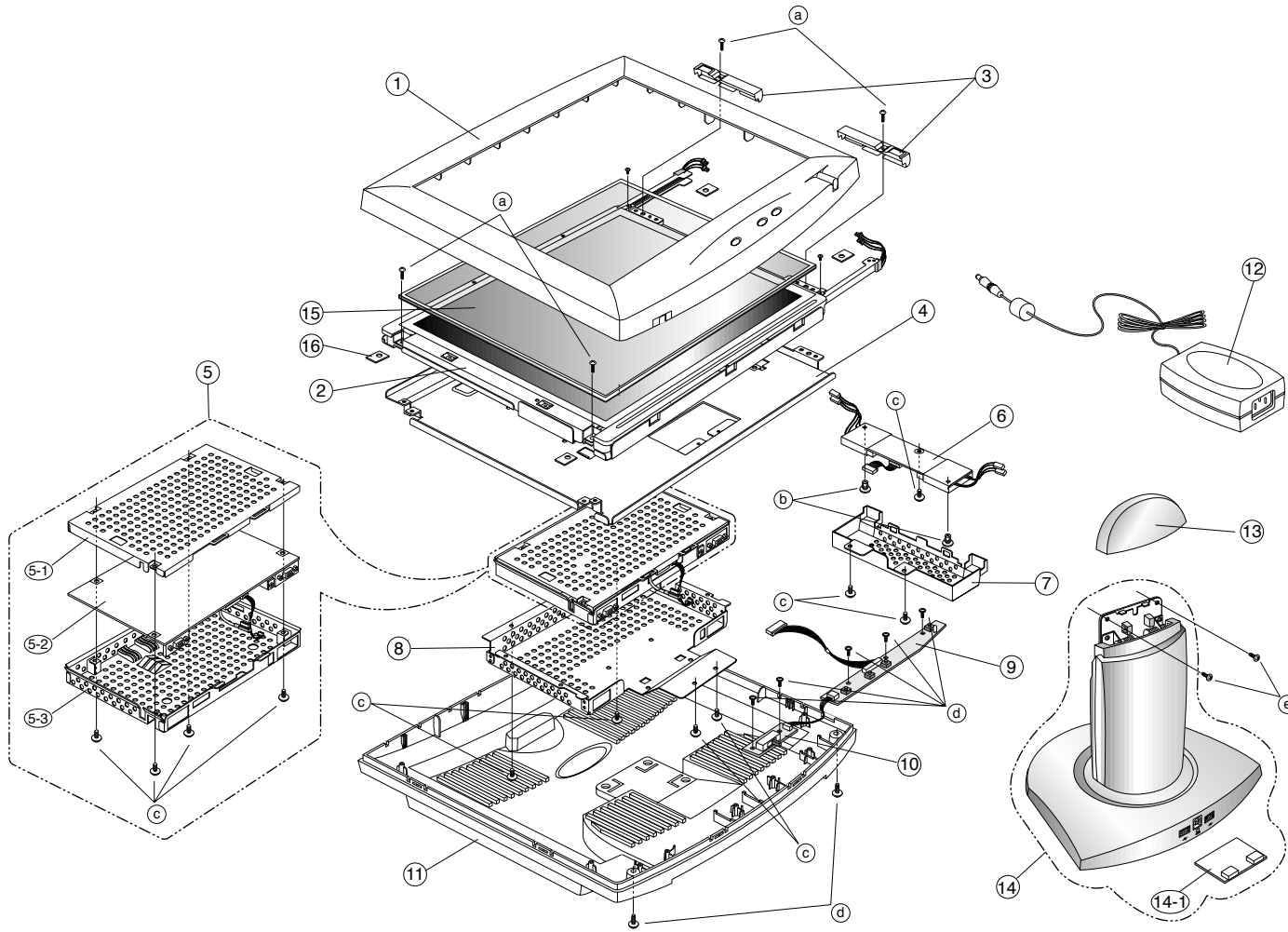


8. MAIN TOTAL ASS'Y REMOVAL

- ① Disconnect J5 and J06.
- ② Remove Inverter Ass'y and Control PCB from the Main PCB.
- ③ Release two latches (a).
- ④ Divide Top Shield, Main PCB, and Bottom Shield.



