

Acer AL718 Service Guide

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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 thoroughly 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.

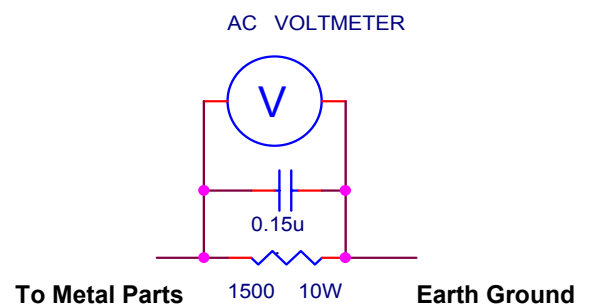
3. POWER SUPPLY REQUIREMENTS

The external power converter for this display utilizes AC and DC cords, AC cord is detachable, but DC cord is permanently attached. Any attempt to replace another adapter could result in serious problem on the display.

4. LEAKAGE CURRENT HOT CHECK

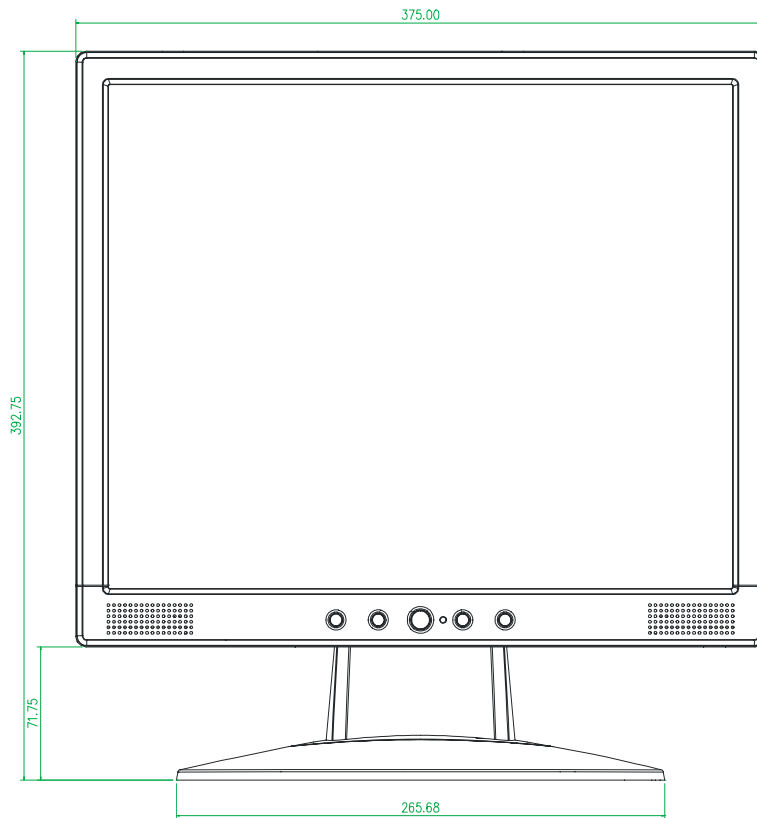
- 4-1 Plug the AC cord directly into the AC outlet. Do not use an isolation transformer during this check.
- 4-2 Connect a 1500 ohm, 10 watt resistor, paralleled by a 0.15uF capacitor between each metallic part and a good earth ground.
- 4-3 Use an AC voltmeter with 1000 ohm / volt or more sensitivity 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 vol 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 1.0 milliamp. In the case of a measurement exceeding the 1.0 milliamp value, a rework is required to eliminate the chance of a shock hazard.

