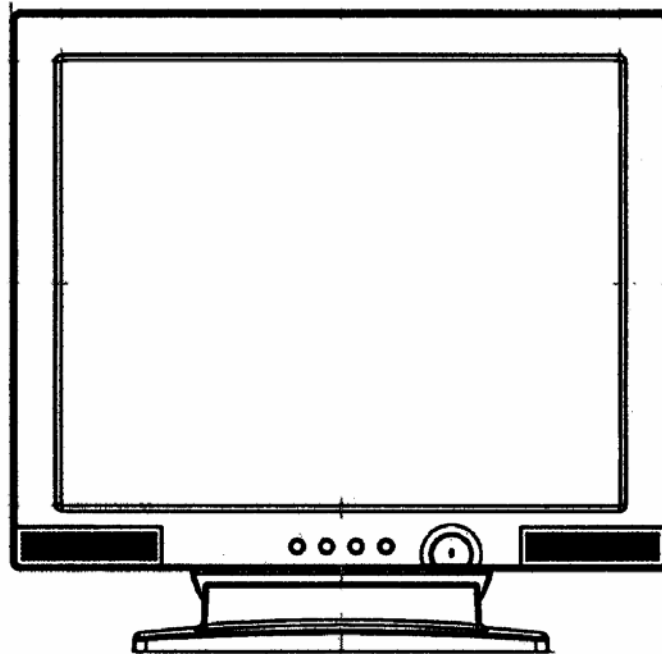


Service Manual



Model : Belinea 101555

Art. No. 111503

MAXDATA Systeme GmbH

Elbestr. 12-16

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WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public

It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.

Products powered by electricity should be serviced or repaired only by experienced professional technicians.

Any attempt to service or repair the product or products dealt within this service information by anyone else could result in serious injury or death.

SAFETY PRECAUTIONS

1. CAUTION:

No modification of any circuit should be attempted. Service work should only be performed after you are through familiar with all of the following safety checks and servicing guide lines.

2. SAFETY CHECK

Care should be taken while servicing this LCD display. Because of the high voltage used in the inverter circuit. These voltage are exposed in such areas as the associated transformer circuits.

3. POWER SUPPLY REQUIREMENTS

The internal power converter for this display utilizes a AC cord, the AC cord is detachable.

4. LEAKAGE CURRENT HOT CHECK

4-1 Plug the AC cord directly into the AC outlet. Do not use an isolation transformer during this check.

4-2 Connect a 1500 ohm, 10 watt resistor, paralleled by a 0.15uF capacitor between each metallic part and a good earth ground.

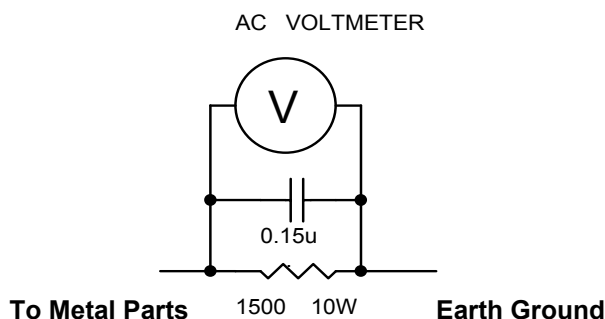
4-3 Use an AC voltmeter with 1000 ohm / volt or more sensitivity and measure the AC voltage across the combination 1500 ohm resistor and 0.15uF capacitor.

4-4 Move the resistor connection to each exposed metallic part and measure the voltage.

4-5 Reverse the polarity of the AC plug in the AC outlet and repeat the above measurement.

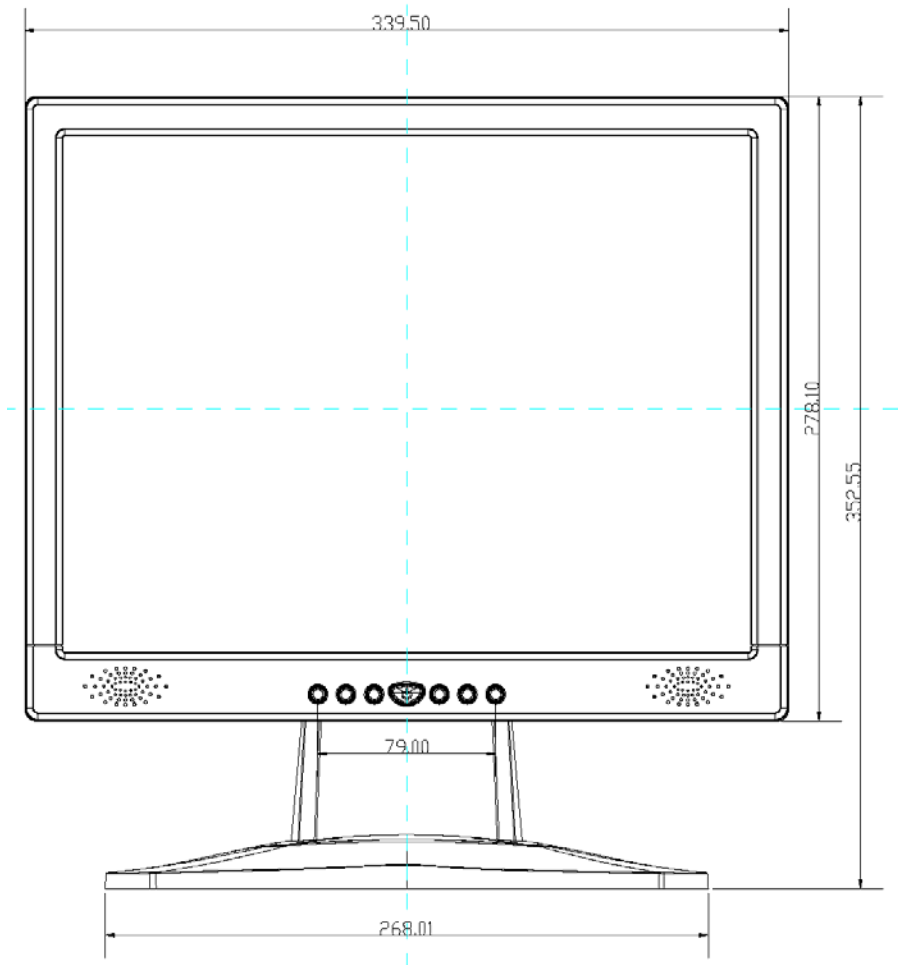
4-6 Voltage measured must not exceed 1.5 volt RMS, from any exposed metallic part to the ground.

A leakage current tester may be used in the above hot check, in which case any circuit measured must not exceed 1 milliamp. In the case of a measurement exceeding the 1 milliamp value, a rework is required to eliminate the chance of a shock hazard.

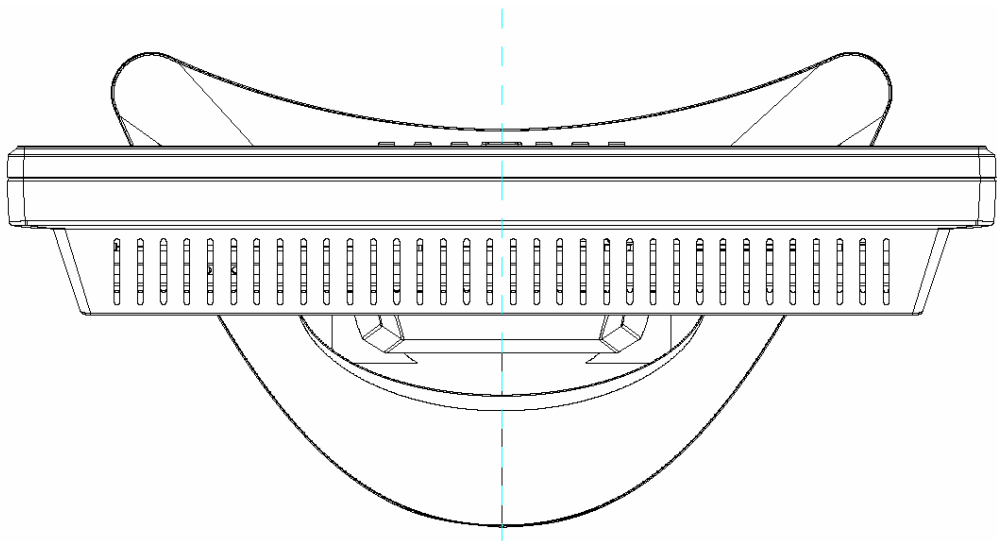


1. DIMENSIONS (Unit:mm)

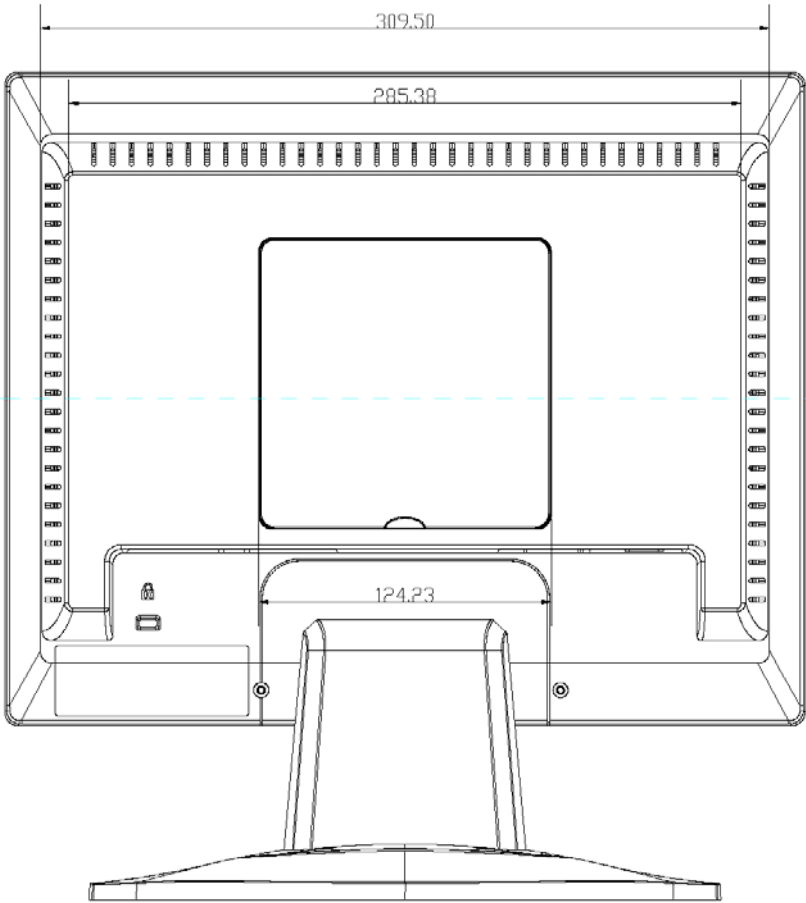
1.1 Front View(ID1)



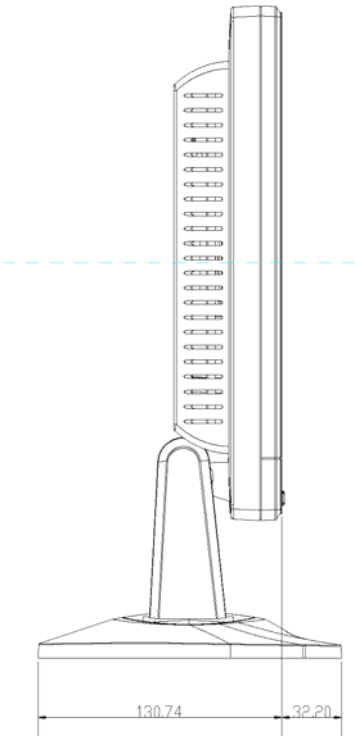
1.2 Top View



1.3 Rear View



1.4 Side View



2. GENERAL INFORMATION

2.1. OUTLINE

This monitor is a 15" multi-scan color LCD display with the following features.

OSD (on screen display) control allows easy user adjustment.

Power saving function, which helps saving energy, is also one of the highlights of this model.

2.2. FEATURES

2.2.1 Power Saving

The Built in Power Save function based on VESA-DMPS standard. Power energy shall be saved by controlling the circuit in accordance with power save signal from computer.

2.2.2 OSD (on screen display) function

OSD (5 Languages) function is excellent and new man-machine interface.

Anyone is able to set up the picture as he like through OSD menu.

2.2.3 Self Test function

Self Testing picture comes out by pushing any key in the case of no-connection with computer or power saving operation. This function shows if monitor is alive or not and can be used for self aging test.

2.2.4 Ergonomic design

Low emission design to meet TCO 99.

2.2.5 Multi scan with digital technology

8 bit micro controller controls the circuit operation to meet with wide range signal of

Fh = 31~61 kHz and Fv = 56~75 Hz. So VGA640x400, VGA640x480, SVGA800x600, XGA 1024x768 are possible.

2.2.6 Factory preset

The product has 21 memory modes in total. 12 modes are preset and 9 modes are user definable.

2.2.7 Fine dot pitch

LCD panel with a fine dot pitch (Horizontal: 0.297 mm / Vertical: 0.297 mm)

2.2.8 Superior display performance

High contrast : 350:1 (Typical)

High brightness : 250 cd / m² (Typical)

Wide view angle : 130 / 110 degrees (H/V Typical)

2.2.9 Special function

VESA DDC2B (Display Data Channel) Compatible

3. SPECIFICATION

3.1. Outline

- 3.1.1 Front Indication: POWER SW, LED (Green/Amber), UP, DOWN, LEFT, RIGHT, Set/Auto and MENU key are located on the front panel.
- 3.1.2 Video signal cable connector, audio line-in receptacle and AC inlet are located on the back side cabinet.
- 3.1.3 OSD menu includes the following function. CONTRAST, BRIGHTNESS, H.POSITION, V.POSITION, COLOR-TEMPERATURE, CLOCK, PHASE, LANGUAGE, VOLUME, RECALL
- 3.1.4 CONTRAST and BRIGHTNESS can be directly controlled with UP / DOWN key.
- 3.1.5 VOLUME can be controlled with LEFT / RIGHT key.

3.2. MECHANICAL SPECIFICATIONS

- 3.2.1 Dimension Height : 340 mm
Width : 352 mm
Depth : 163 mm
- 3.2.2 Net Weight : 2.6 kg
- 3.2.3 Maximum Viewable Area: Diagonal 381mm (15")

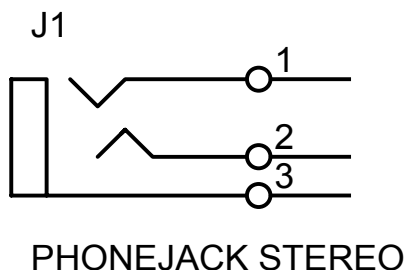
3.3. PANEL SPECIFICATIONS

Part No.	HSD150SX84-C
Driver bit of panel	6 bit
Contrast ratio	350:1
Brightness	250 cd / m ²
Pixel pitch	0.297 mm
Response time	Typical 35 ms
View angle (L/R/T/B)	65/65/55/55 degrees
Color coordinate white	x=0.310,y=0.330

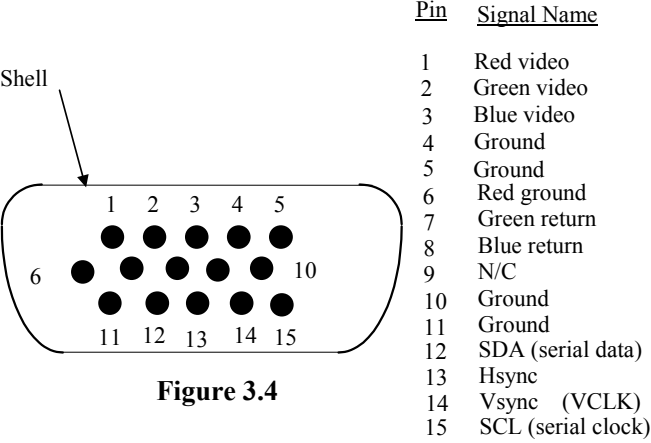
3.4. CONNECTORS

- 3.4.1 AC inlet : CEE22 typed connector

- 3.4.2 Audio : Line-in receptacle



3.4.3 Attached video signal cable connector x 1



Signal cable input connector.