EXPLODED VIEW

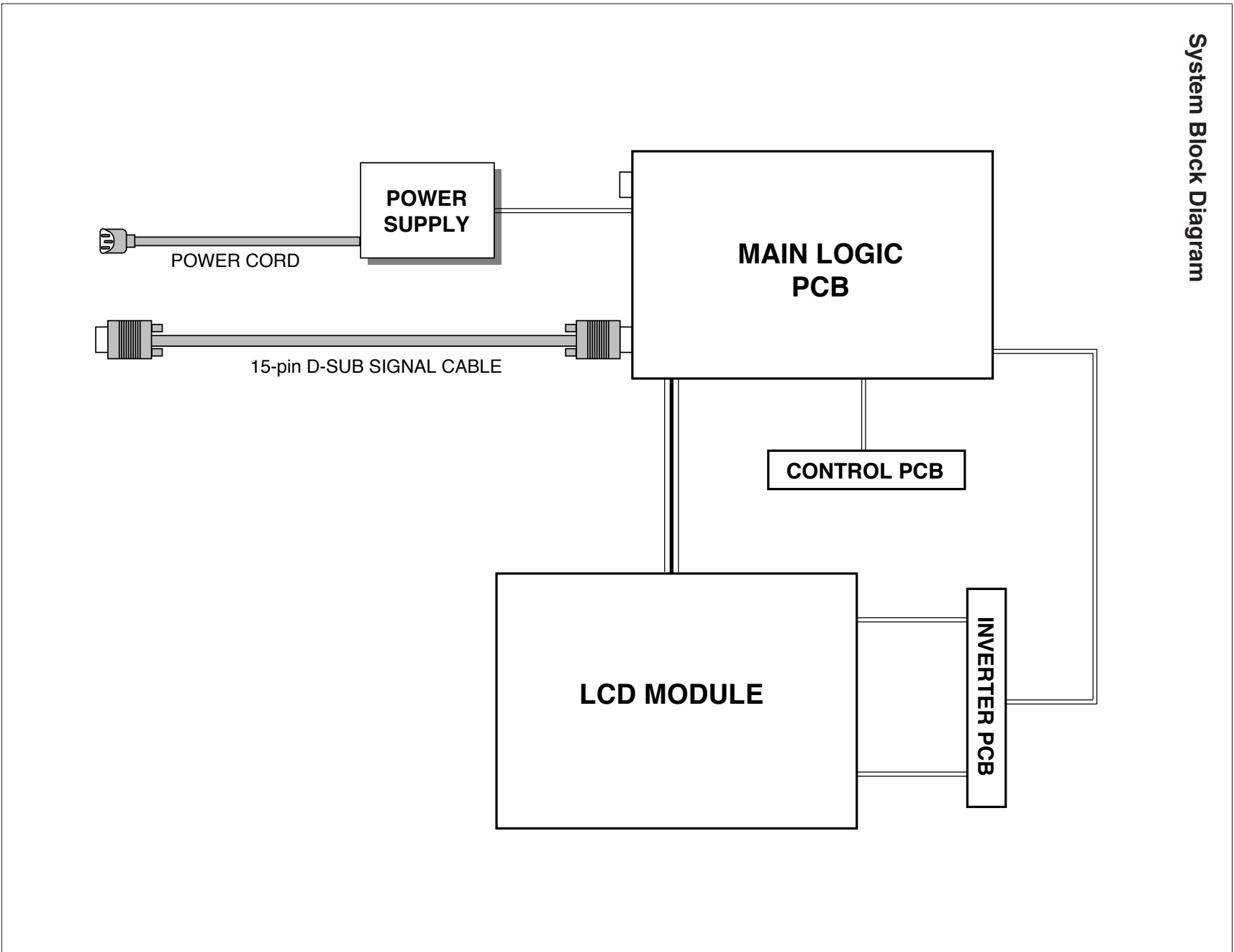


EXPLODED VIEW PARTS LIST

Ref. No.	Part No.	Description	Q'ty	Material
1	3091TKL004A	CABINET ASS'Y, OPAL COMPAQ LCD 18.1"	1	
	3091TKL004B	CABINET ASS'Y, CARBON BLACK COMPAQ LCD 18.1"		
2	6304TLT181A	LCD MODULE, LGE TFT LCD LM181E1 18.1"	1	
3	4814TKK064A	INVERTER WIRE SHIELD	2	
4	4951TKS034A	METAL, MAIN FRAME	1	
5	3313TL8001A	MAIN TOTAL ASS'Y	1	
5-1	4950TKK049A	PCB SHIELD (BOTTOM)	1	
5-2	6871TMT077A	MAIN PCB ASS'Y	1	
5-3	4950TKK048D	PCB SHIELD (TOP)	1	
6	6633TZA002A	INVERTER ASS'Y	1	
7	4814TKK067A	INVERTER SHIELD	1	
8	4950TKS097A	METAL, REAR FRAME	1	
9	6871TST084A	KEY CONTROL PCB ASS'Y	1	
10	6871TST089A	S/W PCB ASS'Y	1	
11	3809TKL004A	BACK COVER ASS'Y, OPAL	1	
	3809TKL004B	BACK COVER ASS'Y, CABON BLACK		
	6634TBZ002A	ADAPTER, AC-DC, 100/240V 12V 5A, OPAL		
12	6634TBZ002B	ADAPTER, AC-DC, 100/240V 12V 5A, CABON BLACK	1	
	3550TKK044A	HINGE COVER, OPAL		
13	3550TKK044B	HINGE COVER, CABON BLACK	1	
	3043TKK034A	TILT SWIVEL ASS'Y, OPAL		
14	3043TKK034B	TILT SWIVEL ASS'Y, CABON BLACK	1	
14-1	6871TST081A	USB PCB ASS'Y	1	
15	3550TKK046B	PROTECTIVE PANEL COVER - PROTECTIVE MODEL ONLY	1	
16	4819TKK082A	BRACKET, SUPPORT MODULE - NON PROTECTIVE MODEL	4	
a	332-015E	SCREW, PVS+3x16 (MSWR/FZMW)	4	
b	4930TKK014A	HOLDER, FIXER	2	
c	332-110A	SCREW, PZS+3x6 (MSWR/FZMY)	13	
d	332-095C	SCREW, PZP+3x12 (MSWR/FZMY)	7	
e	332-105F	SCREW, PVS+4x10 (MSWR/FZMW)	2	

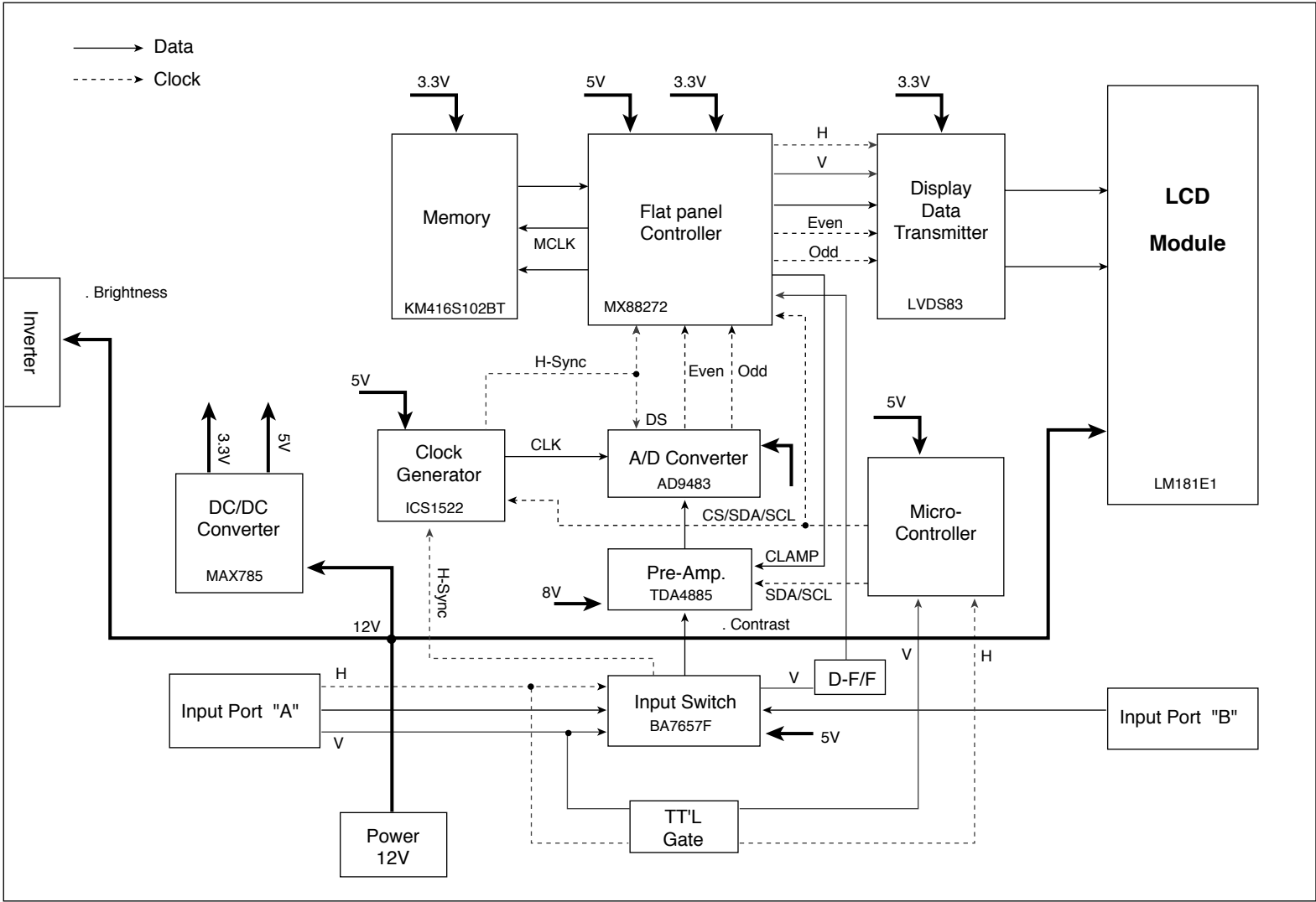
BLOCK DIAGRAM

System Block Diagram



BLOCK DIAGRAM

Block Diagram for Main Logic Board



DESCRIPTION OF BLOCK DIAGRAM

1. Video Control Circuit

- 1) TDA4885 (U101) receives the video signal from PC and amplifies the levels of video signal (0V~0.7V), and controls the contrast signal.
- 2) The biases of A/D inputs control the reference output voltages of TDA4885 (U101) to proper R, G, B bias levels through the Diodes (D101, D102, D103).
- 4) The EX-OR (U604) device outputs the voltage levels to decide the polarities of HSYNCIN and VSYNCIN that supply the sync signals to the PLL IC and MICOM.

2. A/D Converter Circuit

- 1) AD9483 (U201) converts from the analog video signal to the digital signal. For this function, its DC 2.5V output is connected to VREF_IN and it samples the input signal between 2.0V~3.0V. (The reference voltage of the sampling is 2.5V.)
- 2) The frequency range of 8-bit digital output is from 12.5MHz to 67.5MHz with respect to modes.
- 3) The status of power down pin is low for normal state and high for power down state.

3. Features of ICS1522 PLL IC

- 1) ICS1522 (U11) generates the pixel clock for each mode with respect to internal register setting, which is used to sampling circuitry.
The range of the pixel clock is approximately from 25MHz to 135MHz

4. Video Process Circuit

This circuit consists of MXIC (U501) and frame memorys (U401, 402, 403) which convert frame date of input signal to 60Hz frame date. This function is processed by MX88272. The MX88272 (U501) gets the video signal converted analog to digital, interpolates input to 1280x1024 resolution signal and outputs 8-bit R, G, B, DHS, DVS and DE signals to the transmitter (U701, U702).

5. LVDS Circuit

LVDS transmitter (U701, U702) delivers digital signal to the receiver of module by the voltage swing of 1V. The peripheral circuitry of transmitter gets the DHS, DVS, DEN, DISPCLK signal, outputs LVDS signal. At the power down mode, MICOM lets the power down signal be low and Shuton pin be active low.

6. Input Switching Circuit

This circuit consists of BA7657F (U601), slide switch and TTL gates. BA7657F (U601) switch analog R, G, B signal to be entered form 15p D-SUB A(J2) or B(J3). If the position of slide switch is A; R, G, B signal and H/V Sync are entered from D-SUB A. If the Position of slide switch is B; R, G, B signal and H/V sync are entered from D-SUB B. If the position of slide switch is Auto; R, G, B signal and H/V sync are automatically selected A or B by control signal of MICOM. But if A and B are incidentally connected, system display OSD, "2 Input active... select A or B". TTL gates (U602, U603, U604) switch H/V sync to be entered from D-SUB A or B.