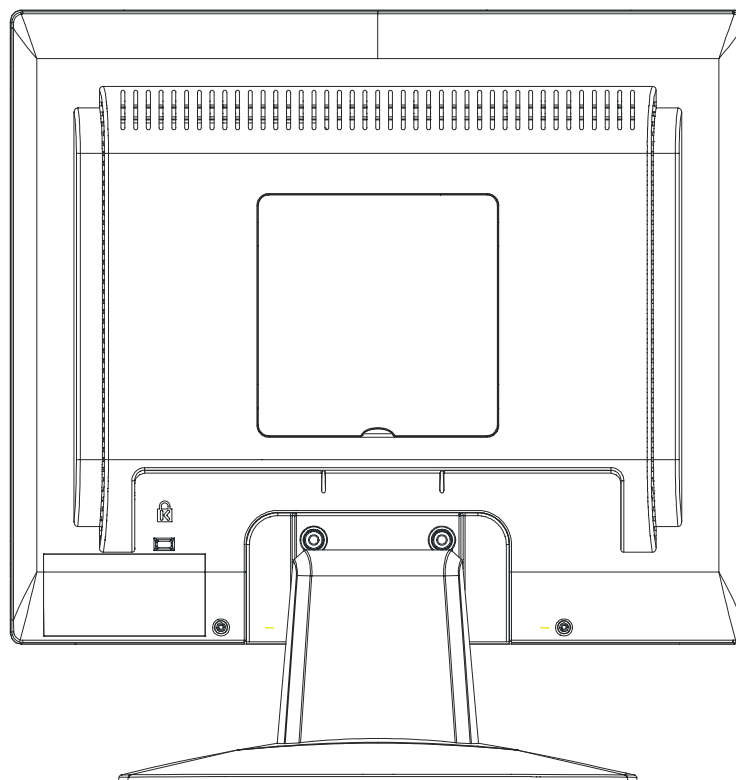


1. DIMENSIONS

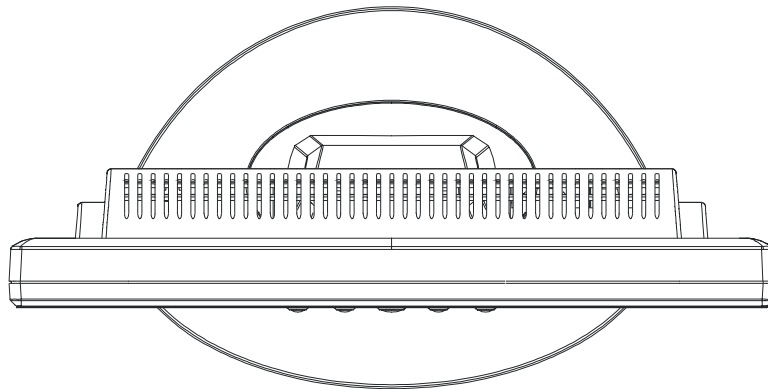
1.1 Front View : unit : mm



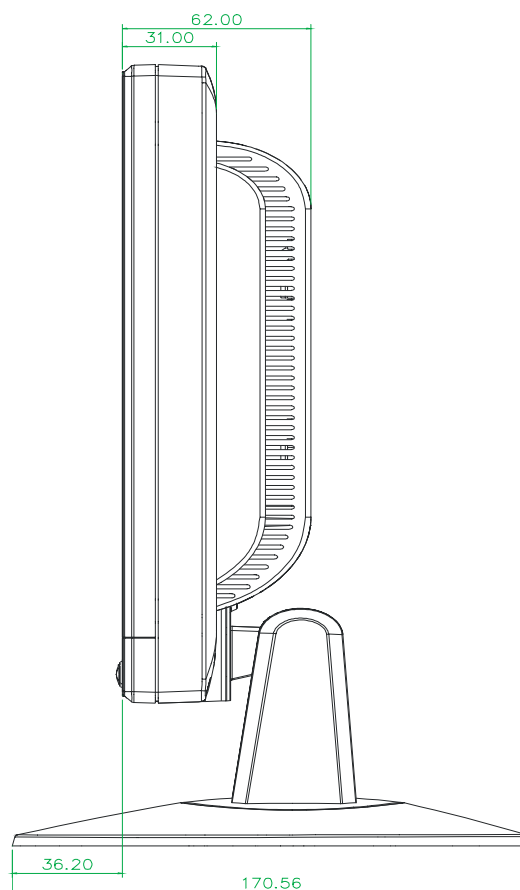
1.2 Real View : unit : mm



1.3 Top View : unit : mm



1.4 Side View : unit : mm



2. GENERAL INFORMATION

1. OUTLINE

This monitor is 17" 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. FEATURES

2.1 Power Saving

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

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.

2.3 Self Test function

Self Testing picture comes out by pushing special 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.

2.4 Ergonomic design

Low emission design to meet MPR II and TCO99

2.5 Multi scan with digital technology

8 bit micro controller controls the circuit operation to meet with wide range signal of $F_h=30\sim 81$ kHz and $F_v=56\sim 75$ Hz. So VGA640x400, VGA640x480, SVGA800x600, XGA 1024x768, SXGA 1280x1024 mode are applicable.

2.6 Factory preset

The product has 26 memory mode in total . 16 modes are preset and 10 modes are user definable.