3.5. ELECTRICAL SPECIFICATIONS

3.5.1 Standard conditions

Display area (HxV)	304 x 228 mm
Video signal level	0.7 Vpp
Contrast	Max.
Brightness	Max.
Ambient Temperature	25 +/- 5 C degrees
Input voltage	AC 220,50Hz
Warming up time	More than 30 minutes
Display mode	1024 x 768

3.5.2 POWER

3.5.2.1 Power supply

AC-DC adapter

Input voltage	100 - 240 V
Input current	max. 1 Arms
Output voltage	12VDC, 350mA, 3.3V 2A
Frequency range	50 - 60 Hz
Inrush current	Shall be less than the ratings of critical components (including fuse, rectifiers and surge limiting device) for all conditions of line in voltage.
Maximum power consumption:	40 Watts

3.5.2.2 Power Management

The Power Management System complies with TCO 99 standards.

MODE	H-SYNC	V-SYNC	COLOR OF POWER LED	POWER CONSUMPTION	RECOVERY TIME
On	Active	Active	Green	< 40 Watts	-
Off	Inactive	Inactive	Amber	< 1 Watts	< 30 seconds

Remark: In case of "no signal" Power LED must be amber.
At first power on w/o signal LED will be green + message on screen.

3.5.3 Signal level and input impedance

3.5.3.1 Video Signal level

This LCD display is adjusted at the factory using 0,7 Vp-p Video signal.

3.5.3.2 Sync Signal level

H/V Separate: TTL level

3.5.3.3 Input impedance

Video input: 75 ohms

Sync input: > 1 k ohms

3.5.4 Display Area

Display area: 304 x 228 mm

3.5.5 Preset Timings

The product has 21 memory modes in total. 12 modes are preset and 9 modes are user definable.

Timing	1	2	3	4	5	6	7	8	9	10	11	12
Standard	DOS	VESA	VESA	VESA	VESA	VESA	VESA	VESA	VESA	VESA	Industry	VESA
Data Pixel	640	640	640	640	720	800	800	800	800	1024	1024	1024
Data Line	350	480	480	480	400	600	600	600	600	768	768	768
H-Freq kHz	31.469	31.469	37.861	37.500	31.467	35.156	37.879	48.077	46.875	48.363	56.180	60.023
V-Freq Hz	70.087	59.942	72.809	75.000	70.082	56.250	60.317	72.188	75.000	60.004	69.960	75.029
Pix Rate MHZ	25.175	25.175	31.500	31.500	28.320	36.000	40.000	50.000	49.500	65.000	74.160	78.750
Hor.A [us]	0.318	0.636*	0.508	0.508	0.616	0.667	1.000	1.120	0.323	0.369	0.323	0.203
Hor.B [us]	3.813	3.813	1.270	2.032	3.813	2.000	3.200	2.400	1.616	2.092	2.373	1.219
Hor.C [us]	1.907	1.907*	3.810	3.810	1.907	3.556	2.200	1.280	3.232	2.462	1.294	2.235
Hor.D [us]	25.422	25.422	20.317	20.317	25.442	22.222	20.000	16.000	16.162	15.754	13.810	13.003
Hor.E [us]	31.778	31.778	26.413	26.667	31.778	28.444	26.400	20.800	21.333	20.677	17.800	16.660
Vert.A [ms]	0.191	0.381	0.026	0.027	0.382	0.028	0.026	0.770	0.021	0.062	0.018	0.017
Vert.B [ms]	0.064	0.064	0.079	0.080	0.064	0.057	0.106	0.125	0.064	0.124	0.142	0.050
Vert.C [ms]	1.907	1.048#	0.528	0.427	1.111	0.626	0.026	0.478	0.448	0.600	0.463	0.466
Vert.D [ms]	11.122	15.253	12.678	12.800	12.711	17.067	15.840	12.480	12.800	15.880	13.670	12.795
Vert.E [ms]	14.268	16.683	13.735	13.333	14.268	17.778	16.579	13.853	13.333	16.666	14.293	13.328
Sync.Pol.	+/-	-/-	-/-	-/-	-/+	+ / +	+ / +	+ / +	+ / +	- / -	+ / +	+ / +

Note: *Indicates horizontal front / back porch includes borders

Indicates vertical front / back porch includes borders

3.5.6 General performance

3.5.6.1 Maximum pixel clock

80.00 MHz

3.5.6.2 Maximum luminance

Test conditions: 100% all white pattern, brightness set to Maximum

typical: 250 cd/m²

min: 200cd/m²

3.5.6.3 Brightness variation

Value	75 % Variation (C / A x 100)
Conditions	Display image: Full white Brightness: Maximum Contrast: Maximum A: Luminance at center position C: Luminance at position of lowest brightness

3.5.6.4 Contrast ratio (CR)

Value	CR= B / A
Conditions	Contrast: Maximum Brightness: max B: Full white pattern A: Full black pattern

3.6. ENVIRONMENTS

The environmental conditions are in accordance to IEC 721

Operating:

Temperature:

5°C - +40° C

Humidity:

20% - 80%

Height:

3000 m

Air pressure:

700 - 1060 mbar

Storage (unpacked)

Temperature:

-20°C - +60° C

Humidity:

10% - 85%

Height:

3000 m

Air pressure:

700 - 1060 mbar

Transport (packed)

Temperature:

-30°C - +60° C

Humidity:

5% - 95%

Height:

12000 m

3.7. REGULATORY STANDARDS**3.7.1 Safety standards**

This monitor applies to various safety & EMI standards May refer to the logo label

3.7.2 EMC standards

FCC part 15, subpart B, class-B (EMV) CE marking

3.8. OTHERS

UL, cUL, TCO 99,

3.9. POWER CORD

Northern Hemisphere Version: UL / CSA approved power cord.

European: VDE approved power cord.

3.10. SIGNAL CABLE

Signal cable with Mini D-Sub 15P connectors. Length: 1.8 meter.

3.11. RELIABILITY

> 30000hrs (demonstrated MTBF)

4. THEORY OF OPERATION

This section describes the function of the LCD monitor per functional block.

Belinea 101555 monitor includes MB board (including audio board function inside), inverter board, adapter and button board.

4.1 MB BOARD

The MB board is a four-layer, single-landed design with ground and internal planes provided. DC power from the power adapter enter the board through DC jack. Other connectors on the board are for inverter, and button board. The VGA cable is a signal cable that contains video signal, sync signal and DDC signal from PC VGA adapter.

The system board consists 3 functional areas: flat panel controller, micro-controller and power regulator.

4.1.1 Flat panel controller..... gmZAN2 (U1)

The heart of the system board is MRT MVZ. The MVZ is a graphics processing IC for LCD monitor.

It provides all key IC functions required for LCD panel. On-chip functions include a high-speed triple-ADC, PLL, high scaling engine, and OSD controller.

a) Clock Generation :

Crystal Input Clock (TCLK and XTAL). This is the input pair to an internal crystal oscillator and corresponding logic. A 20 MHz crystal is recommended.

b) Hardware Reset (Pin 155)

Hardware Reset signal is generated by micro-controller (U1, pin 36). It assert a reset signal at least 100 ms.

c) Analog to Digital Converter

The MVZ chip has three ADC's (analog-to-digital converters), one for each color (red, green and blue)

The analog RGB signals are connected to MVZ as described below

Pin Name	Pin Number
Red +	59
Red -	60
Green +	53
Green -	54
Blue +	47
Blue -	48

d) Panel Power Sequencing (VDDCTRL, INVCTRL) (Pin20~21)

The MCU has two dedicated outputs VDDCTRL and INVCTRL (Pin76 and Pin75) to control LCD power sequencing once data and control signals are stable.

e) Panel interface (Pin 66~137)

The MVZ driver interface is highly programmable. It supports dual bus / dual port for XGA drivers.

4.1.2 Microcontroller MT312 (U1)

The MT312 is a microcontroller serves as the system microcontroller. That is, it programs the MVZ and manages other devices in the system such as the keypad, the backlight, LED, audio and non-volatile RAM using general purpose input/output (I/O) pins.

[illegible]

4.1.3 Power reference TL431 (TD1)

The TL431 is a 2.5V voltage provider. It could support maximum 100mA current capability. The 2.5V reference was for scaler MRT MVZ reference. The voltage was very important for this all the function that MVZ have.

4.2 Inverter/Power/Audio Board

This is a specific inverter/Power/Audio module for L5TL monitor with backlight/EE parts/audio function.

4.2.1 Inverter function

The inverter converts 12 Vdc to drive two cold cathode fluorescence tubes. Electrical specification described as below.

INPUT	Rated Input Voltage	12Vdc (L5EP)
	Maximum Input Voltage	11.4~12.6 Vdc
	Input Current	<1. 2A
	Off state Input Power	< 0.1 W
	On / Off Voltage	20~98 % duty cycle
OUTPUT	Rated Output Strike-on Voltage	1100 Vrms
	Rated Output Voltage	675 Vrms at 7.5 mA
	Rated Output Frequency	50~60KHz
	Rate Output Current per tube	7.5 mA

4.2.2 Adapter

This is a general purpose AC / DC adapter which converter 90~240 Vac to a stabilized DC voltage 12 V with rated output current of 3A . Electrical specification described as below

INPUT	Rated Input Voltage	100~240 Vac , 50/60 Hz
	Operation Input Voltage	90~264 Vac, 47~63 Hz
	Input Current	< 1.0A
	Inrush Current (Cold Start)	< 50A @ all input range
	Standby Input Power	< 1.0 W (3.3V 30mA)
OUTPUT	Rated Output Voltage	12 Vdc and 3.3Vdc
	Output Voltage Regulation	+ 5 / -5 % and
	Output Ripple and Noise	< 120 and 100 mVp-p
	Rate Output Current	< 250mA and 2.0A
	Turn-on Delay	< 1 Second

4.2.3 Audio amplifier TDA7496

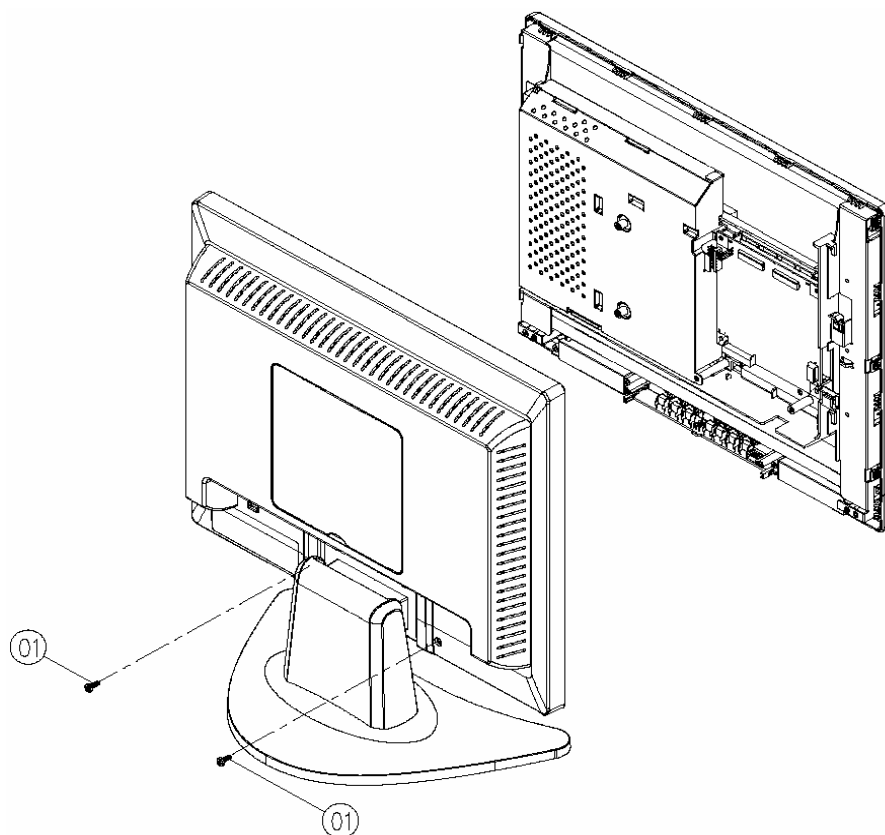
The AN7522 on the power board is a 2 channel audio power amplifier capable of delivering 1W of continuous average power to an 8 ohms with less than 10% (THD) from a 12 V power supply.

TDA7496 can directly drive 8 ohms speaker, does not require output coupling capacitor, bootstrap capacitor, or snubber network. Audio line-in are feed into pin 4,8 of the AN7522. The output power is controlled by the DC voltage of pin 39 from MTV312 I / O port.