7. DC/DC Converter

This curcuit supplies stand-by 5V (5VST) that is made using IC U801 regulator for MICOM and SYNC processing.
The 5VDD voltage is converted using MAX785 (U802) and supply to IC need to it.
The 8VA is converted using 8V regulator (U808) and supply to video pre-amp.
The 3.3V voltage is converted using 6 Diodes and supply to IC need to it.
The 5VA is converted using 5V regulator (U809) and supply to A/D converter and PLL IC.
The state of power down make all voltage except 5VST down using SHDN.

8. System Controller (08XL36) Circuit

This curcuit consists of EEPROM IC (U902) which stores control data, RESET IC (U904) and LED driver Q01 and Q02 indicate that power is ON or OFF.

The operating procedures of MICOM and its associated circuit are as follows:

- 1) The MICOM distinguishes polarity and frequency of the horizontal sync and the vertical sync are supplied from signal cable. The controlled data of each mode is stored in EEPROM.
- 2) User can adjust screen condition by each OSD function. (H-Position, V-Position, Clock, Clock Phase, ... etc.)

9. DDC Circuit

This circuit consists of MICOM (U901) and bidirection switching IC (U2).

- 1) Bidirection switching IC switch I²C line for DDC communication by control signal of MICOM (U901).
- 2) The MICOM has D-SCL, D-SDA line for sending and receiving data to adjust line through 15-pin D-sub connector.
- 3) The data of EDID DDC information is stored in EEPROM IC (U902).

10. OSD Control Circuit

When the MX88272 outputs the area which is able to display overlay using OSDBLNK PIN of MX88272. OSD (On-Screen-Display) device (U502) outputs display data as the timing of the signal.

11. Power Module Circuit

This block supplies the +12V to the inverter for the backlight voltage of module and the +5V for data control of LCD module.

That is, SI4925DY (Q01) is switched by TR Q12 for module voltage.

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.
 - Compaq PC (Desktop Pro 2000)
 - 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) Select EEPROM all clear command and Enter.
- 2) Display cross hatch pattern at Mode 1.
- 3) Run alignment program for LQ800 on the IBM compatible PC.
- 4) Select COMMAND → PRESET START command.
- 5) Select FOS ADJ command and Enter.
- 6) No attempt to manually adjust, but select each menu

(H-position, V-position, Clock, and Clock Phase) with Up, Down keys (+, -) on the keyboard, then automatically adjusted and saved to the EEPROM. (Don't adjust H-Position, V-Position, Clock and Clock Phase.)

- 7) Display from Mode 2 to Mode 16 and repeat above adjustment.
- 8) Select PRESET EXIT command and Enter.

2. Adjustment for White Balance

- 1) Display color 0,0 pattern at Mode 16.
- 2) Set External Bright to max position and Contrast to 52 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 16.
- 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.

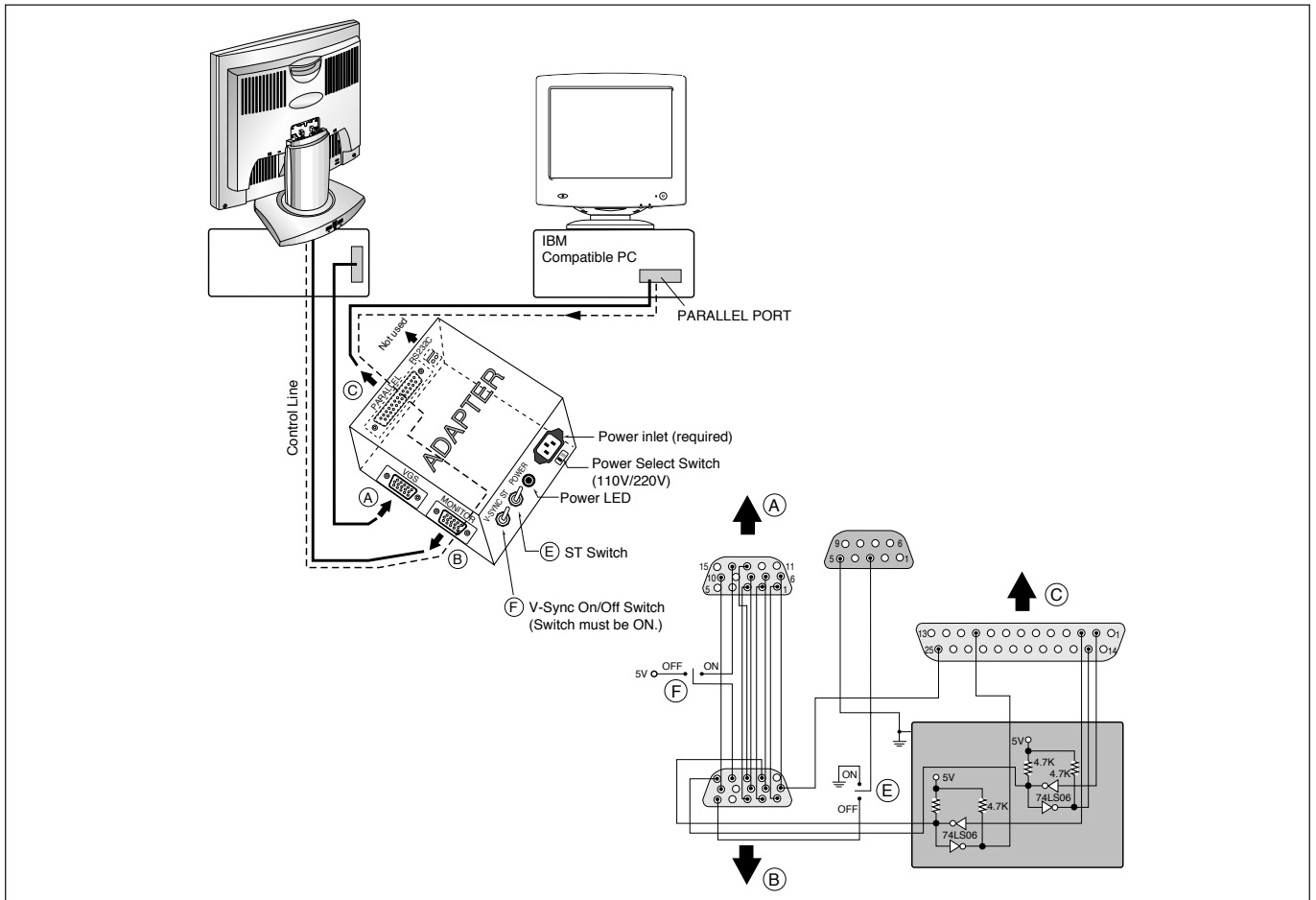
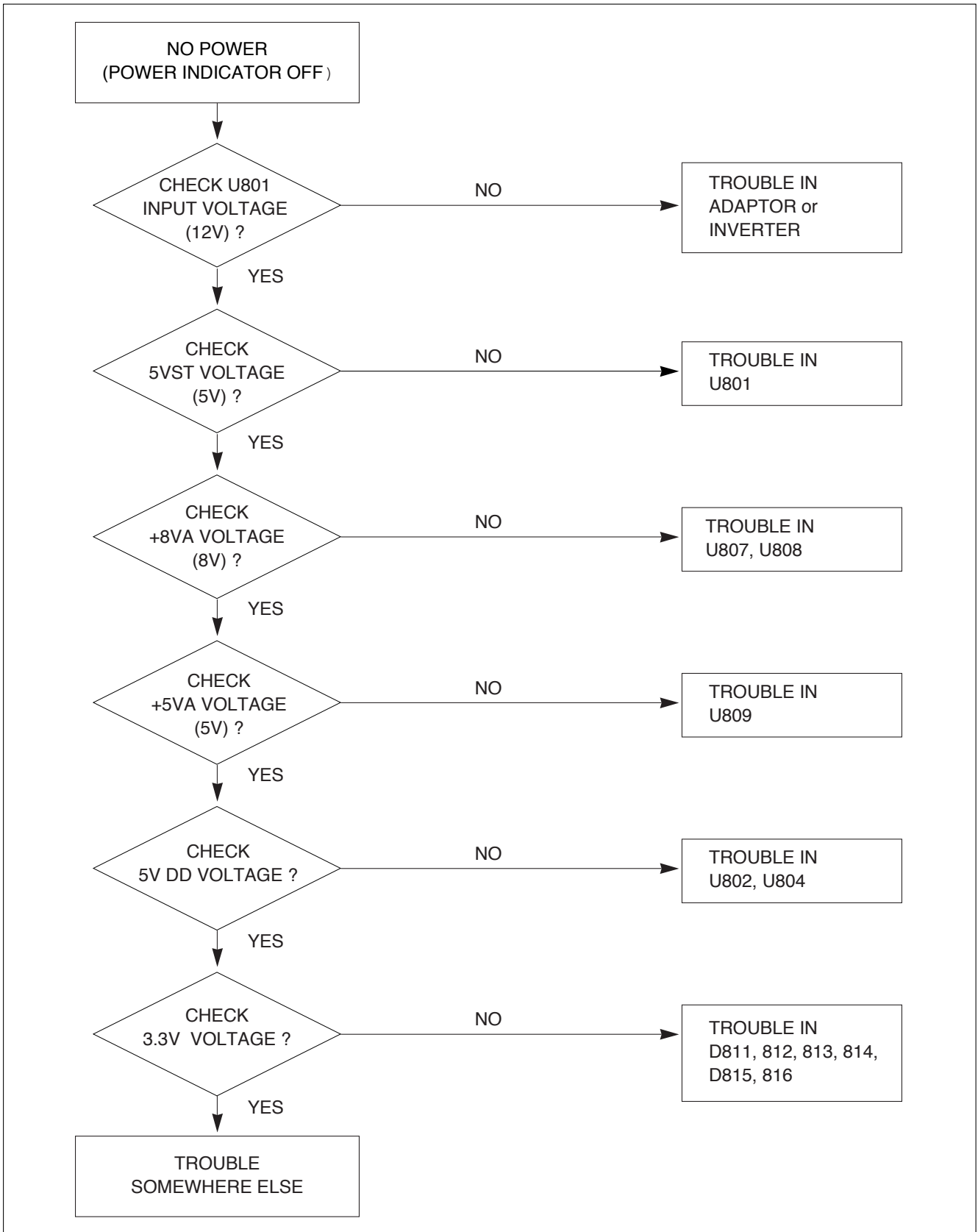