2.7 Fine dot pitch

LCD panel with a fine dot pitch
(Horizontal : 0.264 mm / Vertical : 0.264 mm)

2.8 Superior display performance

High contrast : 450 : 1(typ), 300:1 (min)

High brightness : 300 cd / m² (Typical)

Wide view angle : 150 / 125 degrees (H/V)

2.9 Special function

VESA DDC2B (Display Data Channel)
Compatible

3. SPECIFICATION

1. Outline

- 1.1 LED POWER SW, AUTO, MANU, LEFT and RIGHT key are located on the front panel.
- 1.2 Video signal cable and audio line-in receptacle are located on the back side of the cabinet.
- 1.3 OSD menu includes the following function.
 CONTRAST BRIGHTNESS H.POSITION
 V.POSITION COLOR-TEMPERATURE
 CLOCK PHASE LANGUAGE
 VOLUME POWER-ON-RECALL

1.4 VOLUME can be controlled with LEFT / RIGHT key.

2. MECHANICAL SPECIFICATIONS

- 2.1 Dimension Height : 393 mm (15.5")
 Width : 375 mm (14.8")
 Depth : 182 mm (7.2")
- 2.2 Net Weight :4.24kg (9.35 lbs)
- 2.3 Maximum Viewable Area : Diagonal 432 mm (17")

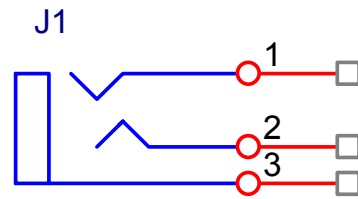
3. PANEL SPECIFICATIONS

Part No.	QD17EL07
Driver bit of panel	8 bit
Contrast ratio	450:1 typ, 300:1min.
Brightness	300 cd/ m2(tpy),
Pixel pitch	0.264 mm
Response time	< 20 ms (Tr+Tf)
View angle	75/75/65/60 degrees
Color coordinate	x=0.313,y=0.329

4. CONNECTORS

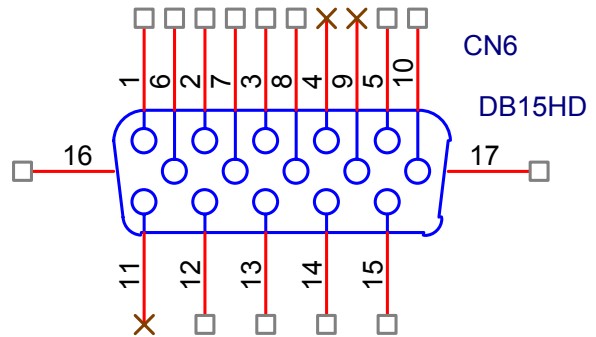
- 4.1 AC power cord : CEE22 typed connector
- 4.2 Audio cable : Line-in receptacle

4.2 Audio : Line-in receptacle



PHONEJACK STEREO

4.3 Video signal connector 15P Mini D-Sub connector x 1



PIN	MNEMO	SIGNAL
1	RV	Red Video
2	GV	Green Video
3	BV	Blue Video
4	NC	None
5	GND	Ground(DDC return)
6	RG	Red GND
7	GG	Green GND
8	BG	Blue GND
9	+5V	+ 5V (for DDC)
10	SG	Sync GND
11	NC	None
12	SDA	DDC Data
13	HS	Horizontal Sync
14	VS	Vertical Sync
15	SCL	DDC Clock

5. ELECTRICAL SPECIFICATIONS

5.1 Standard conditions

Display area	338 x 270 mm
Video signal level	0.7 Vpp
Contrast	Max.
Brightness	Max.
Ambient	20 +/- 5 C degrees
Input voltage	AC 120,60Hz
Warming up time	> 30 minutes
Display mode	1280 x 1024

5.2 POWER

5.2.1 Power supply

Input voltage	90~240 Volts
Power frequency	50 / 60 Hz , +/-
Input current	< 2 Arms
Inrush current	< 90A
Power	< 50 Watts

5.2.2 Power Management

State	Power	Indicator
On	< 50Watts	Green
Standby	< 1 Watts	Amber
Off	< 1 Watts	

5.3 Acceptable timing

If your timing is within following specification, this LCD display can automatically function with a certain position.

Horizontal: Sync frequency : 30~81 kHz

Vertical : Sync frequency : 56~75Hz

5.4 Preset Timings

#	mode	Resolution	Fv Hz	Fh (KHz)
1	IBM VGA	720 x 400	70	31.46
2	VESA	640 x 480	60	31.46
3	MAC 13"	640 x 480	67	35
4	VESA	640 x 480	72	37.86
5	VESA	640 x 480	75	37.5
6	VESA	800 x 600	56	35.16
7	VESA	800 x 600	60	37.87
8	VESA	800 x 600	72	48.07
9	VESA	800 x 600	75	46.87
1	MAC 16"	832 x 624	75	49.72
1	VESA	1024 x 768	60	48.36
1	VESA	1024 x 768	70	56.48
1	VESA	1024 x 768	75	60.02
1	VESA	1152 x 864	75	67.5
1	VESA	1280 x 1024	60	63.98
1	VESA	1280 x 1024	75	79.97