5. DISASSEMBLY INSTRUCTIONS

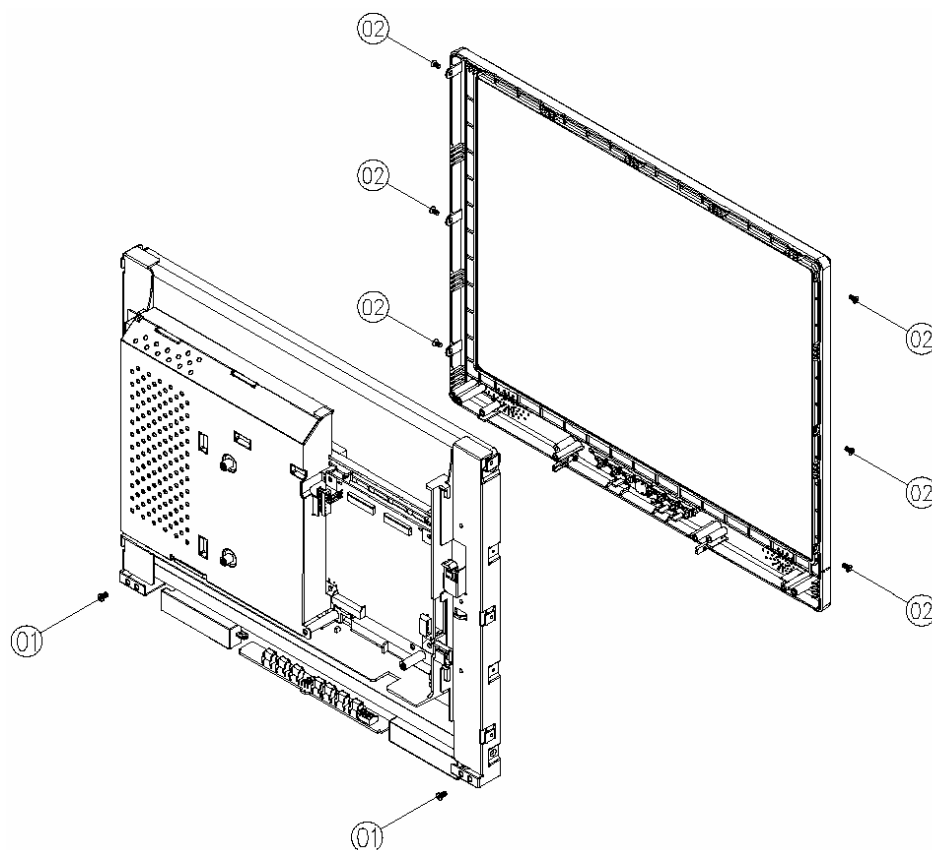
1. Stand and rear cover removal

- 1) remove four large screw "1" from
the rear cover
- 2) remove the back cover



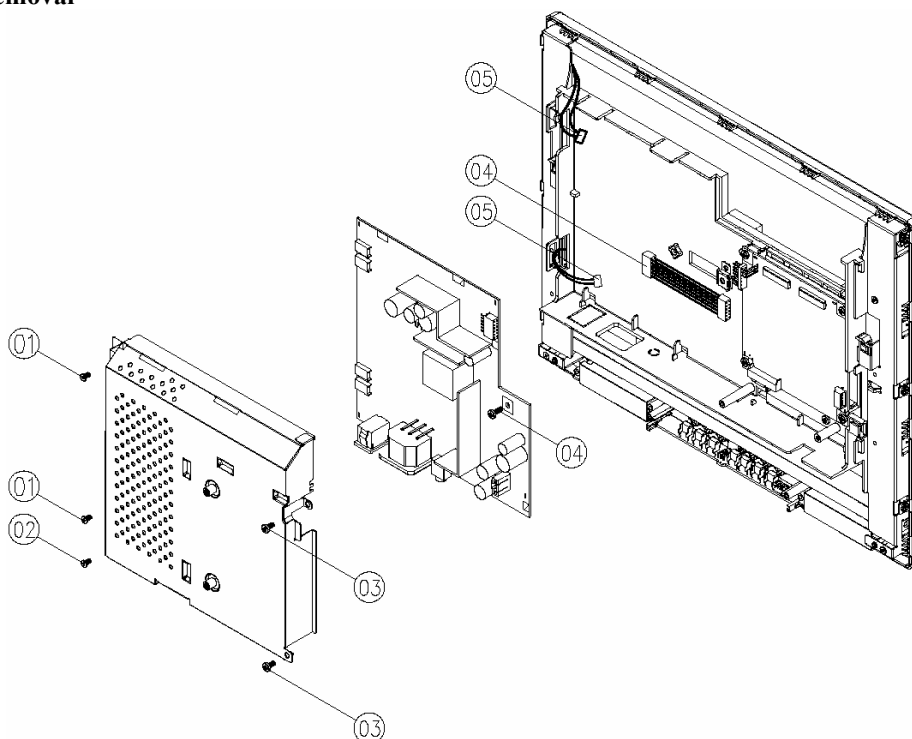
2. Bezel removal

- 1) remove screw "1" & "2" from the Bezel
- 2) remove the bezel



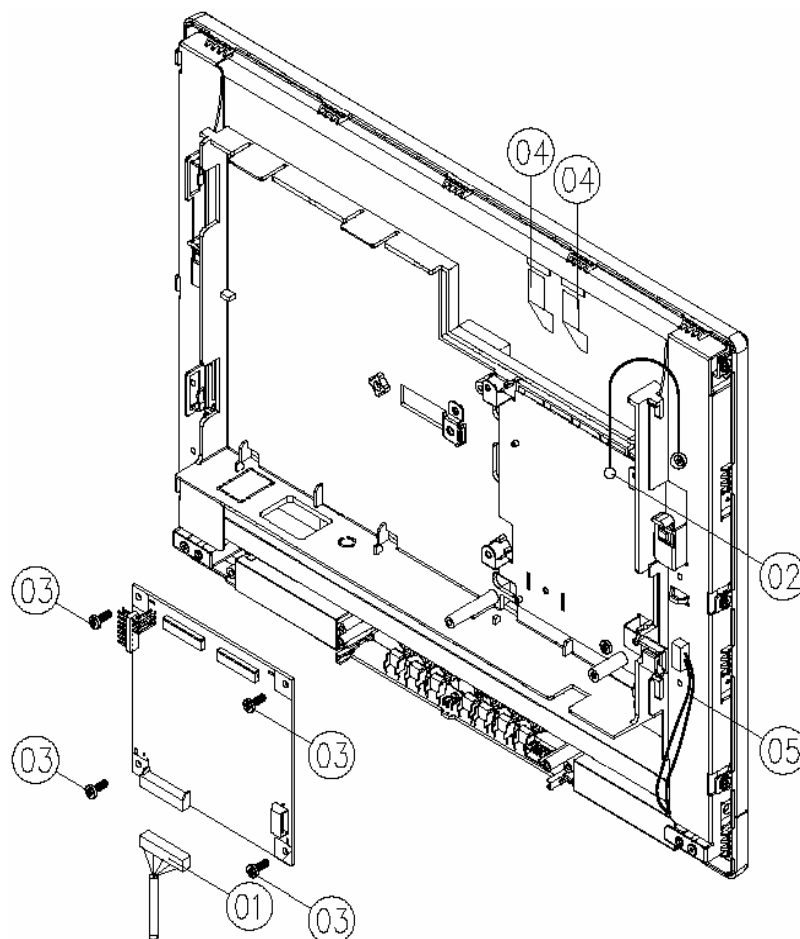
3. Inverter cover & Inverter board removal

- 1) remove two screw "1", "2" & "3"
- 2) remove the shield cover
- 3) remove two screw "4"
- 4) remove cable 4 & 5 then remove Power/Inv board

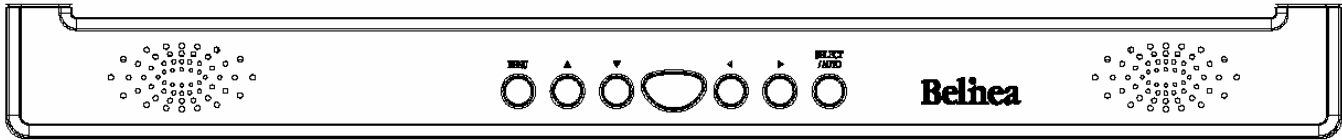


4. AD board removal

- 1) remove cables 1, 4 & 5
- 2) remove screw “2” & “3”
- 3) remove the AD board



6. CONTROL LOCATION



Button Define

1	MENU	OSD Menu	Trigger OSD Main Menu / Clear OSD
2		UP	1. Select OSD Main Menu Item 2. Trigger Brightness/Contrast Menu.
3		DOWN	1. Select OSD Main Menu Item 2. Trigger Brightness/Contrast Menu.
4		POWER	Switch Power ON/OFF
5		LEFT	1. Decrease Menu Item value 2. Trigger Volume Menu.
6		RIGHT	1. Increase Menu Item value 2. Trigger Volume Menu.
7	SELECT/AUTO	SELECT/ AUTO	1. Switch OSD Main Menu focus status. 2. Perform Auto configuration.

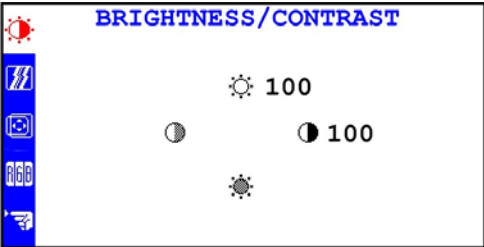
LED Status

Color	Status Description
-------	--------------------

Green	Normal status
Amber	Enter Sleep Mode status or use “Power + Auto” key enter factory mode

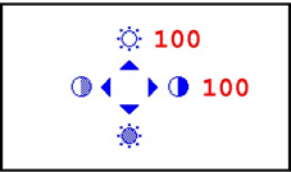
Dialog Overview

● OSD Main Menu



When user press the **Menu** key under none OSD status will trigger this menu appear for detail parameters adjust. This menu will display about 45 seconds if no one press other key, otherwise will refresh display time length.

● Brightness/Contrast Menu



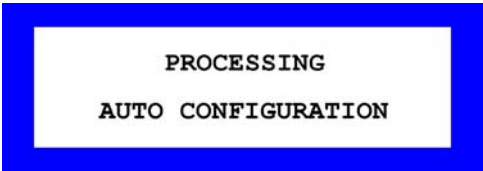
When user press the **Up** or **Down** keys under none OSD status will trigger this menu appear for Brightness and Contrast adjust. This menu will display about 45 seconds.

● Volume Menu



When user press the **Left** or **Right** keys under none OSD status will trigger this menu appear for Volume adjust. Use the **Left & Right** keys adjust the volume value, and use the **Up & Down** keys switch the Mute status. This

● Auto Configuration



When user press the **select/Auto** key under none OSD status will trigger this dialog appears and perform Auto Configuration procedure.

Mode Information



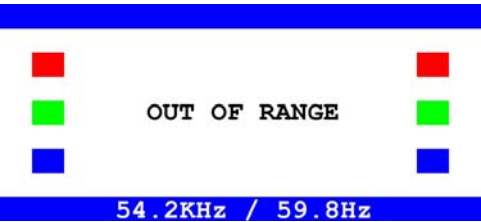
When Display timing changed this dialog will appear about 5 seconds. And this feature only enable when “Information” indicates On in OSD’s other page of main menu.

● No Signal



When user not support the video signal from the cable this dialog will appear about 20 seconds. And then enter the Sleep mode. One special case was in factory mode, the display time length will become 5 seconds for testing the power consumer.

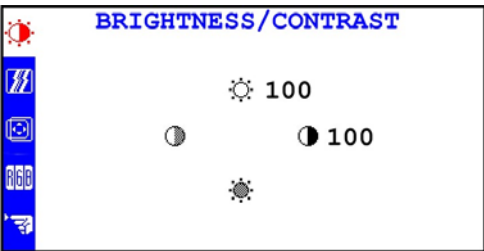
Out Of Range



When user input the video signal out of spec this dialog will appear about 20 seconds. And then enter the Sleep mode.

OSD Main Menu

Brightness & Contrast Adjustment



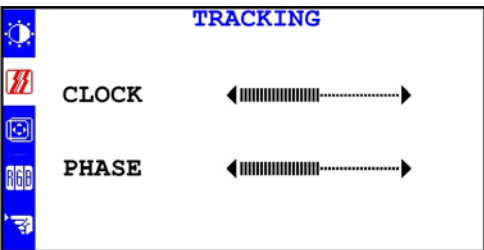
Brightness (Up&Down):

Adjust the brightness of the display.

Contrast (Left&Right):

Adjust the difference between the

Tracking Adjustment



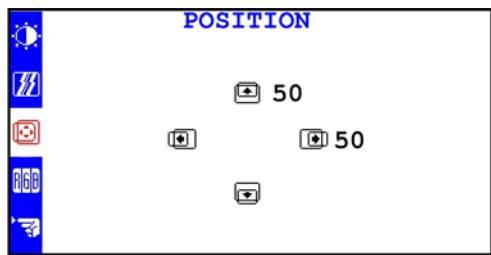
CLOCK:

Adjust to minimize any vertical bars or stripes visible on the screen background. The horizontal screen size will also change.

PHASE:

Adjust to remove any horizontal distortion, and clear or sharpen the image of characters.

● Position Adjustment



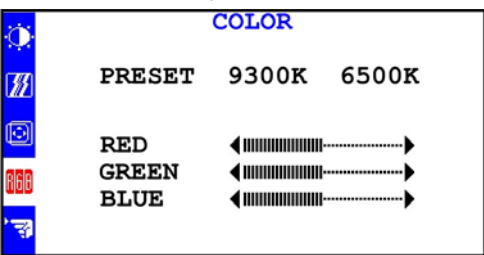
V-Position:

Adjust the vertical position of the picture.

H-Position:

Adjust the horizontal position of the picture.

● Color Adjustment



There are four items for color adjustment:

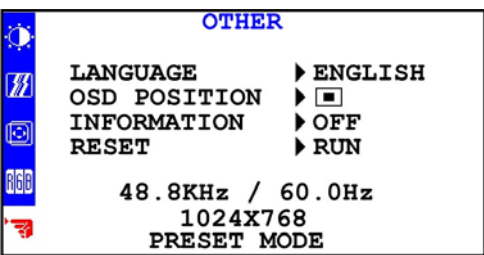
9300K: Bluish white

6500K: Reddish white

User defined:

Red, Green, Blue. Adjust to set your own color level.

● Other



LANGUAGE:

Multi- Language selection

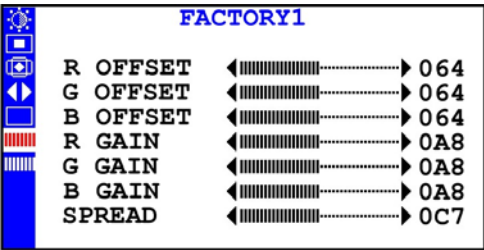
OSD POSITION:

Adjust the OSD window position on the screen.

INFORMATION:

Display Information Dialog or not when input timing changed.

● Factory1 Adjustment



This page only visible in factory mode

R,G,B OFFSET:

Adjust current RGB cut off level

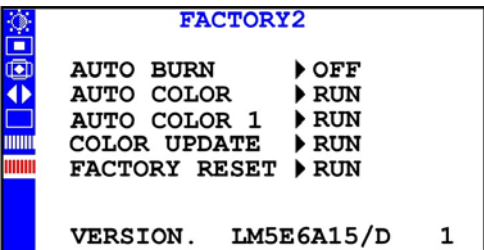
R,G,B GAIN:

Adjust current RGB Driver value.

SPREAD:

Adjust chip set internal frequency spread effect for EMI testing.

● Factory2 Adjustment



This page only visible in factory mode

AUTO BURN:

Use the chip set internal pattern for hot running monitor panel and inverter.

AUTO COLOR:

Perform Auto Balance measurement.

AUTO COLOR 1:

Perform Auto Balance measurement by chip set internal signal. And reference these values to initial all other color temperature detail parameters.

COLOR UPDATE:

Force presently R,G,B offset and gain parameters update to currently temperature memory address.

FACTORY RESET:

Recall to factory setting and power off immediately.

VERSION:

Display F/W version and panel vender and DDC serial no.