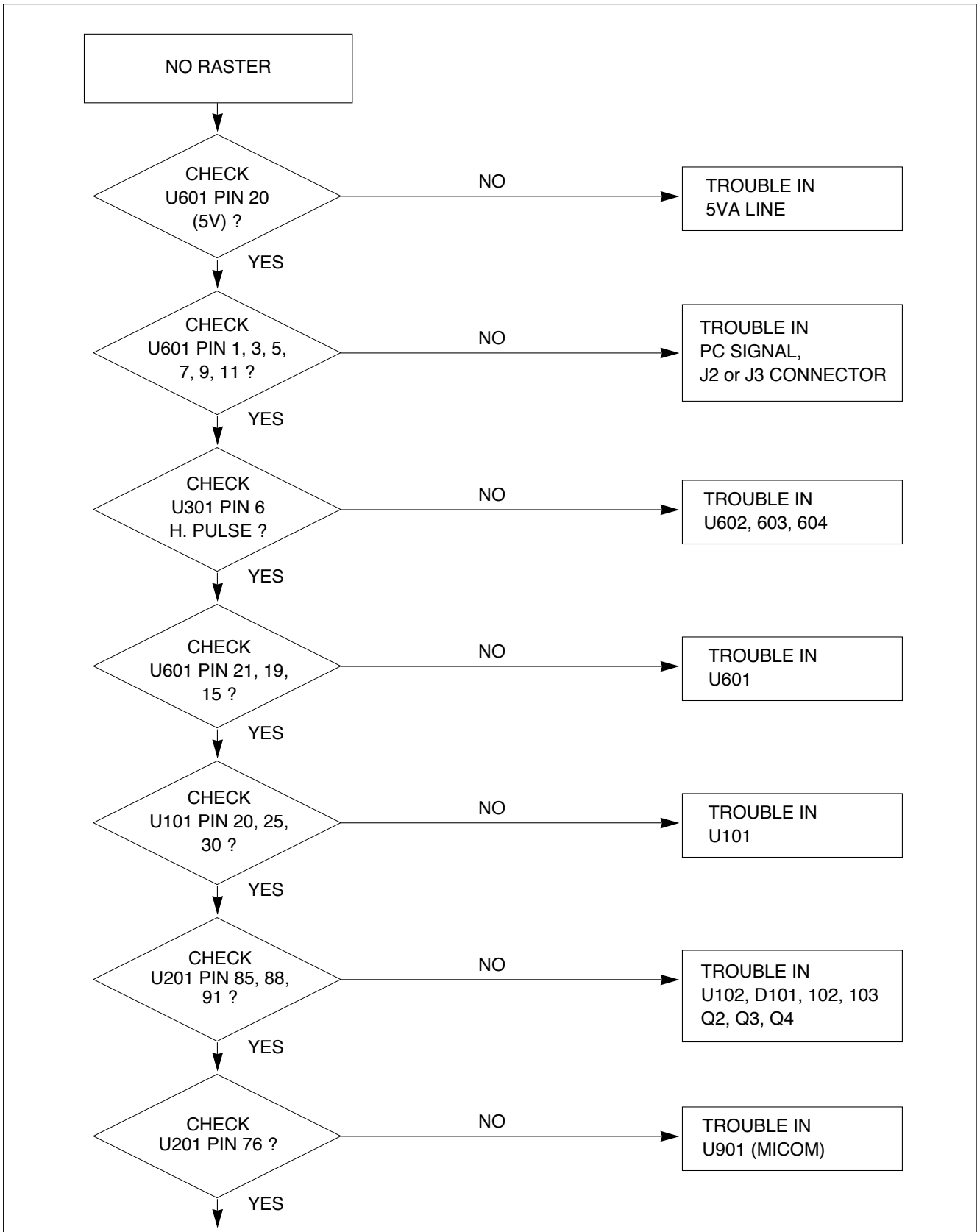
Figure 1. Cable Connection

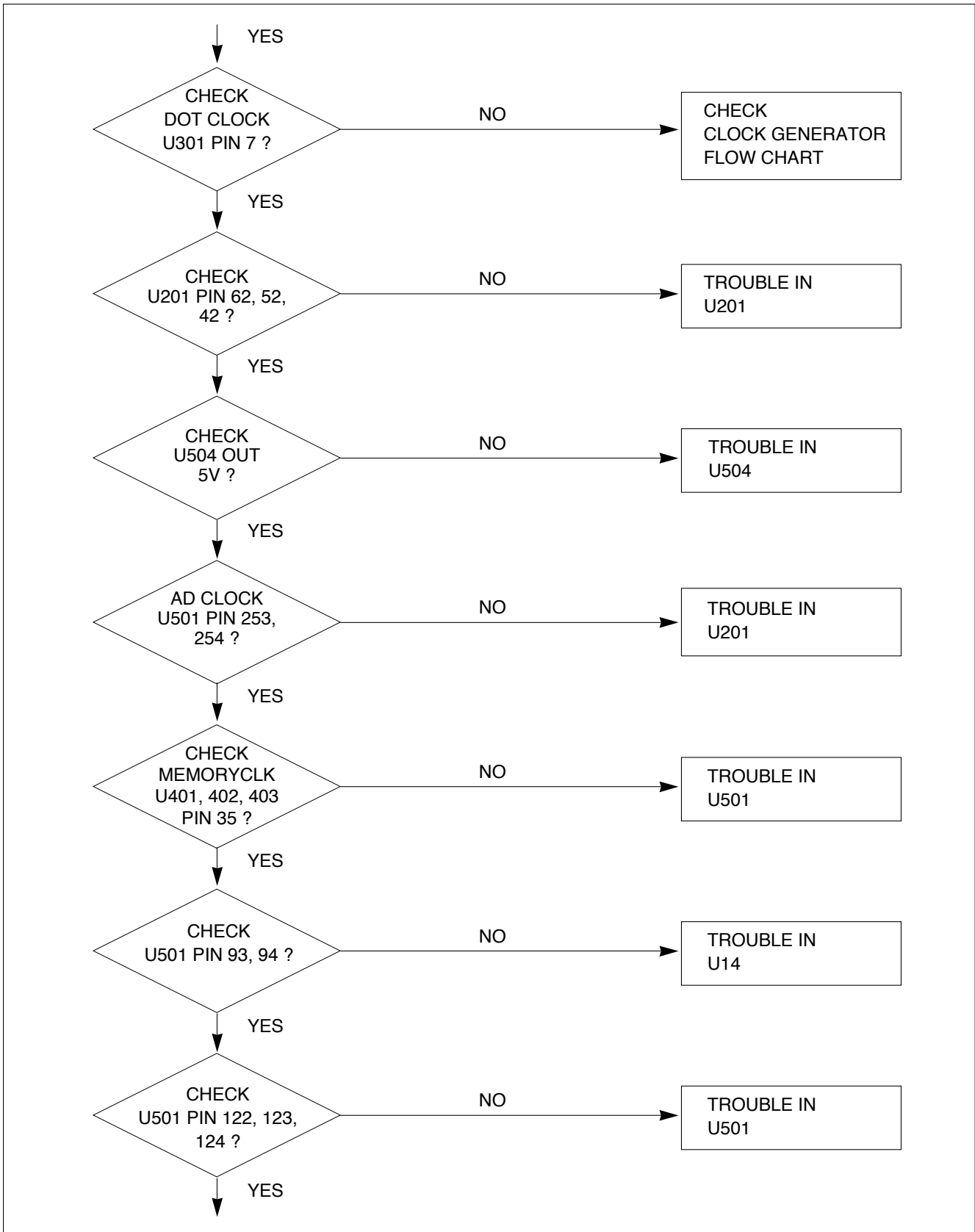
TROUBLESHOOTING GUIDE

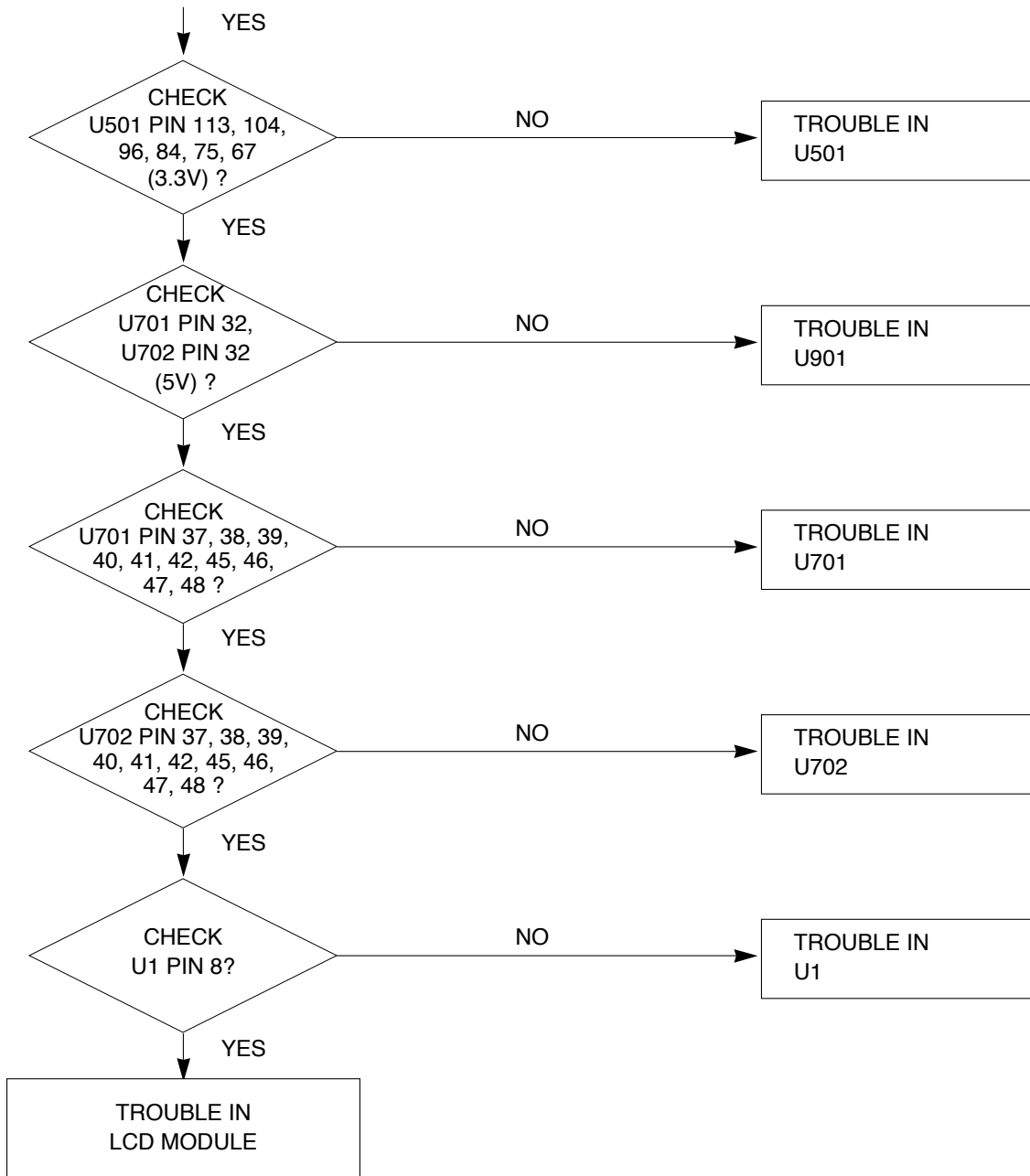
1. NO POWER



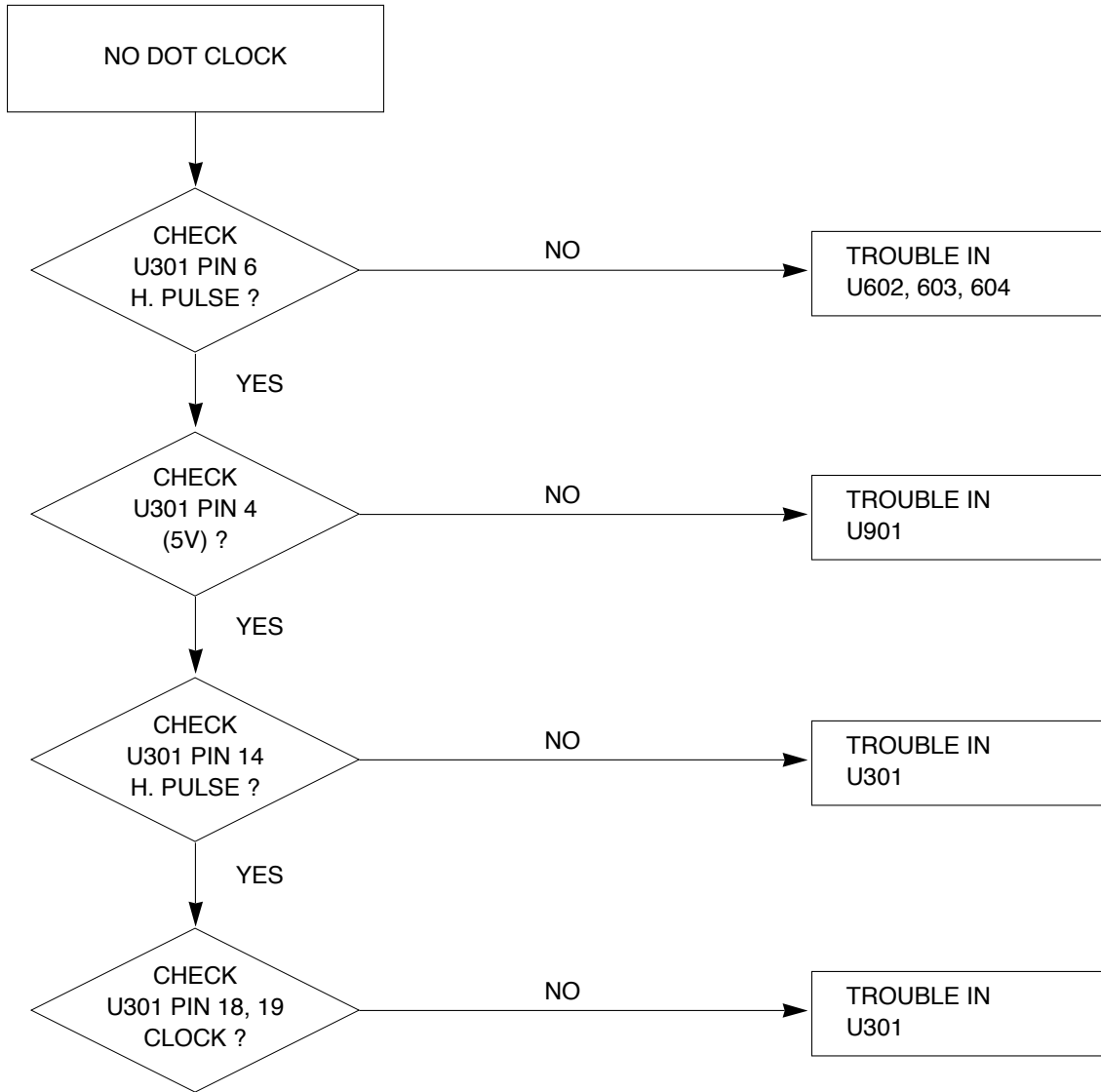
2. NO RASTER