/A: LG panel

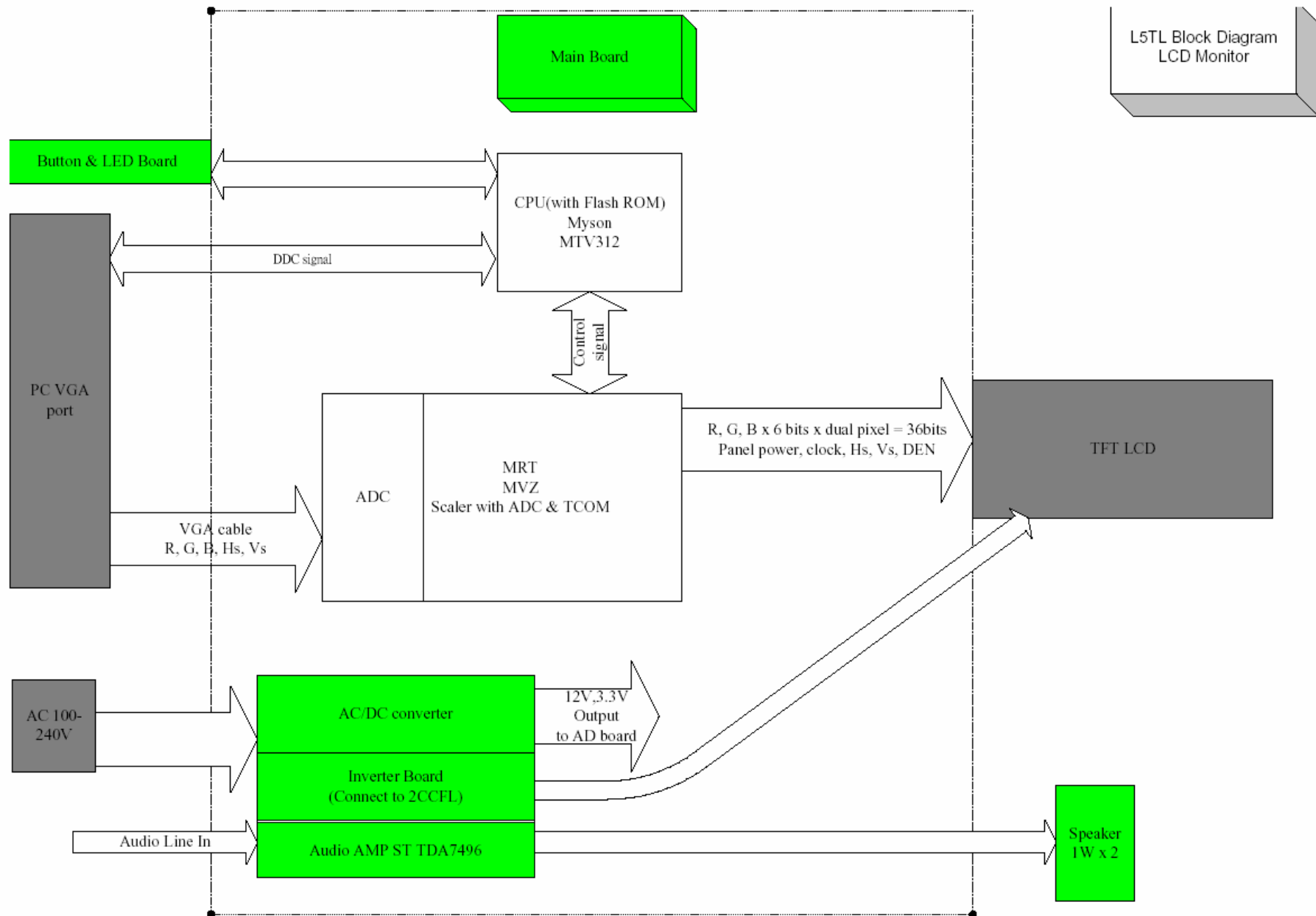
/B: CPT panel

7. NECESSARY EQUIPMENT LIST

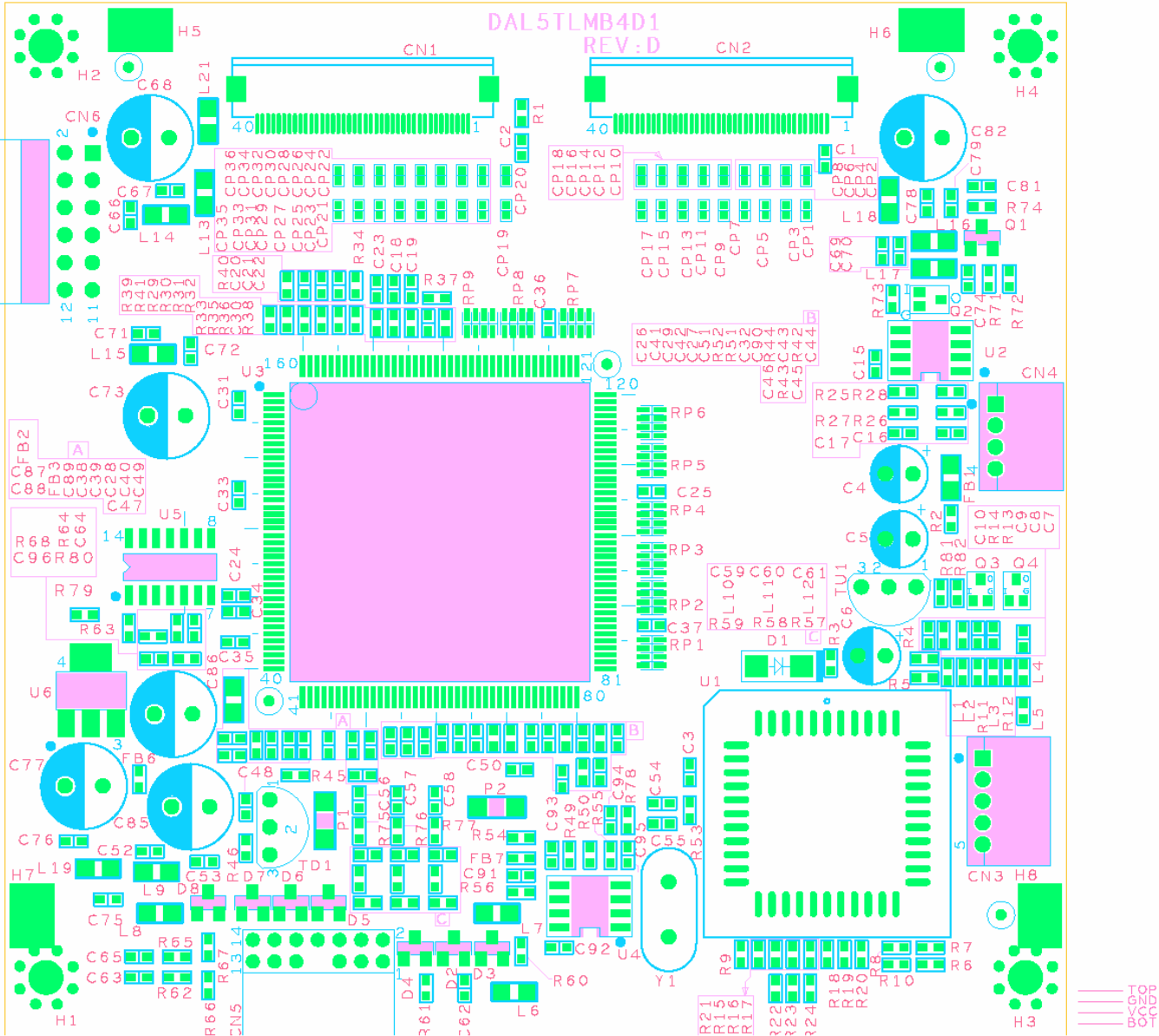
Item

- 1 Personal Computer with Windows 98/Me/XP**
- 2 Luminance Meter Minolta CA 110**
- 3 Video Generator : Chroma 2000,2135,2250 or equivalent
like test program(Display Mate)**
- 4 Color Analyzer : Minolta CA110 , Chroma or equivalent**
- 5 Watt / Power Meter**
- 6 10 Times Magnifier**
- 7 Multimeter**
- 8 Oscilloscope**

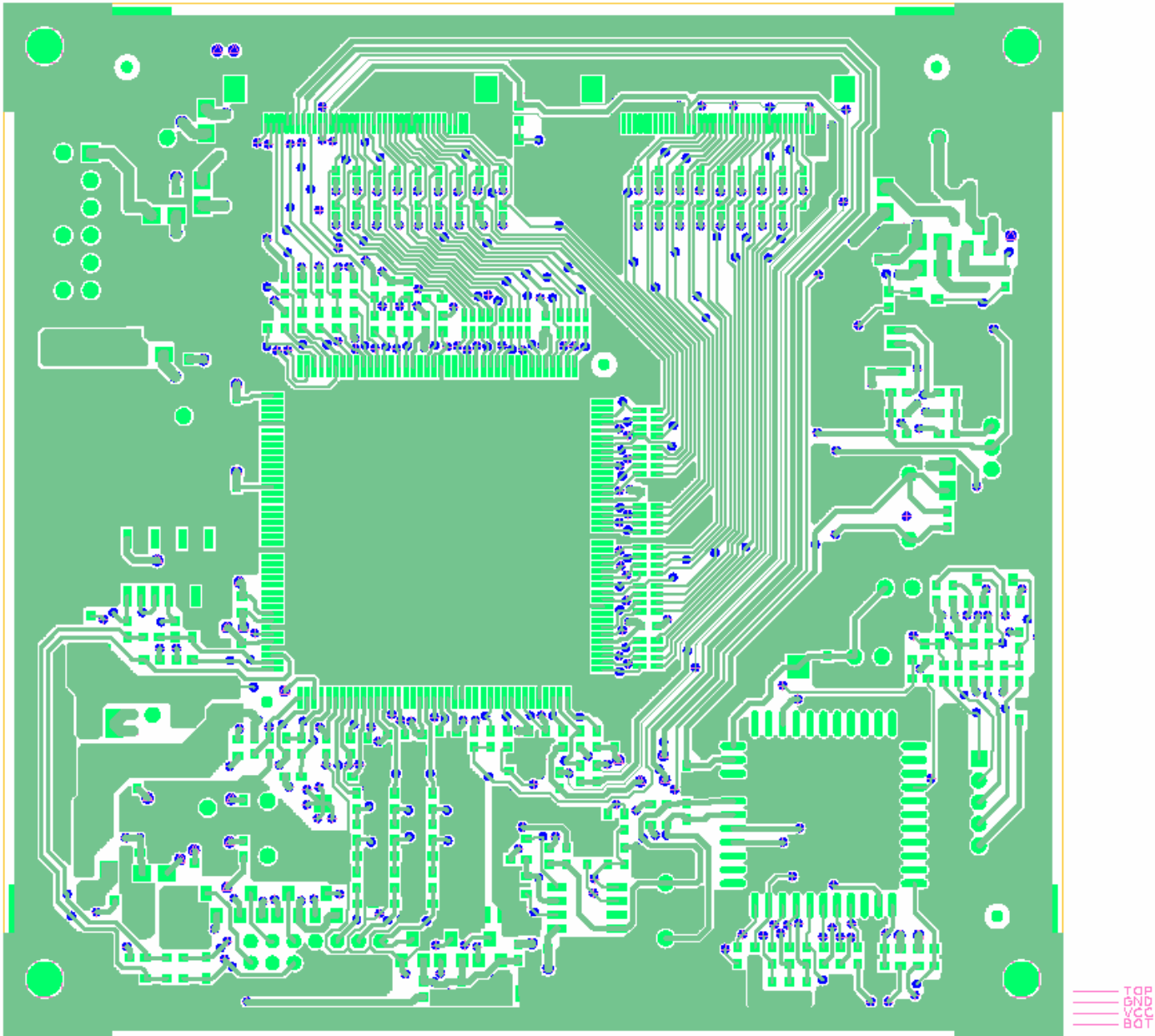
8. BLOCK DIAGRAM



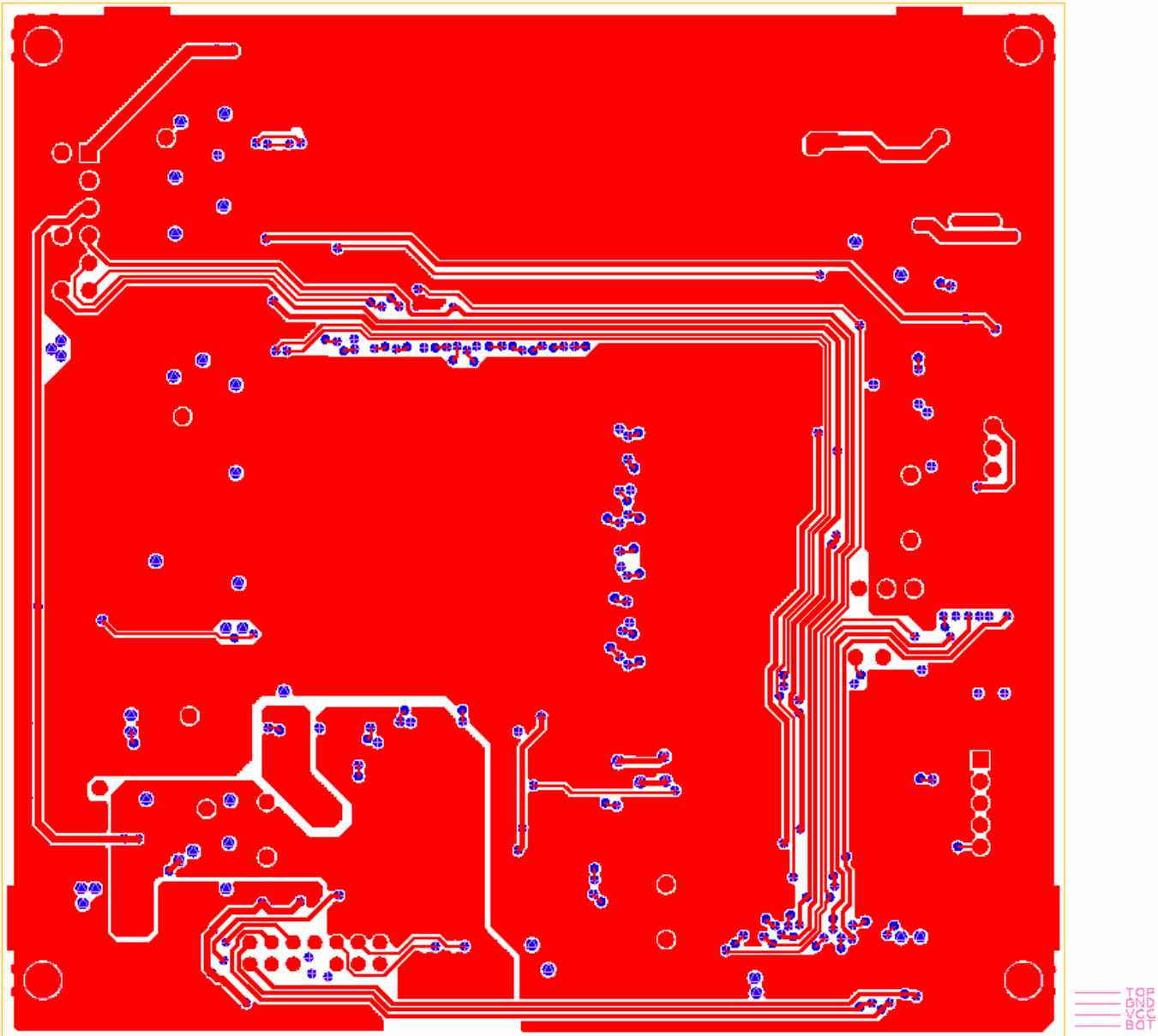
9. CONDUCTOR VIEW Main Board Silkscreen Top