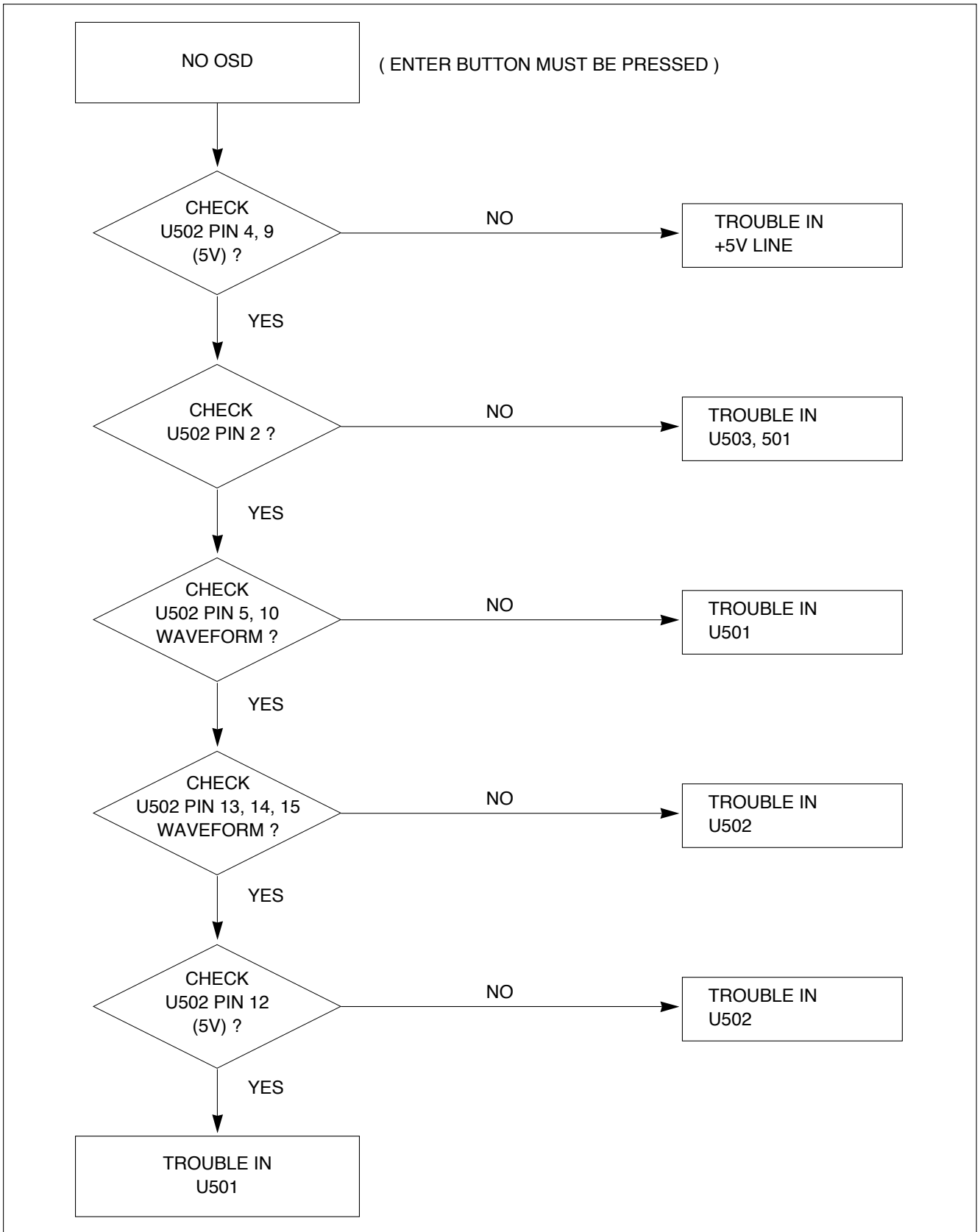




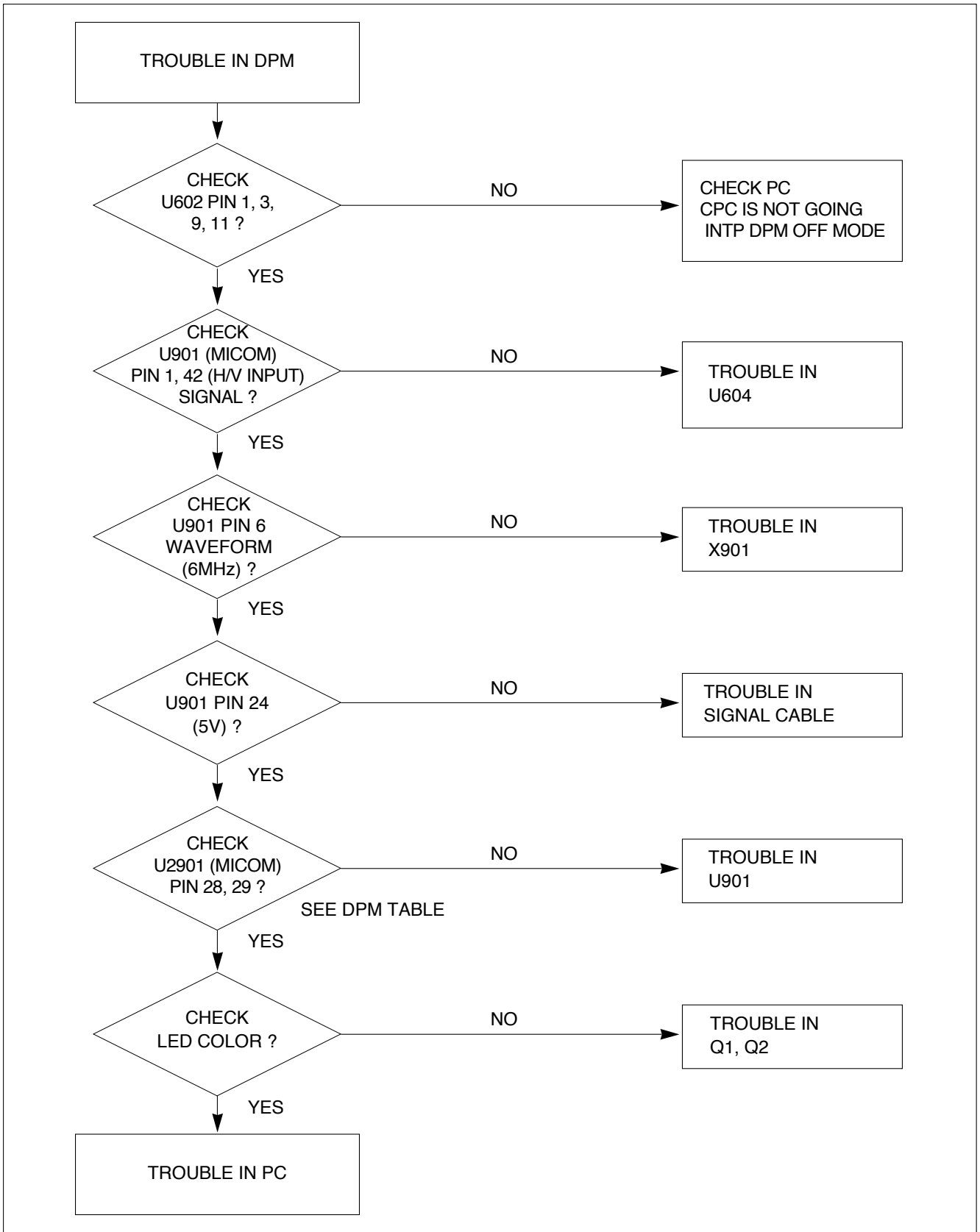
3. NO CLOCK (CLOCK GENERATOR)