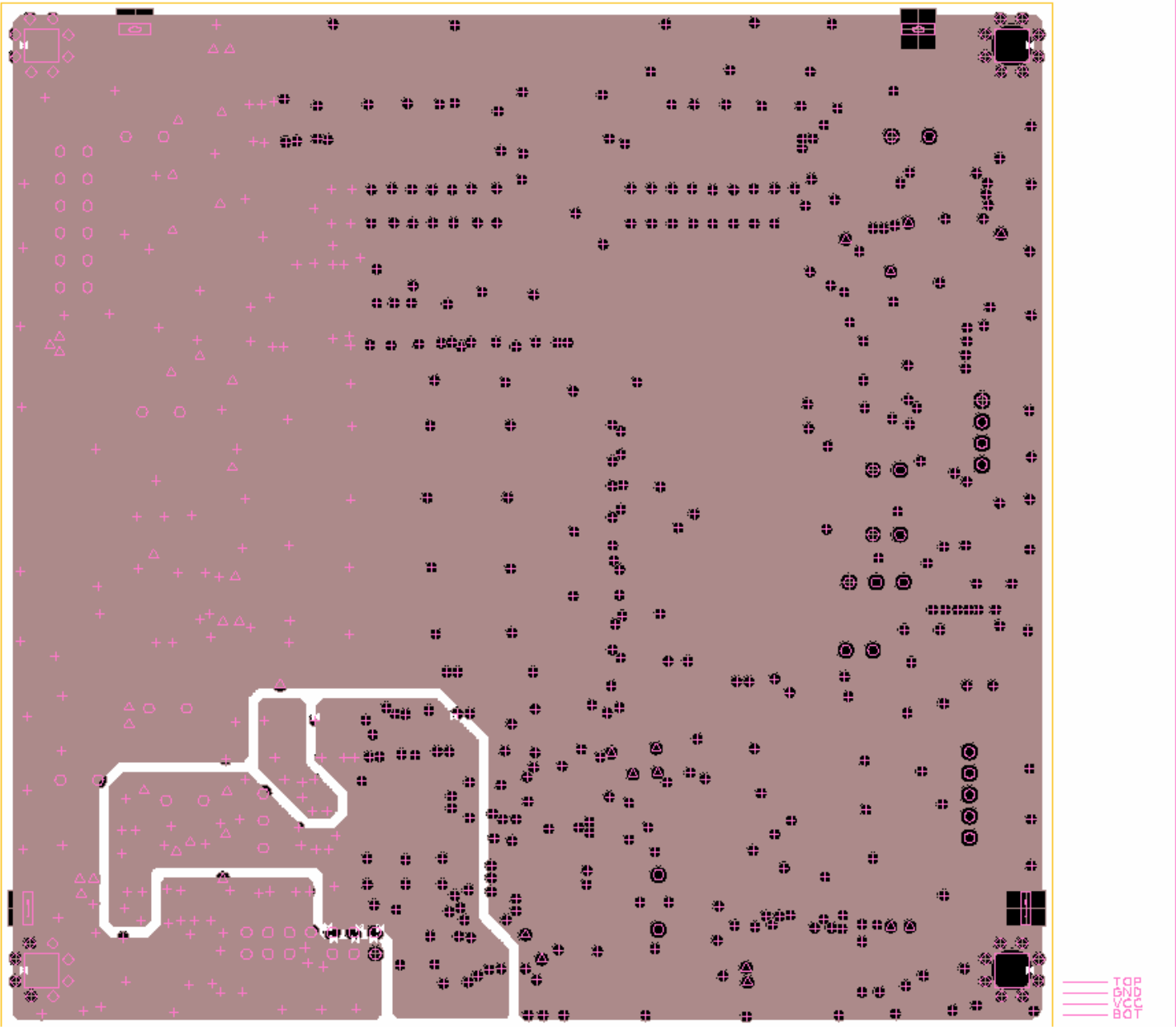
Main Board Top Layer



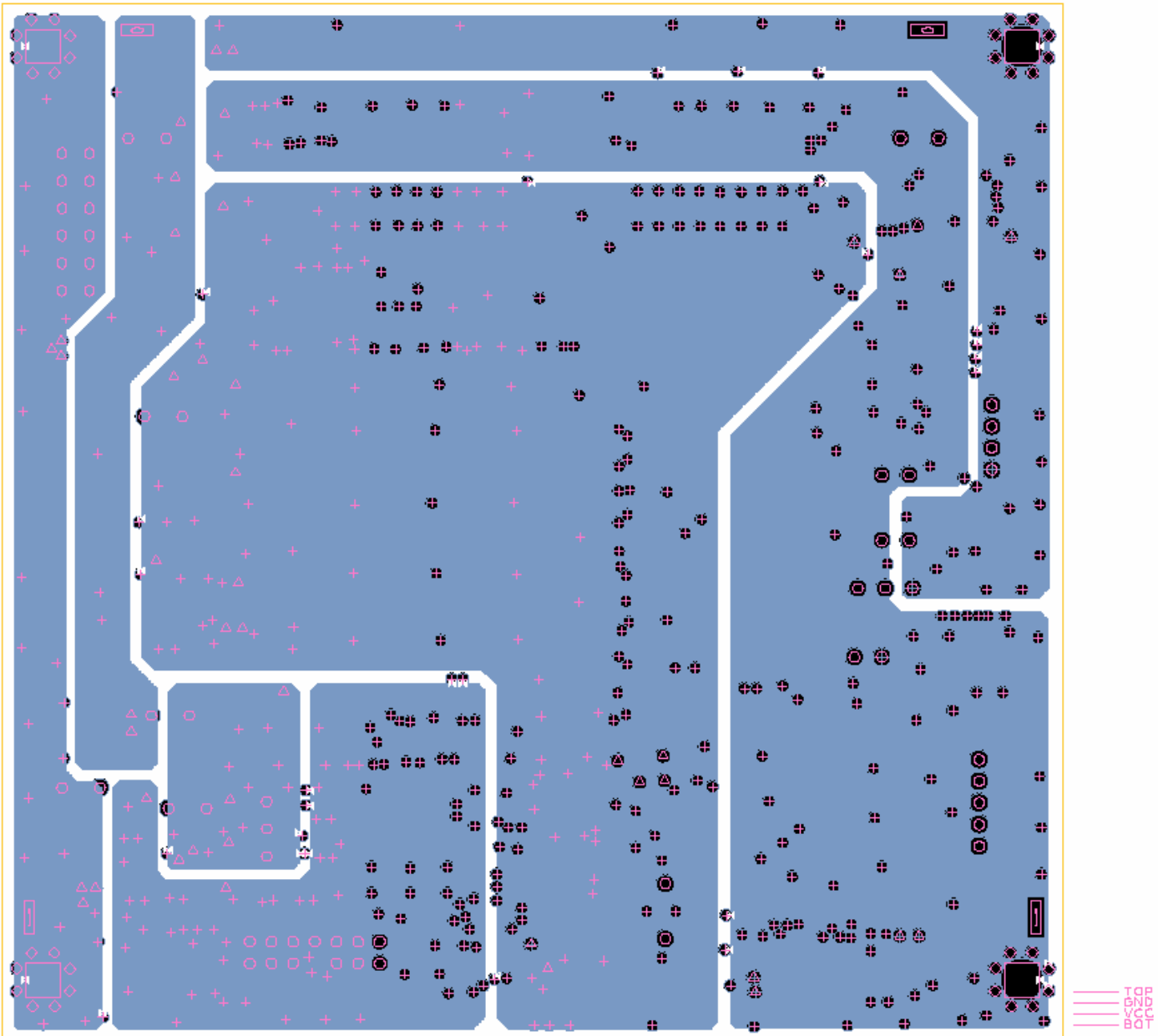
Main Board Button Layer



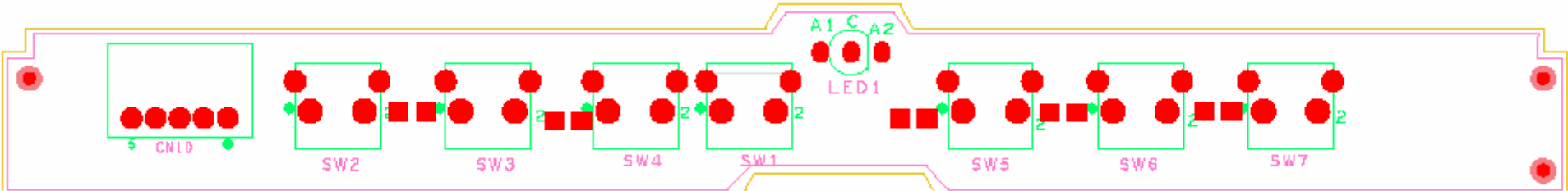
Main Board Layer GND



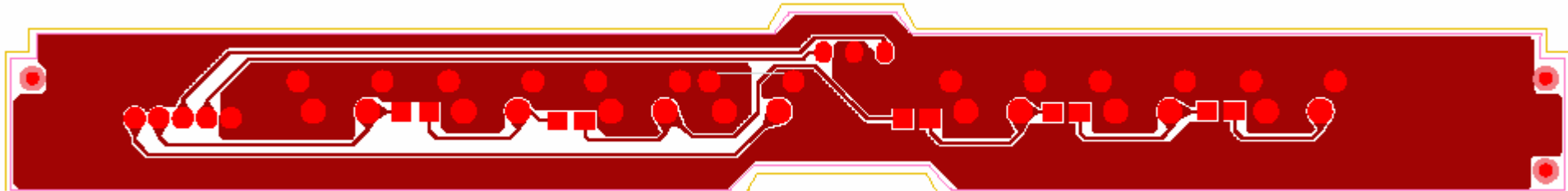
Main Board Layer Power



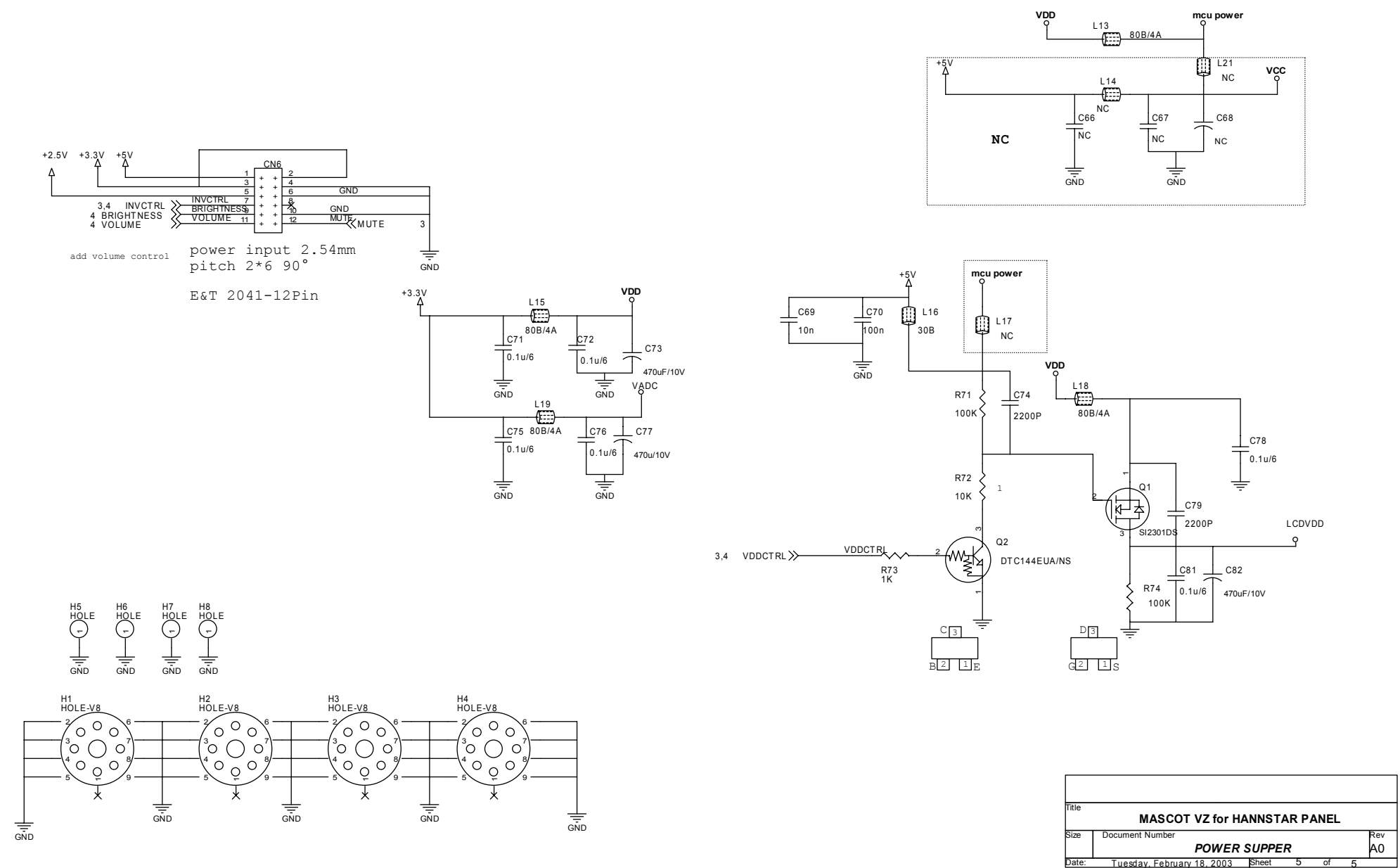
Button Board Silkscreen



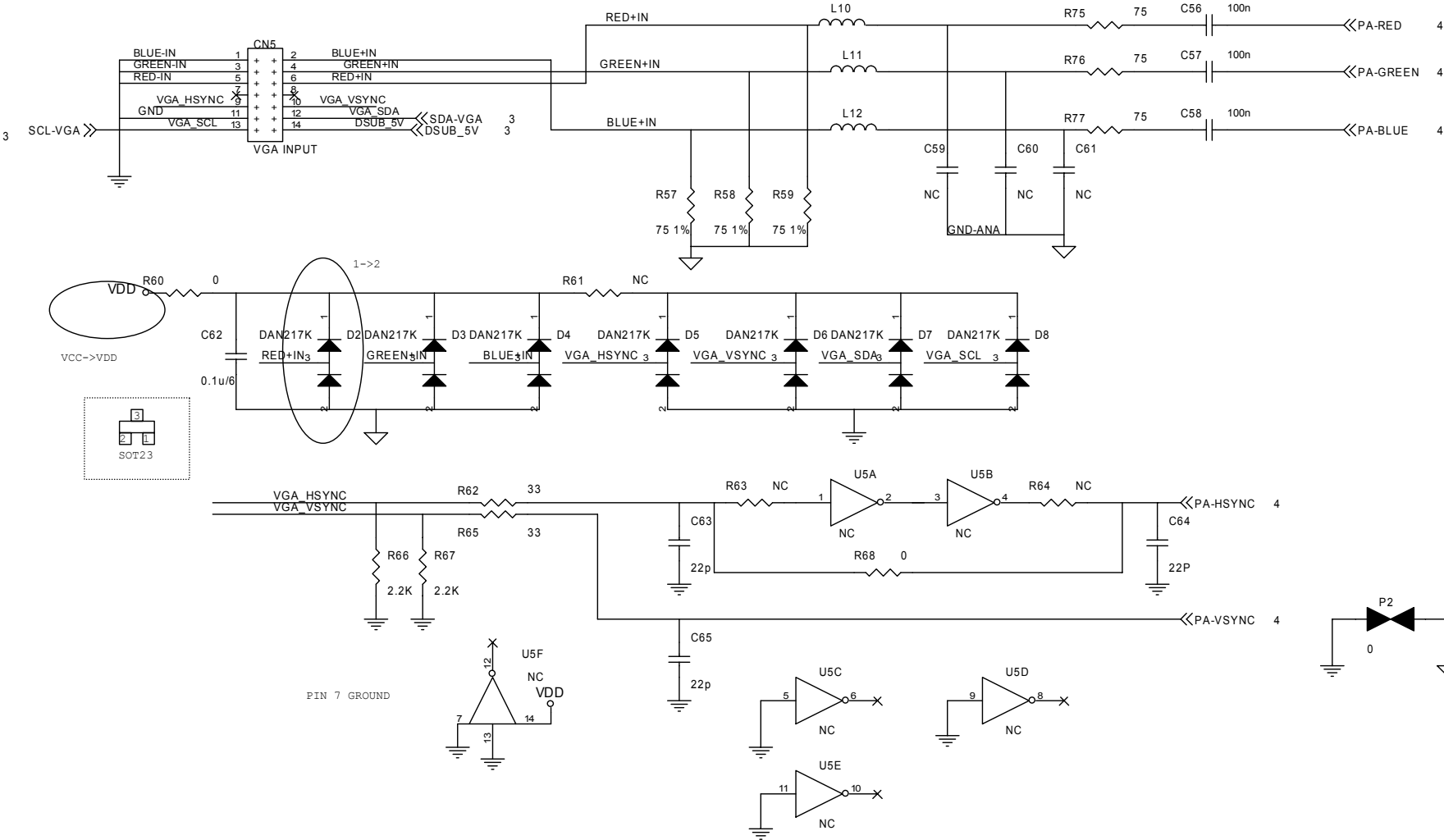
Button Board Layer Bottom



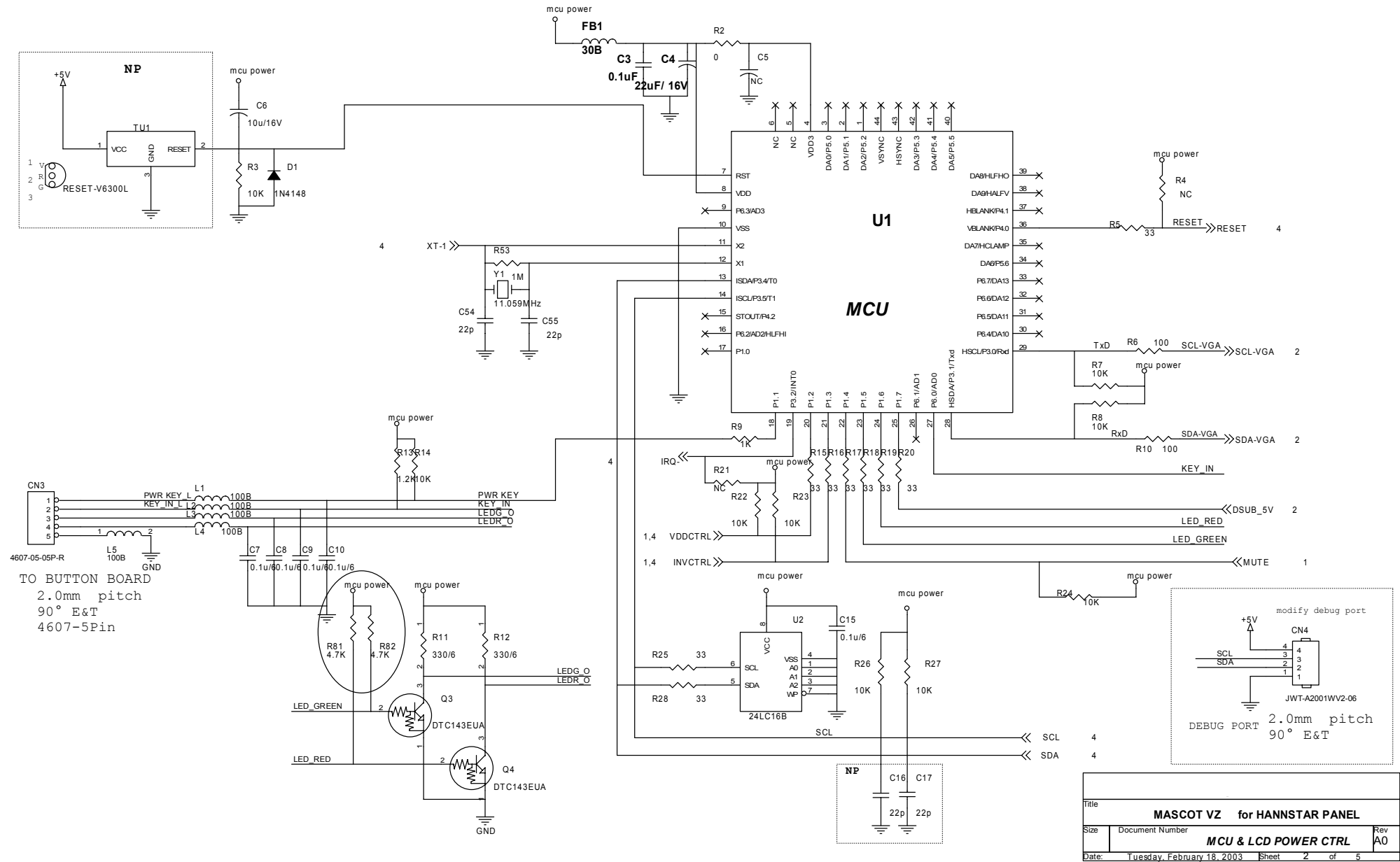
10. SCHEMATIC DIAGRAM Main Board

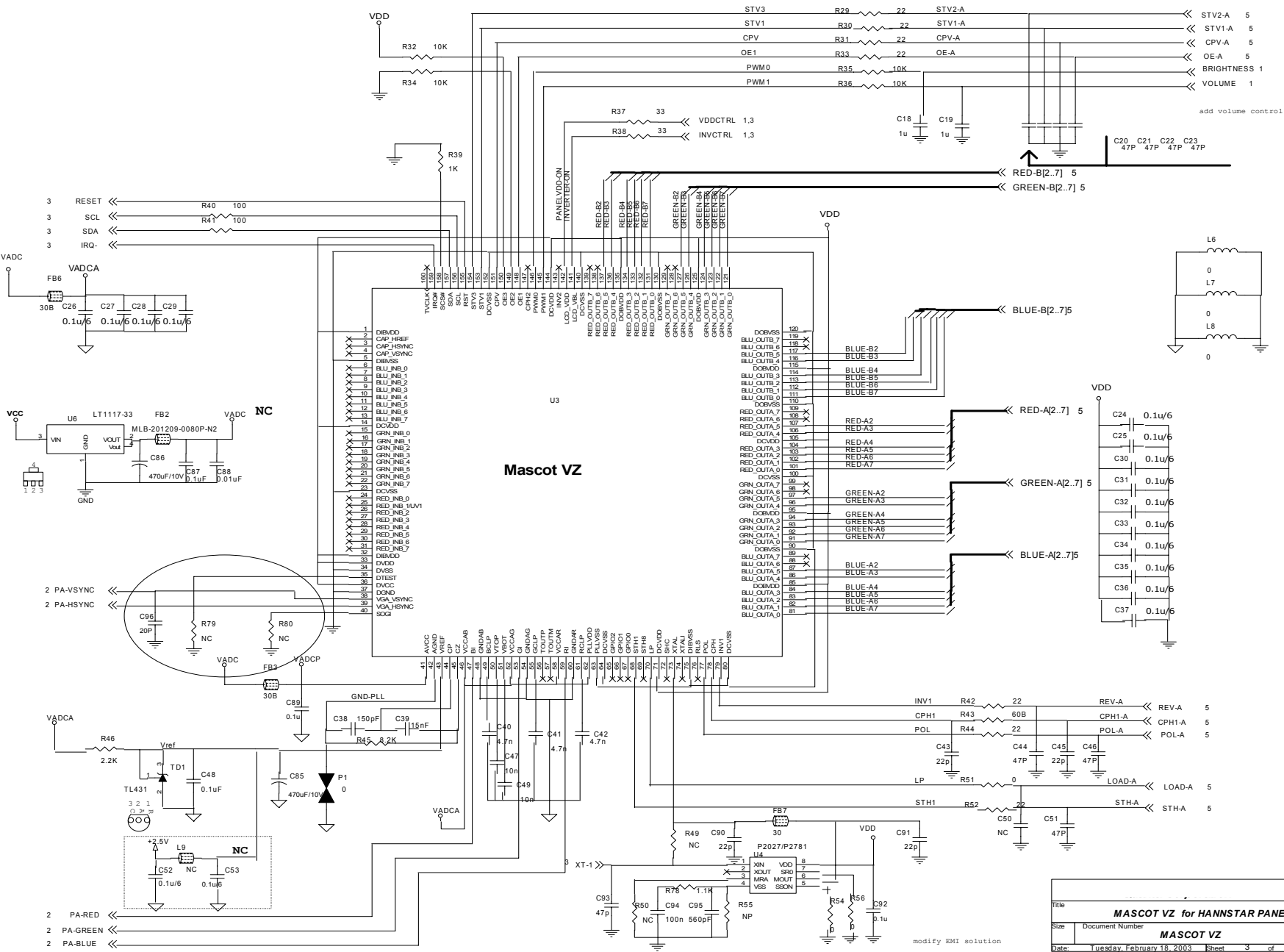


Title			
MASCOT VZ for HANNSTAR PANEL			
Size	Document Number	Rev	
	POWER SUPPER	A0	
Date:	Tuesday, February 18, 2003	Sheet	5 of 5

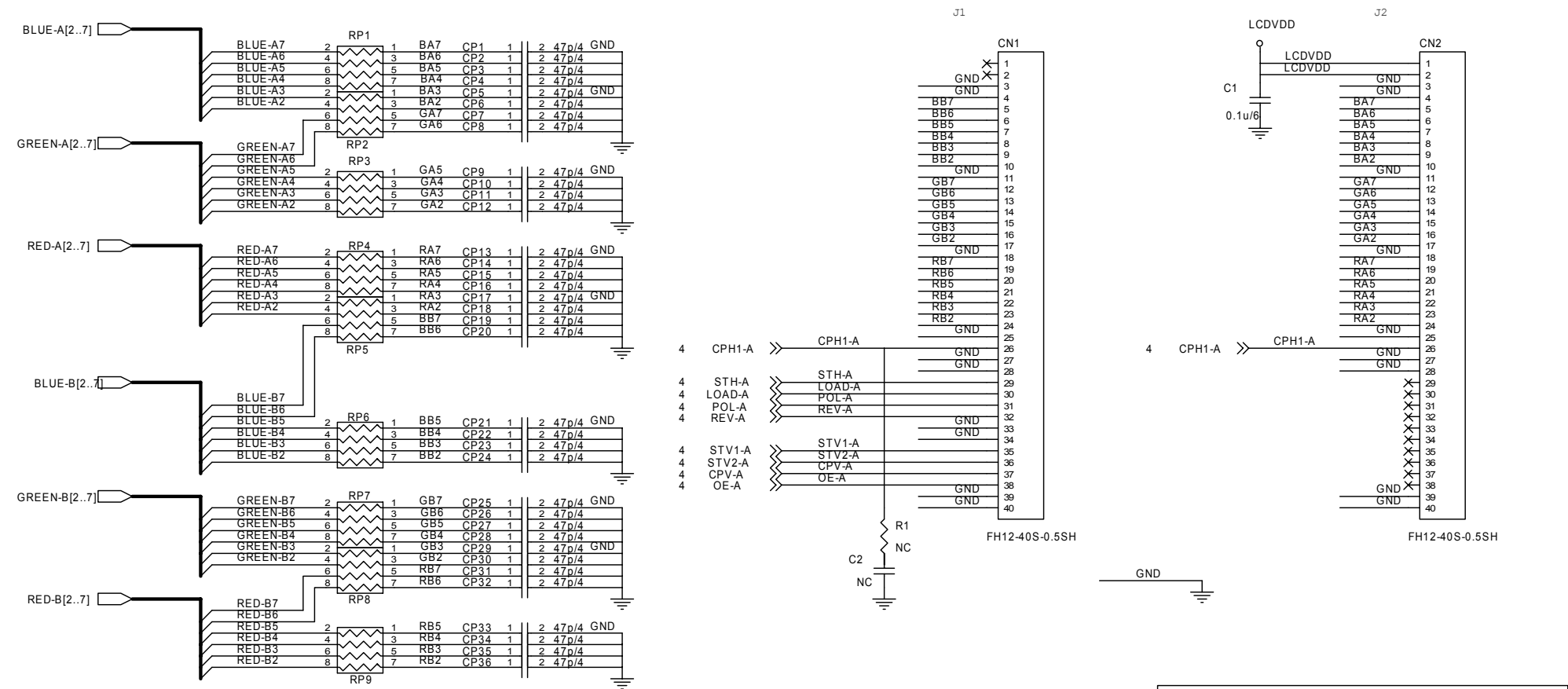


Title			
MASCOT VZ for HANNSTAR PANEL			
Size	Document Number	Rev	
	VGA INPUT	A0	
Date:	Tuesday, February 18, 2003	Sheet	4 of 5

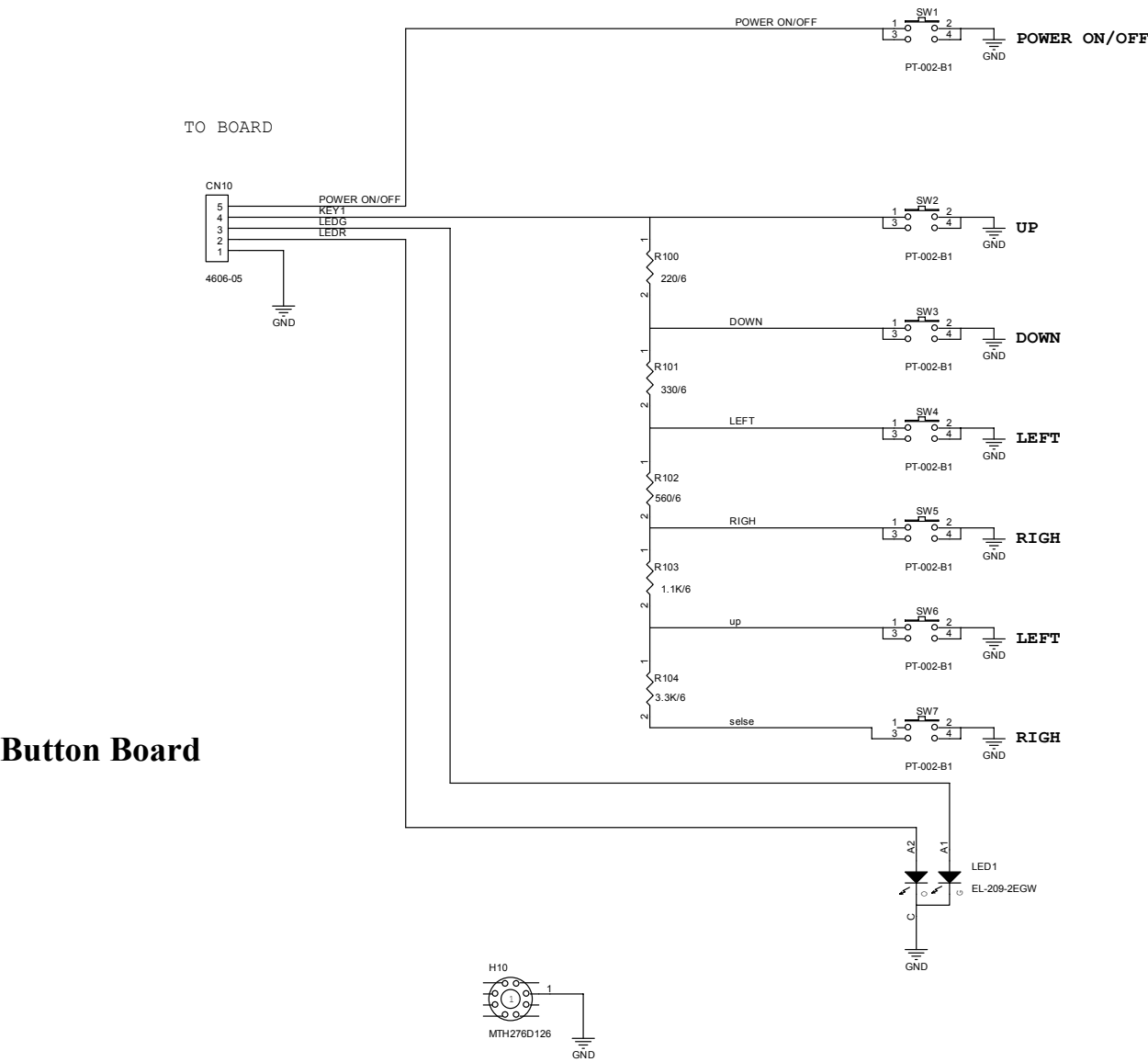




Title			
MASCOT VZ for HANNSTAR PANEL			
Size	Document Number	Rev	
	MASCOT VZ	A0	
Date:	Tuesday, February 18, 2003	Sheet	3 of 5



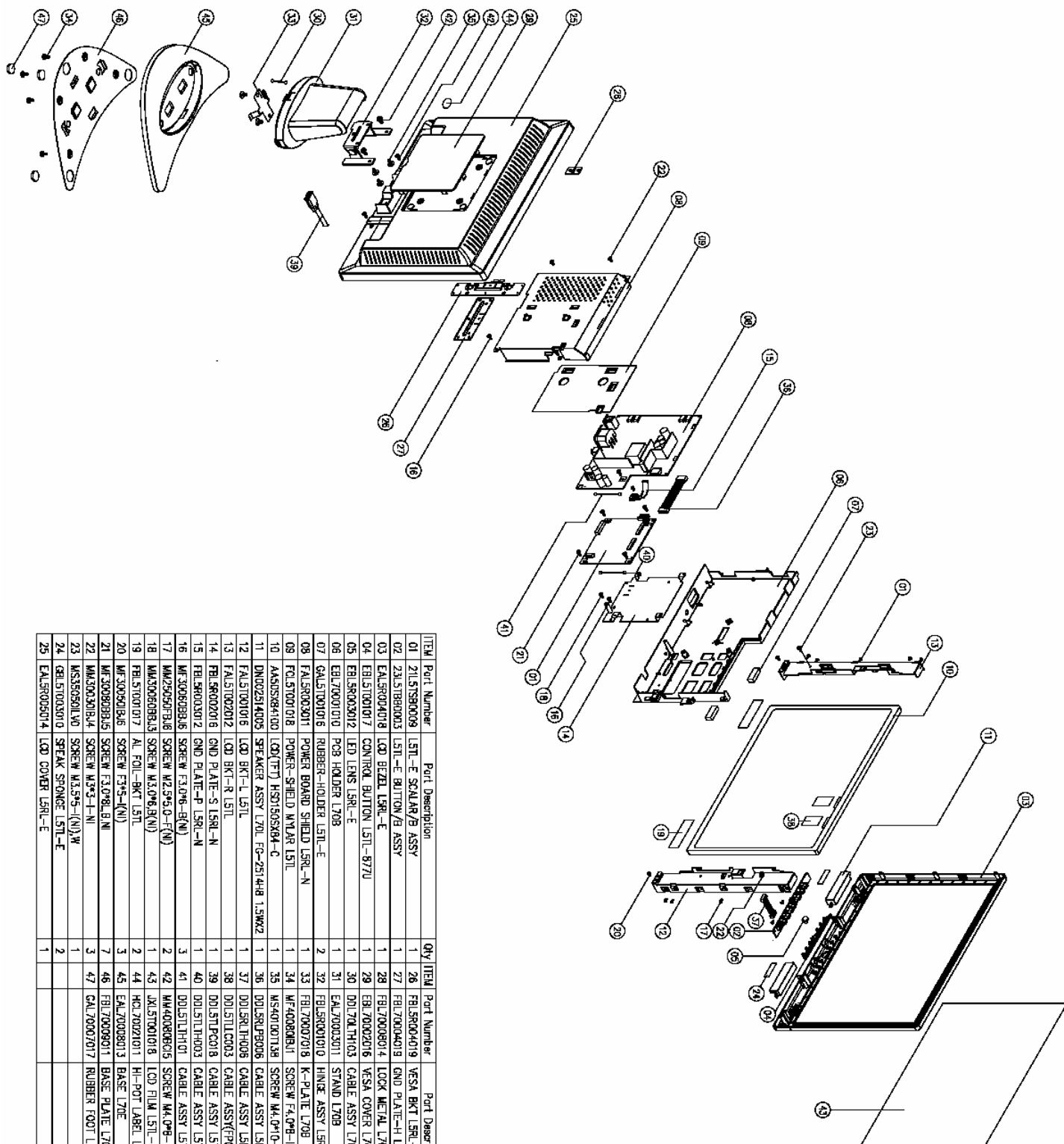
Title		
MASCOT VZ for HANNSTAR PANEL		
Size	Document Number	Rev
OUTPUT CONNECTOR		A0
Date:	Tuesday, February 18, 2003	Sheet 1 of 5



Button Board

Title			
Size	Document Number	BUTTON BOARD	
	SCHEMATIC		Rev B
Date:	Friday, March 21, 2003	Sheet	1 of 2