4. TROUBLE IN OSD

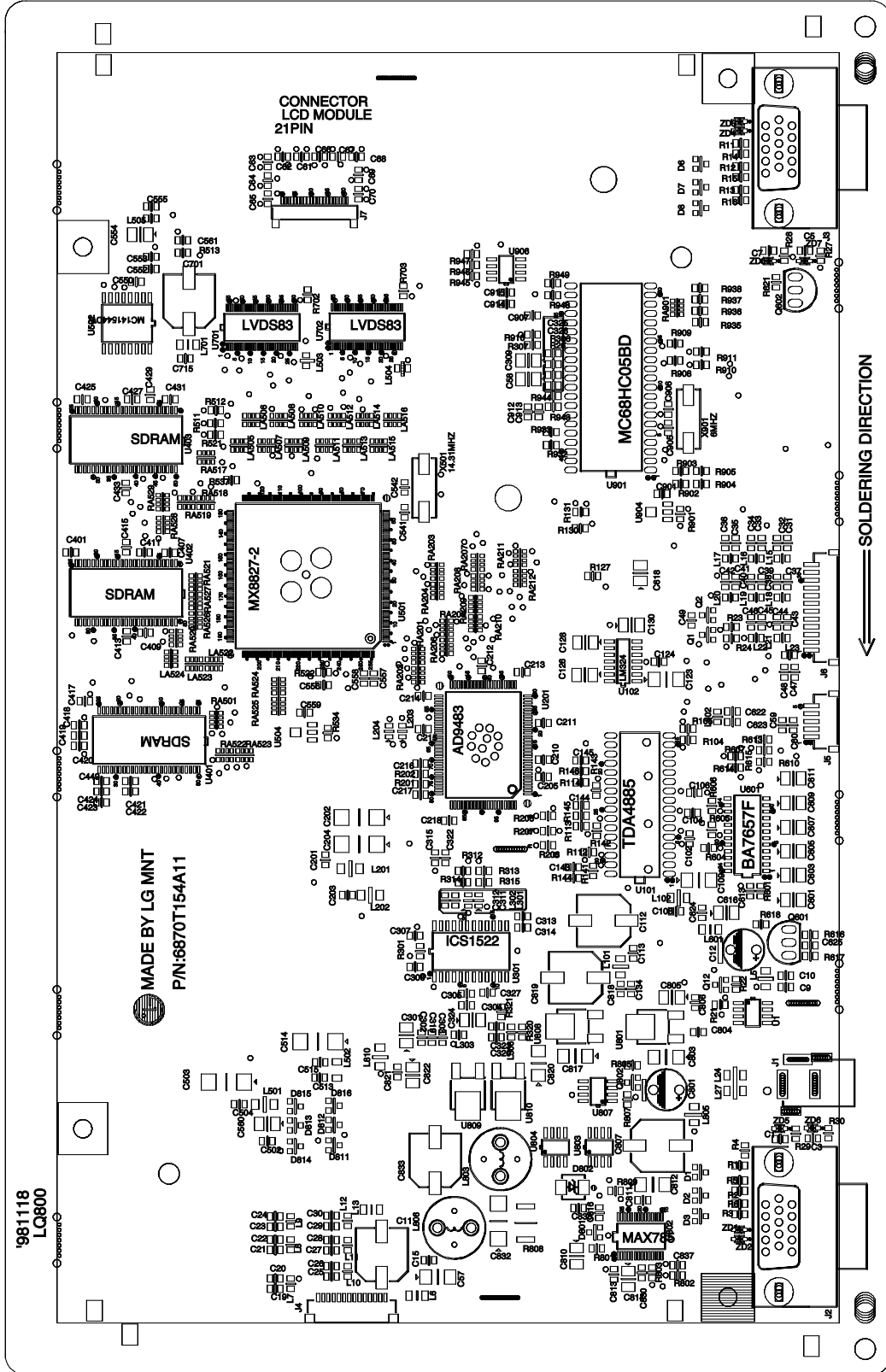


5. TROUBLE IN DPM



PRINTED CIRCUIT BOARD

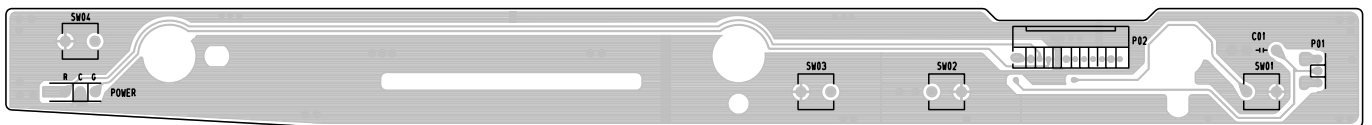
1. MAIN BOARD (Component Side)



3. CONTROL BOARD (Component Side)



4. CONTROL BOARD (Solder Side)



SCHEMATIC DIAGRAM

CONTENTS

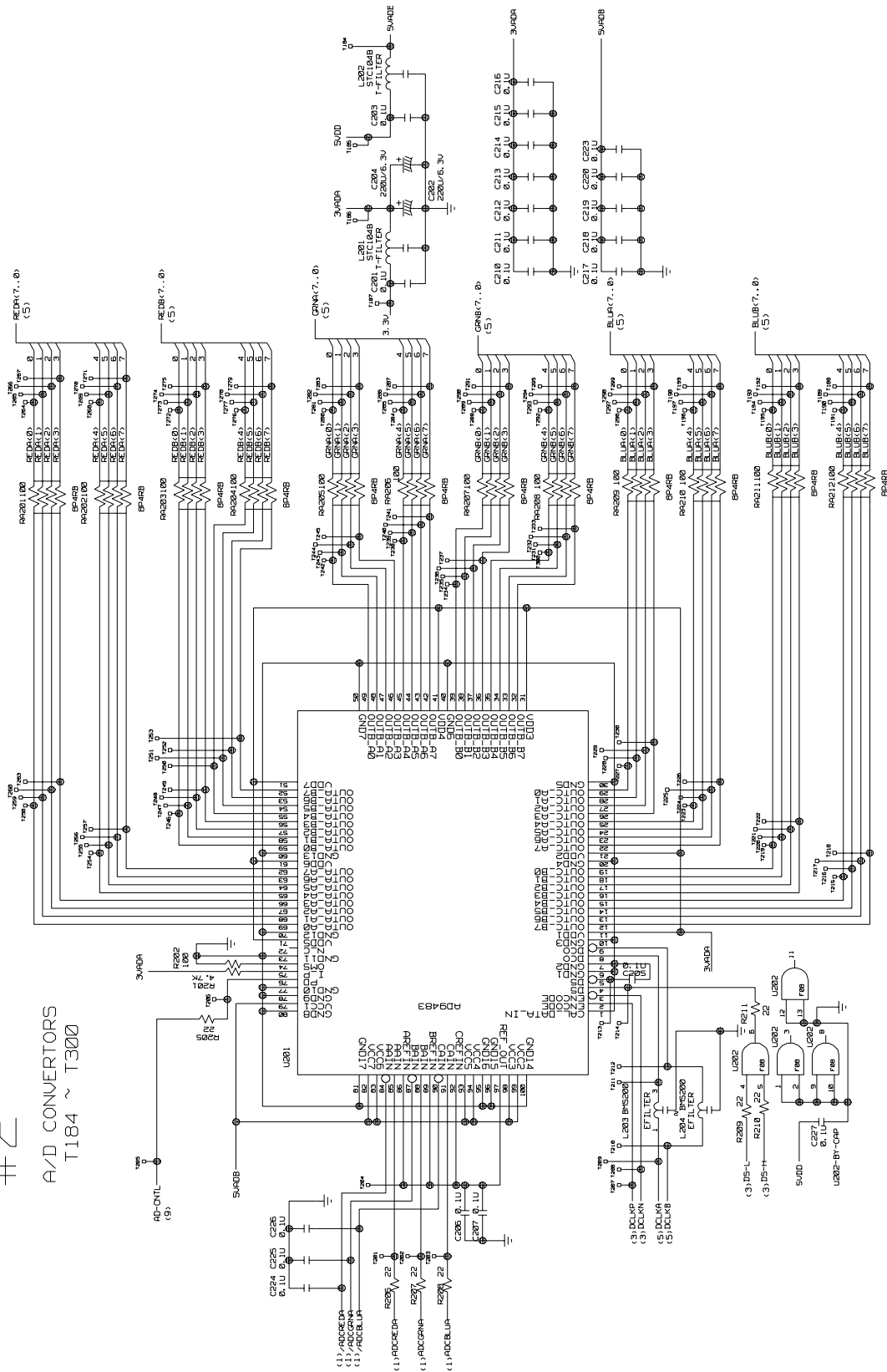
1. RGB Processor
 2. A/D Converters
 3. Clocks
 4. Memory
 5. Video Process
 6. T601~T648
 7. LVDS
 8. DC/DC Converter
 9. T901~T945
 10. Connectors & Jacks
- * USB

*** NOTICE:** SINCE THIS IS BASIC SCHEMATIC DIAGRAM, THE VALUE OF COMPONENTS AND SOME PARTIAL CONNECTION ARE SUBJECT TO CHANGE FOR IMPROVEMENT.