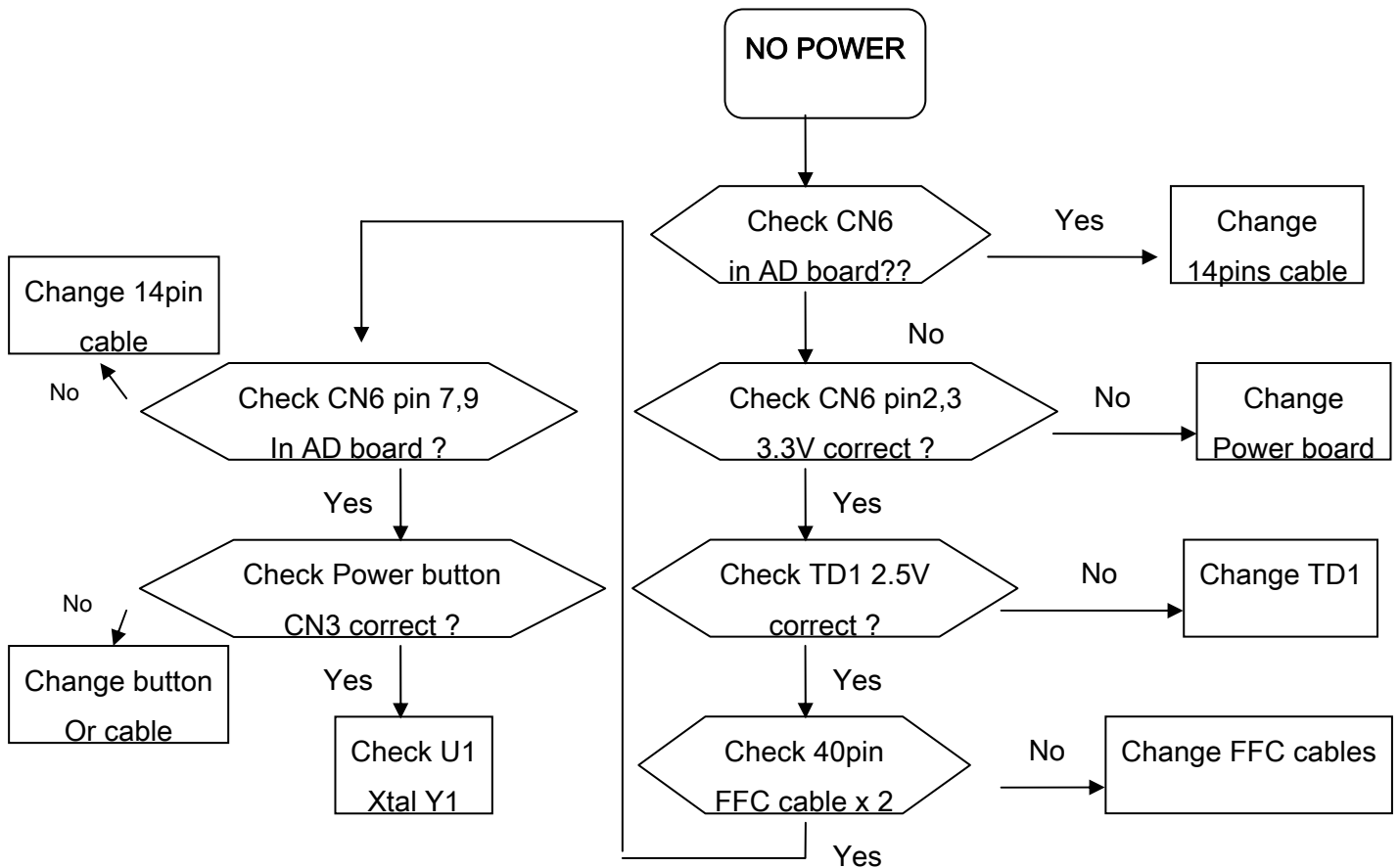
11. EXPLODED VIEW Please see the L5E_exploded_Assy_1.pdf



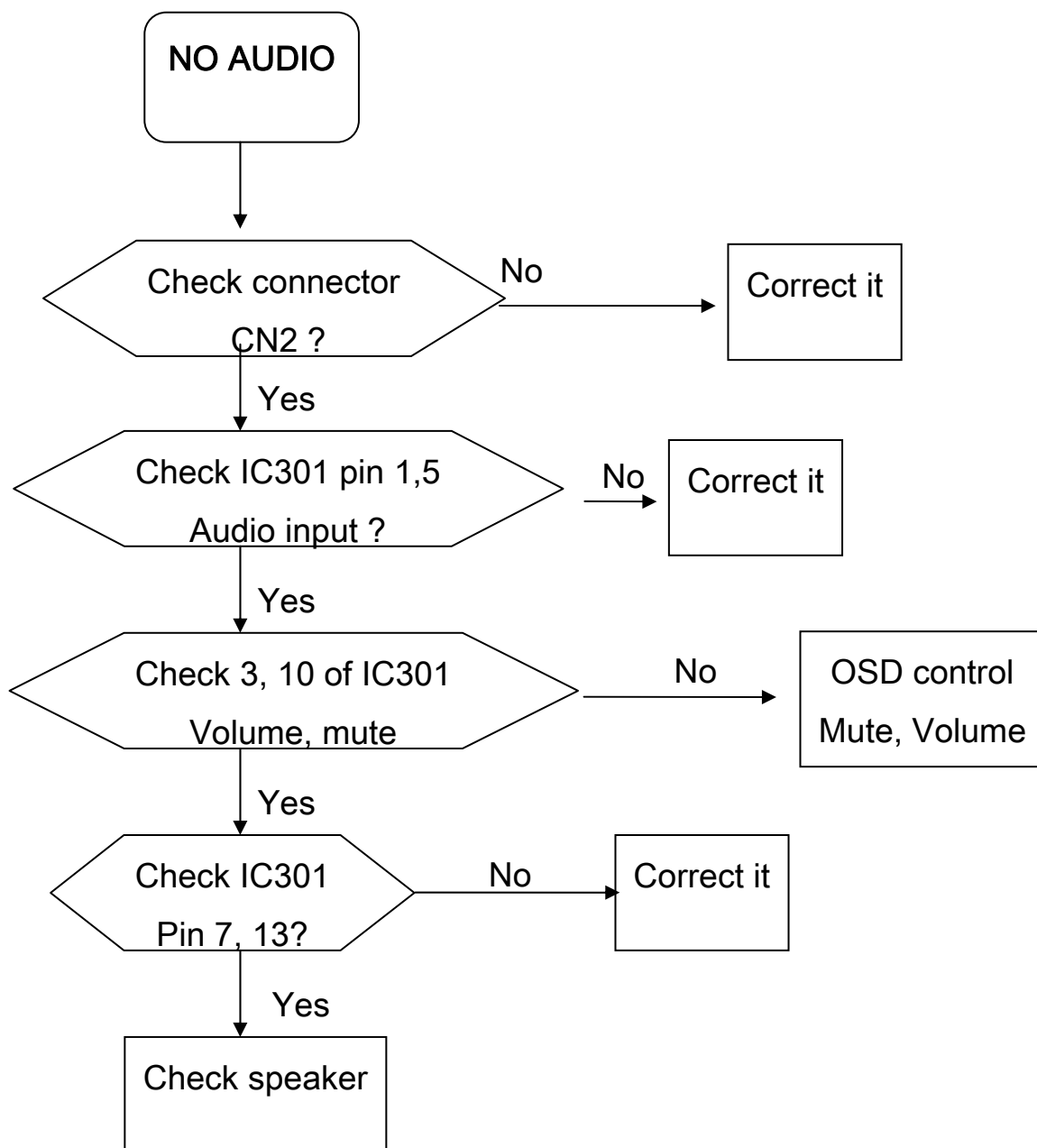
ITEM	Part Number	Part Description	Qty	ITEM	Part Number	Part Description	Qty
01	21L5TB0009	L5TL-E SCALAR/B ASSY	1	26	FBL5R004019	VESA BKT L5RL-N	1
02	23L5TB0003	L5TL-E BUTTON/B ASSY	1	27	FBL70004019	GND PLATE-H L70B	2
03	EAL5R004018	L5TL-E BKT L5RL-E	1	28	FBL70008014	LOCK METAL L70B	1
04	EEL5T001017	CONTROL BUTTON L5TL-B77U	1	29	EEL70002016	VESA COVER L70B	1
05	FBL5R003012	LED LENS L5RL-E	1	30	DL70LTH103	CABLE ASSY L70L STAND-HINGE	1
06	EEL70001010	PCB HOLDER L70B	1	31	EAL70003011	STAND L70B	1
07	GAL5T001016	RUBBER-HOLDER L5TL-E	2	32	FBL5R001010	HINGE ASSY L5RL-N	1
08	FAL5R003011	POWER BOARD SHIELD L5RL-N	1	33	FBL70007018	K-PLATE L70B	1
09	FOL5T001018	POWER-SHIELD MYLAR L5TL	1	34	MF40080814	SCREW F4.0*8-(N)	6
10	AA05S04100	CD(TTF) HSD105S04-C	1	35	MS40100138	SCREW M4.0*10-(TMC)	3
11	DN002514003	SPEAKER ASSY L70L FG-25144H 1.5W*2	1	36	DL5RUP0006	CABLE ASSY L5RL MB-POWER	1
12	FAL5T001016	L5TL BKT-L L5TL	1	37	DL5RLH006	CABLE ASSY L5RL MB-POWER	1
13	FAL5T002012	L5TL BKT-R L5TL	1	38	DL5TLCD03	CABLE ASSY L5TL MB-CD	1
14	FBL5R002018	GND PLATE-S L5RL-N	1	39	DL5TLP0018	CABLE ASSY L5TL VESA	1
15	FBL5R003012	GND PLATE-P L5RL-N	1	40	DL5TLH101	CABLE ASSY L5TL MB-CHASSIS	1
16	MF30060816	SCREW F3.0*6-(N)	3	41	DL5TLH101	CABLE ASSY L5TL MB-CHASSIS	1
17	MM29060738	SCREW M2.9*5.0-(N)	2	42	MM40080615	SCREW M4.0*8-B(VTOK)	2
18	MM30060813	SCREW M3.0*6.5(N)	1	43	JAL5T001018	L5TL FILM L5TL-E	1
19	FBL5T001017	AL FOL-BKT L5TL	2	44	HCL70021011	HI-POT LABEL L70L	1
20	MF30060816	SCREW F3.0*6-(N)	3	45	EAL70008013	BASE L70E	1
21	MF30060819	SCREW F3.0*6.5(N)	7	46	FBL70009011	BASE PLATE L70E	1
22	MM30030184	SCREW M3.0*3-I-NI	3	47	GAL70002017	RUBBER FOOT L70L-E	1
23	MS350501UN	SCREW M3.5*5-(N) W	1				
24	GEL5T003010	SPEAK SPONGE L5TL-E	2				
25	EAL5R005014	L5TL COVER L5RL-E	1				

12. TROUBLE SHOOTING HINTS

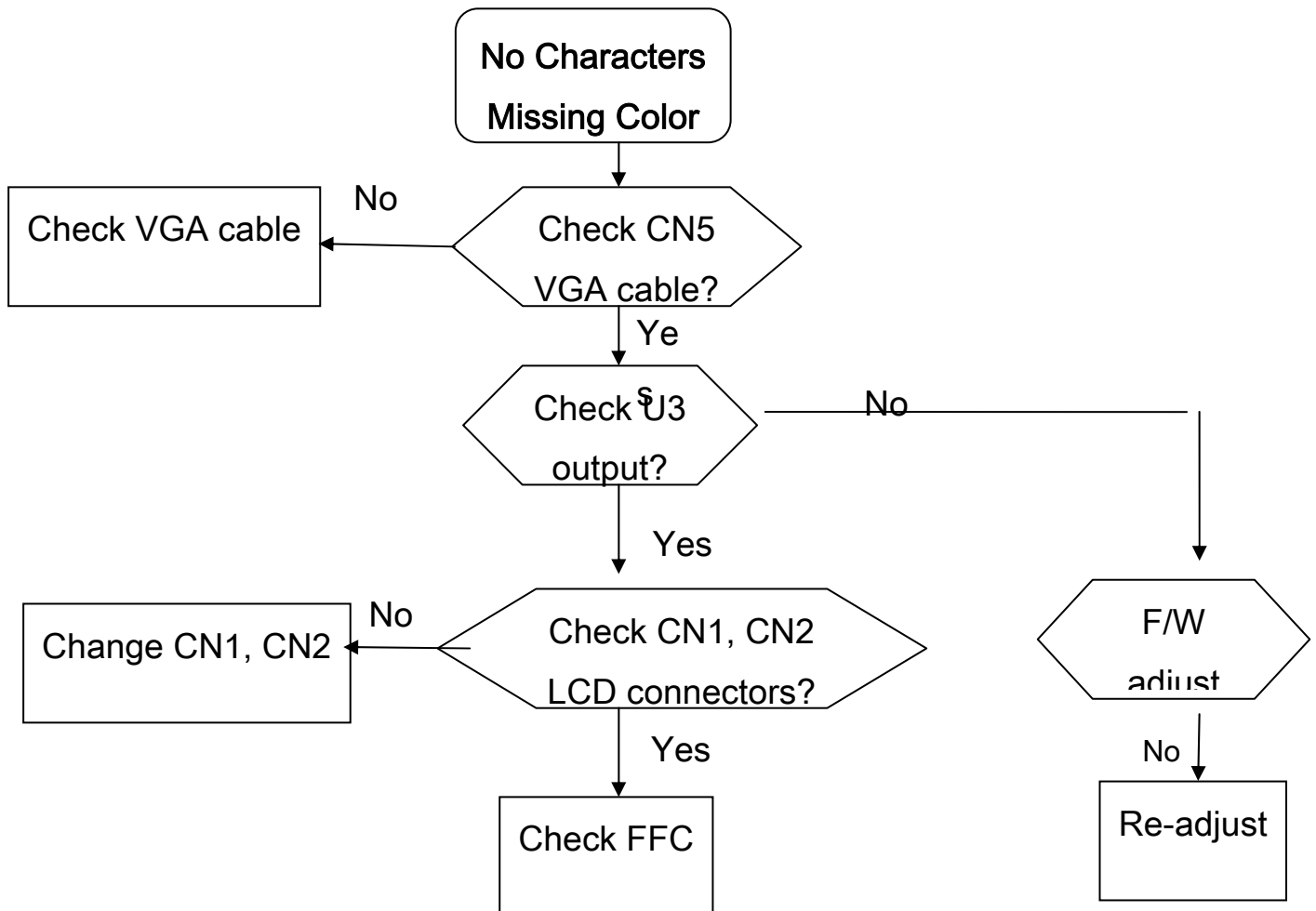
1. No Power



2. No Audio



3. 3. No Characters , Missing one Color



13. REPLACEMENT PARTS LIST

Level	Part Number	Part Description	Qty	Location
0	1L5TZZZMA01	L5TL-E LCD MONITOR		
1	21L5TSB0009	L5TL-E SCALAR/B ASSY	1	
2	31L5TSS0001	L5TL-E SCALAR/B S/S ASSY	1	
3	AJ000VZ^F07	IC (160P) MASCOT VZ (160MHZ, PQFP)	1	U3
3	AJ00312VP00	IC (44P) MTV312MV64 (12MHZ, PLCC)	1	U1
3	AKE3A8S0Y01	IC, EEPROM (8P) 24LC16B/SN (2K*8, 100KHZ)	1	U2
3	BA001440Z87	TRANSISTOR SMD PDTC144EU (50V, 30MA)	1	Q2
3	BAM23010Z05	TRANSISTOR MOSFET SI2301DS (-12V, -2.3A)	1	Q1
3	BCAN217T003	DIODE DAN217 (80V, 100MA)	7	D2, D3, D4, D5, D6,
				D7, D8
3	CH02206J909	CAPACITOR CHIP 22P 50V (+-5%, NPO, 0603)	8	C16, C17, C54, C55, C64,
				C90, C91, C96
3	CH04706JB01	CAP CHIP 47P 50V (+-5%, NPO, 0402)	36	CP1, CP2, CP3, CP4, CP5,
				CP6, CP7, CP8, CP9, CP10,
				CP11, CP12, CP13, CP14, CP15,
				CP16, CP17, CP18, CP19, CP20,
				CP21, CP22, CP23, CP24, CP25,
				CP26, CP27, CP28, CP29, CP30,
				CP31, CP32, CP33, CP34, CP35,
				CP36
3	CH04706J902	CAPACITOR CHIP 47P 50V (+-5%, NPO, 0603)	9	C20, C21, C22, C23, C44,
				C45, C46, C51, C93
3	CH11506K905	CAP CHIP 150P 50V (+-10%, NPO, 0603)	1	C38
3	CH15606K918	CAPACITOR CHIP 560P, 50V (+-10%, X7R, 0603)	1	C95
3	CH22206K917	CAP CHIP 2200P 50V (+-10%, X7R, 0603)	2	C74, C79
3	CH31506K917	CAP CHIP 0.015U 50V (+-10%, X7R, 0603)	1	C39
3	CH24706K911	CAP CHIP 4700P, 50V (+-10%, X7R, 0603)	3	C40, C41, C42
3	CH31006K919	CAP CHIP 0.01U 50V (+-10%, X7R, 0603)	4	C47, C49, C69, C88
3	CH41004Z931	CAP CHIP 0.1U, 25V (+80-20%, Y5V, 0603)	39	C1, C3, C7, C8, C9,
				C10, C15, C24, C25, C26,
				C27, C28, C29, C30, C31,
				C32, C33, C34, C35, C36,

			C37, C48, C52, C53, C56,
			C57, C58, C62, C70, C71,
			C72, C75, C76, C78, C81,
			C87, C89, C92, C94
3	CH51001K991	CAP CHIP 1U 6.3V(+/-10%,X5R,0603)	2 C18, C19
3	CJ033084N24	RESISTOR ARRAY CHIP 33 +/-5% 1/16W 8P 4R	9 RP1, RP2, RP3, RP4, RP5,
			RP6, RP7, RP8, RP9
3	CS00003J900	RESISTOR CHIP 0 1/10W+/-5%(0603)	7 FB6, FB7, R2, R54, R56,
			R60, R68
3	CS00006F203	RES CHIP 0 1/4W +/-1%(1206)	2 P1, P2
3	CS03303J909	RES CHIP 33 1/10W +/-5%(0603)	12 R5, R15, R16, R17, R18,
			R19, R20, R25, R28, R37,
			R38, R51
3	CS07503F905	RESISTOR CHIP 75 1/10W +/-1%(1608)	13 L10, L11, L12, R29, R30,
			R31, R33, R42, R44, R52,
			R57, R58, R59
3	CS13303F909	RESISTOR CHIP 330 1/10W +/-1%(0603)	5 R11, R12, R75, R76, R77
3	CS21003J906	RES CHIP 1K 1/10W +/-5%(0603)	4 L1, R9, R39, R73
3	CS22203F904	RES CHIP 2.2K 1/10W, +/-1%(0603)	3 R46, R66, R67
3	CS28203J902	RES CHIP 8.2K 1/10W +/-5%(0603)	1 R45
3	CS31003J908	RES CHIP 10K 1/10W +/-5%(0603)	14 R3, R7, R8, R14, R22,
			R23, R24, R26, R27, R32,
			R34, R35, R36, R72
3	CS41003J900	RES CHIP 100K 1/10W +/-5%(0603)	2 R71, R74
3	CS51003F900	RESISTOR CHIP 1M 1/10W+/-1%(0603)	1 R53
3	CX201209805	EMI FILTER CHIP FBM-11-201209-121A40	2 L15, L18
3	CS21103F908	RESISTOR CHIP 1.1K 1/10W +/-1%(0603)	1 R78
3	BA001430Z22	TRANSISTOR SMD DTC143EUA(50V,100MA)	2 Q3, Q4
3	DAL5TLMB4D1	PCB(M/B) L5TL MB(4L,100*96,REVD)	1
3	AL002781001	IC(8P)P2781A-08SR(SOIC)	1 U4
3	CX601T02001	EMI FILTER CHIP N2012Z601T02(0.2A,600	2 FB1, L17
3	BCLS4148AZ9	DIODE,SMD RLS4148	1 D1
3	CS00004JA07	RESISTOR CHIP 0 1/8W +/-5%(0805)	5 L6, L7, L8, L13, L19
3	CS11003J904	RESISTOR CHIP 100 1/10W +/-5%(0603)	4 R6, R10, R40, R41
3	CS21203F901	RES CHIP 1.2K 1/10W +/-1%(0603)	1 R13
3	CX160808009	EMI FILTER SBK160808T-121Y-S(120,200MA)	4 L2, L3, L4, L5
3	CX000800107	EMI FILTER CHIP FCM1608K-800T07	1 R43
3	CX000300309	EMI FILTER CHIP FCM1608K-300T07(30,0.7A)	3 FB3, R62, R65
3	CH-4706J905	CAP CHIP 4.7P 50V(+/-0.25P,NPO,0603)	3 C59, C60, C61
3	CH03306J905	CAPACITOR CHIP 33P 50V(+/-5%,NPO,0603)	2 C63, C65
3	AZL5TBIM100	L5TL-E SW BIOS IMAGE	1
3	CS24703F908	RESISTOR CHIP 4.7K 1/10W+/-1%(0603)	2 R81, R82

MAXDATA
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3	DFFC40FS011	CONN SMD FFC 40P 1R FS (P0.5,H2)	2	CN1,CN2
2	BG611059319	CRYSTAL DIP 11.0592MHZ (+-30PPM,49/US)	1	Y1
2	CC61005MD02	CAP ELEC 10U 35V (+-20%,105C,5*11,2000HR)	1	C6
2	CC62204MD23	CAP ELEC 22U 25V (+-20%,105C,5*11,2000HR)	1	C4
2	CC74702MD44	CAP ELEC 470U 10V +-20%,105C,8*11.5,LESR	5	C73,C77,C82,C85,C86
2	DFHD05MR633	CONN DIP HEADER 5P 1R MR (P2.0,H5.1)	1	CN3
2	DFHD12MR251	CONN DIP HEADER 12P 2R MR (P2.54,H5.1)	1	CN6
2	DFHD14MS264	CONN DIP HEADER 14P 2R MS (P2.0,H6.0)	1	CN5
2	AL0TL431T19	IC (3P) TL431ACZ-AP (TO-92)	1	TD1
1	AS020126015	ADP/INV/AUD,ADP-26AFA,90~264V REV1A	1	
1	23L5TBB0003	L5TL-E BUTTON/B ASSY	1	
2	35L5TSS0005	L5TL-E BUTTON/B S/S ASSY	1	
3	CS12204JA01	RESISTOR CHIP 220 1/8W+-5% (0805)	1	R100
3	CS13304JA08	RESISTOR CHIP 330 1/8W+-5% (0805)	1	R101
3	CS15604FA02	RESISTOR CHIP 560 1/8W ?% (0805)	1	R102
3	CS21204FA09	RESISTOR CHIP 1.2K 1/8W +-1% (0805)	1	R103
3	CS23304JA00	RESISTOR CHIP 3.3K 1/8W+-5% (0805)	1	R104
3	DAL5RLTB1B9	PCB (BUTTON) L5RL TL (1L,130*12,REVB)	1	
2	BEYG0024DA5	LED (DIP) YELLOW/GREEN (L-3WAFN/1GYW)	1	LED1
2	DFHD05MR633	CONN DIP HEADER 5P 1R MR (P2.0,H5.1)	1	CN1
2	DHP00062N10	SWITCH PUSH BUTTON (DTSA-62N,50MA,12V)	7	SW1, SW2, SW3, SW4, SW5,
				SW6, SW7
1	24L5TLBMA01	L5TL-E LCD BEZEL ASSY	1	
2	32L5TLBMA09	L5TL-E LCD BEZEL SUB ASSY	1	
3	EAL5R004018	LCD BEZEL L5RL-E (EAL5R004,REV3A)	1	
3	EBL5T001017	CONTROL BUTTON L5TL-877U (EBL5T001,REV3A)	1	
3	EBL5R003012	LED LENS L5RL-E (EBL5R003,REV3A)	1	
2	36L5TPAMA01	L5TL-E PCB HOLDER ASSY	1	
3	EBL70001010	PCB HOLDER L70B (EBL70001,REV3A) -L	1	
4	EBL70001	PCB HOLDER	0	
4	RB02800GY01	PC+ABS 94V-0 GE-C2800 701922 (4225) GRAY	152	
3	GAL5T001016	RUBBER-HOLDER L5TL-E (GAL5T001,REV3A)	2	
4	GAL5T001	RUBBER-HOLDER L5TL-E	0	
2	37L5TPBMA07	L5TL-E POWER/B SHIELD ASSY	1	
3	FAL5R003011	POWER BOARD SHIELD L5RL-N (FAL5R003,R3A)	1	
3	FCL5T001018	POWER-SHIELD MYLAR L5TL (FCL5T001,REV3A)	1	
2	AA50SX84100	LCD (TFT) HSD150SX84-C (15",1024,768 XGA)	1	
2	DN002514005	SPEAK ASSY L70L FG-2514H8 1.5WX2	1	
2	FAL5T001016	LCD BKT-L L5TL (FAL5T001,REV3A) (ID2)	1	
2	FAL5T002012	LCD BKT-R L5TL (FAL5T002,REV3A) (ID2)	1	
2	FBL5R002016	GND PLATE-S L5RL-N (FBL5R002,REV3A)	1	
2	FBL5R003012	GND PLATE-P L5RL-N (FBL5R003,REV3A)	1	

MAXDATA
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2	MF30060BBJ6	SCREW F3.0*6-B(NI)	3	
2	MM25050FBJ6	SCREW M2.5*5.0-F(NI)	10	
2	MM30060BBJ3	SCREW M3.0*6,B(NI)	3	
2	FBL5T001017	AL FOIL-BKT L5TL(FBL5T001,REV3A)	2	
3	FBL5T001	AL FOIL-BKT L5TL	0	
2	MF30050IBJ6	SCREW F3*5-I(NI)	2	
2	MF30080BBJ5	SCREW F3.0*8L,B,NI	5	
2	MS30060P215	SCREW M3*6-P(NI) T2(8,0.6)	4	
2	MS35050IBW8	SCREW M3.5*5-I(NI),W	1	
1	25L5TLCMA07	L5TL-E LCD COVER ASSY	1	
2	33L5TLSMA02	L5TL-E LCD COVER SUB ASSY	1	
3	EAL5R005014	LCD COVER L5RL-E(EAL5R005,REV3A)	1	
3	FBL5R004019	VESA BKT L5RL-N(FBL5R004,REV3A)	1	
3	FBL70004019	GND PLATE-H L70B(FBL70004,REV3A)-L	1	
3	FBL70008014	LOCK METAL L70B(FBL70008,REV3A)	1	
2	EBL70002016	VESA COVER L70B(EBL70002,REV3A)-L	1	
1	26L5TSAMA04	L5TL-E STAND ASSY	1	
2	DDL70LTH103	CABLE ASSY L70L STAND-HINGE(1P, REV1A)	1	
2	EAL70003011	STAND L70B(EAL70003,REV3A)-L	1	
3	RB01922GY01	ABS 94HB 3453AS 70 19 22 (4225) GRAY	100	
3	RB0D350GY01	ABS94HB D-350 BAYER 70 19 22 GRAY	100	
2	FBL5R001010	HINGE ASSY L5RL-N(FBL5R001,REV3A)	1	
2	FBL70007018	K-PLATE L70B(FBL70007,REV3A)	1	
2	MF40080IBJ1	SCREW F4.0*8-I(NI)	5	
1	27L5TCSSY04	L5TL-N CHASSIS ASSY	1	
2	CW00W5ZP001	EMI FERRITE CORE W5 ZP 5*12*25	2	
2	DDL5RLPB006	CABLE ASSY L5RL MB-POWER(12P,REV1A)	1	
2	DDL5RLTH006	CABLE ASSY L5RL BUTTON(5P,REV1A)	1	
2	DDL5TLLC003	CABLE ASSY(FPC) L5TLMB-LCD(40P/40P,REVA)	2	
2	DDL5TLPC018	CABLE ASSY L5TL VGA(14/15P,REV1B)	1	
2	DDL5TLTH003	CABLE ASSY L5TL MB-CHASSIS(1P,REV1A)	1	
2	DDL5TLTH101	CABLE ASSY L5TL POWER-CHASSIS(1P,REV1A)	1	
2	MF30080BBJ5	SCREW F3.0*8L,B,NI	2	
2	MM40080BCI5	SCREW M4.0*8-B(NI,NYLOK)	2	
1	28L5TPKMA02	L5TL-E PACKING ASSY	1	
2	DDL70LPC100	CABLE ASSY L70L1.8M PC-MONITOR (REV1A)	1	
2	DM333180014	POWER CORD(EU) 3P 1.8M Y345B30000818001	1	
2	HALM5002012	PE BAG LM5A(HALM5002,REV3C)	1	
2	HBL5R003012	END CAP-R L5RL-E(HBL5R003,REV3A)	1	
2	HBL5R004019	END CAP-L L5RL-E(HBL5R004,REV3A)	1	
2	HCL70002017	BARCODE LABELL70E(HCL70002,REV3A)	1	
3	HCL70002	BARCODE LABELL70E	0	

MAXDATA
Belinea 101555

2	HCL5R002017	RATING LABEL L5RL-E (HCL5R002,REV3A)	1	
2	HCLM5013016	TRAVEL CARD LM5A (HCLM5013,REV3A)	1	
2	HDL5R002018	MANUAL L5RL-E (HDL5R002,REV3A)	1	
2	HFL5E001016	SPACE PLATE L5E (HFL5E001,REV3A)	0.1	
2	HFL5R002010	CARTON L5RL-E (HFL5R002,REV3A)	1	
2	JXL5T001018	LCD FILM L5TL-E (JXL5T001,REV3A)	1	
1	29L5TBAMA00	L5TL-E BASE ASSY	1	
2	EAL70008013	BASE L70E (EAL70008,REV3A)	1	
3	RB01922GY01	ABS 94HB 3453AS 70 19 22 (4225) GRAY	130	
3	RB0D350GY01	ABS94HB D-350 BAYER 70 19 22 GRAY	130	
2	FBL70009011	BASE PLATE L70E (FBL70009,REV3A)	1	
2	GAL70001019	RUBBER FOOT L70B (GAL70001,REV3A)	3	
3	GAL70001	RUBBER FOOT L70B	0	
2	MF40080IBJ1	SCREW F4.0*8-I (NI)	4	

14. SPARE PARTS LIST

PART NO.	DESCRIPTION	REMARK
21L5TSB0009	L5TL-E SCALAR/B ASSY	AD Board
23L5TBB0003	L5TL-E BUTTON/B ASSY	Button board
EBL70001010	PCB HOLDER L70B (EBL70001, REV3A) -L	PCB holder
32L5TLBMA09	L5TL-E LCD BEZEL SUB ASSY	Front bezel
AS020126015	ADP/INV/AUD, ADP-26AFA, 90~264V REV1A	Power/Inverter unit
37L5TPBMA07	L5TL-E POWER/B SHIELD ASSY	Power Shield
AA50SX84100	LCD (TFT) HSD150SX84-C (15", 1024, 768 XGA)	LCD
DN002514005	SPEAK ASSY L70L FG-2514H8 1.5WX2	Speaker
FAL5T001016	LCD BKT-L L5TL (FAL5T001, REV3A) (ID2)	LCD BKT-L
FAL5T002012	LCD BKT-R L5TL (FAL5T002, REV3A) (ID2)	LCD BKT-R
33L5TLSMA02	L5TL-E LCD COVER SUB ASSY	Back cover
26L5TSAMA04	L5TL-E STAND ASSY	Stand assy
EBL70002016	VESA COVER L70B (EBL70002, REV3A) -L	VESA COVER
DDL5RLPB006	CABLE ASSY L5RL MB-POWER (12P, REV1A)	Power board cable
DDL5RLTH006	CABLE ASSY L5RL BUTTON (5P, REV1A)	Button cable
DDL5TLLC003	CABLE ASSY (FPC) L5TLMB-LCD (40P/40P, REVA)	LCD cable
DDL5TLPC018	CABLE ASSY L5TL VGA (14/15P, REV1B)	VGA cable
DDL5TLTH003	CABLE ASSY L5TL MB-CHASSIS (1P, REV1A)	GND cable
DDL5TLTH101	CABLE ASSY L5TL POWER-CHASSIS (1P, REV1A)	GND cable
DDL70LPC100	CABLE ASSY L70L 1.8M PC-MONITOR (REV1A)	Audio cable
DM333180014	POWER CORD (EU) 3P 1.8M Y345B30000818001	Power cord
HALM5002012	PE BAG LM5A (HALM5002, REV3C)	PE bag
HBL5R003012	END CAP-R L5RL-E (HBL5R003, REV3A)	Packing material

	HBL5R004019	END CAP-L L5RL-E (HBL5R004,REV3A)	Packing material
	HFL5R002010	CARTON L5RL-E (HFL5R002,REV3A)	Packing material
	JXL5T001018	LCD FILM L5TL-E (JXL5T001,REV3A)	
	29L5TBAMA00	L5TL-E BASE ASSY	Base plate
	GAL70001019	RUBBER FOOT L70B (GAL70001,REV3A)	Rubber foot

Screw spare parts

1	MF30060BBJ6	SCREW F3.0*6-B (NI)	
2	MM25050FBJ6	SCREW M2.5*5.0-F (NI)	
3	MM30060BBJ3	SCREW M3.0*6,B (NI)	
4	MF30050IBJ6	SCREW F3*5-I (NI)	
5	MF30080BBJ5	SCREW F3.0*8L,B,NI	
6	MS30060P215	SCREW M3*6-P (NI) T2 (8,0.6)	
7	MS35050IBW8	SCEREW M3.5*5-I (NI) ,W	
8	MF40080IBJ1	SCREW F4.0*8-I (NI)	
9	MM40080BCI5	SCREW M4.0*8-B (NI, NYLOK)	

15. Auto White Balance Procedure

- 1 Connect signal to monitor. The display signal need contain real black and full white.
- 2 Press "Auto" button (don't release) when power ON (LED display Amber).
- 3 Press OSD select FACTORY 2, Auto Color, RUN (For AD converter calibration on R, G and B gain, offset).
- 4 Select Color Update, RUN.
Press OSD select COLOR into 6500 and check by color analysis (If adjustment Press OSD select FACTORY 1 for Adjust the R, G, B gain. Please make color update when finished adjustment on 6500)
- 5 Press OSD select COLOR into 9300 and check by color analysis (If adjustment Press OSD select FACTORY 1 for Adjust the R, G, B gain. Please make color update when finished adjustment on 9300)
- 6

- * Please make sure that Brightness set 100, Contrast set 80 when adjust (factory default).
The adjustment result needs to be checked by Color Analysis like CA110, the input signal 0.7V and full white pattern while on check.
- *

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Appendix

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