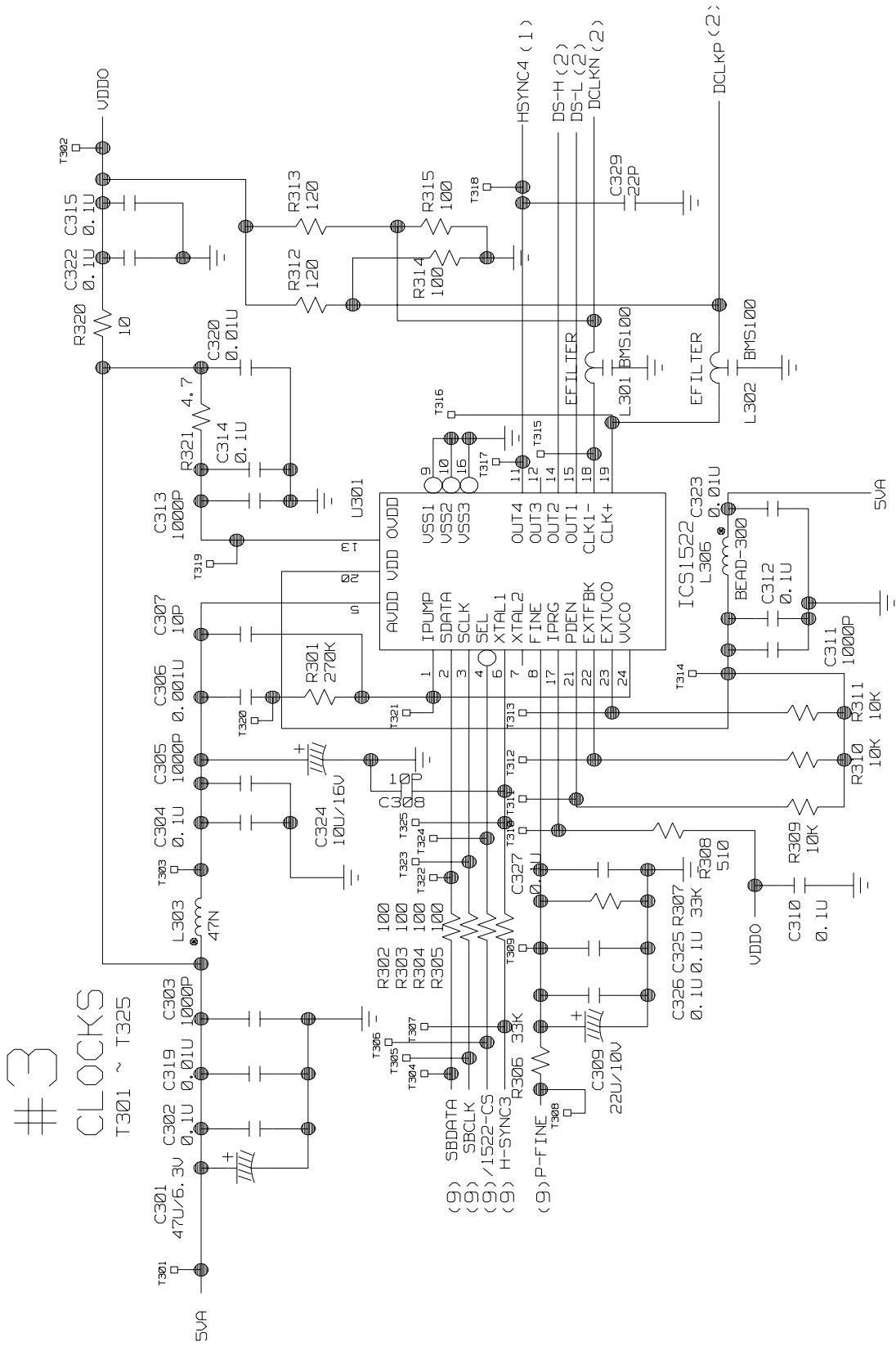
2. A/D CONVERTERS

#2

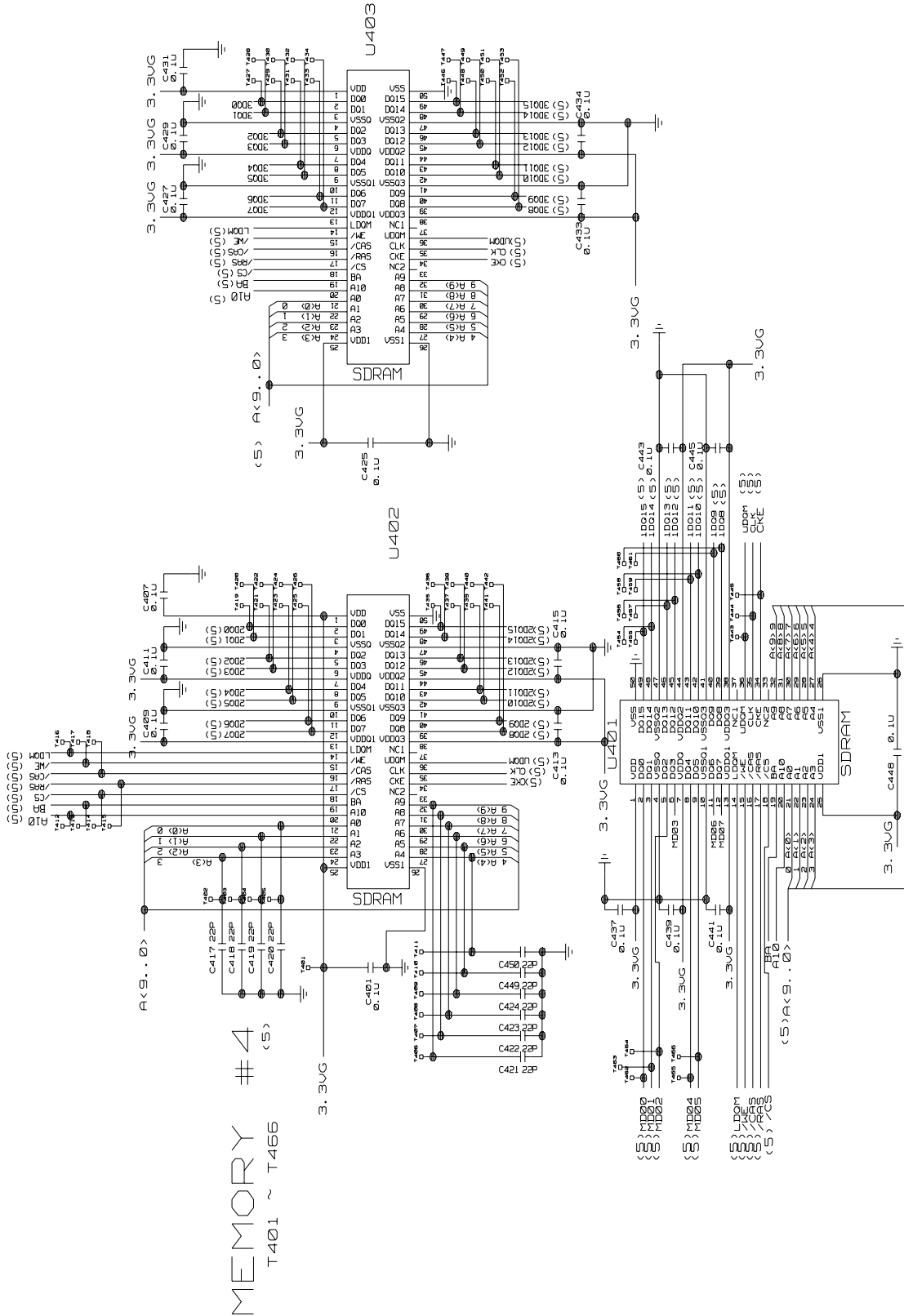
A/D CONVERTERS
T184 ~ T300



3. CLOCKS



4. MEMORY



7. LVDS