5.5 Signal level and input impedance

5.5.1 Video Signal level

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

5.5.2 Sync Signal level

H/V Separate : TTL level

5.5.3 Input impedance

Video input : 75 ohms

Sync input : > 1 k ohms

5.6 Display Area

Display area : 338 x 270 mm

5.7 General performance

5.7.1 Maximum pixel clock

135 MHz

5.7.2 Maximum luminance

Value	250 cd / m ² at center of the display area ,Specified by 6500K + 8 MPCD
Conditions	Display image : Full white Brightness : Maximum Contrast : Maximum

5.7.3 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

5.7.4 Contrast ratio (CR)

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

6. ENVIRONMENTS

	Operation	Storage and Shipment
Temperature	0 ~ 40 C	-20 ~ +60 C
Humidity	5 ~ 90 % *	5 ~ 90 % *
Altitude	3000m	12000m

* Non-condensation

7. REGULATORY STANDARDS

7.1 Safety standards

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

7.2 EMC standards

FCC part 15,subpart B , class-B
CE marking

8. OTHERS

TUV (Rheinland)
ISO13406-II pixel fault class 2
TCO99

9. POWER CORD

Northern Hemisphere Version : UL / CSA approved power cord.
European : VDE approved power cord.

10. SIGNAL CABLE

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

11. RELIABILITY

11.1 MTBF for completed unit without LCD
> 50,000 hours (demonstrated MTBF)

11.2 MTBF for LCD

The brightness is still more than 50% of the original brightness after 30,000 hours (min.)

4. THEORY OF OPERATION

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

1. MB BOARD

The MB board is a four-layer, single-landed design with ground and internal planes provided. The VGA cable is a signal cable that contains video signal, sync signal and DDC signal from PC VGA adapter. This system board consists of 3 functional areas : flat panel controller, flash ROM and LVDS transmitter.

1.1 Flat panel controller..... gm2120 (U8)

The heart of the system board is Genesis gm2120. The gm2120 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, OSD controller and on-chip microcontroller.

a) Clock Generation :

Crystal Input Clock (TCLK and XTAL). This is the input pair to an internal crystal oscillator and corresponding logic. A 14.318 MHz crystal is recommended.

b) Hardware Reset (Pin 5)

Hardware Reset signal is generated by MAX809 (U10).It assert a reset signal at least 100 ms.

c) Analog to Digital Converter

The gm2120 chip has three ADC's (analog-to-digital converters), one for each color (red, green and blue) The analog RGB signals are connected to gm2120 as described below

Pin Name	Pin Number
Red +	171
Red -	170
Green +	167
Green -	166
Blue +	163
Blue -	162

d) OSD :

The gm2120 has a fully programmable ,high-quality OSD controller.The on-chip static RAM(4096 words by 24 bits) stores the cell map and the cell definitions.

e) On-Chip Microcontroller (OCM)

The gm2120 on-chip microcontroller(OCM) serves as the system microcontroller.That is , it programs the gm2120 and manages other devices in the system such as the keypad, the backlight, LED, audio and non-volatile RAM.using general purpose input/output (GPIO) pins.

Pin Number	Pin Name	Pin Usage
40	GPIO0 / PWM0	Backlight control
41	GPIO1 / PWM1	Volume control
42	GPIO2 / PWM2	Key-Left
43	GPIO3 / TIMER	No use
44	GPIO4 / UART_DI	Debug Purpose
45	GPIO5 / UART_DO	Debug Purpose
46	GPIO6	Key-Right
47	GPIO7	No use
39	GPIO8 / IROInn	LED-Orange
48	GPIO9	Key-Sel
49	GPIO10	Key-Menu
50	GPIO11	No use
51	GPIO12	NV- RAM (U4) SDA
52	GPIO13	NV- RAM (U4) SCL
205	GPIO16 / HFSn	NV- RAM (U11) SCL
1	GPIO17	No use
208	GPIO18	No use
207	GPIO19	Key-Power. on / off control
206	GPIO20	Mute . audio disable
4	GPIO21 / IROn	LED-Green
204	GPIO22 / HCLK	NV- RAM (U11) SDA

f) Panel Power Sequencing (PPWR, PBIAS) (Pin 113~114)

The gm2120 has two dedicated outputs PPWR and PBIAS (Pin113 and Pin114) to control LCD power sequencing once data and control signals are stable.

g) Parallel ROM Interface Port (Pin 8~25, Pin28~35)

The gm2120 has parallel ROM interface port , pin8~25 for address bus, pin28~35 for data bus.

h) Panel interface (Pin 55~66, Pin69~80, Pin83~87, Pin90~96.Pin99~110)

The gm2120 driver interface is highly programmable. It supports dual bus / dual port for SXGA drivers.

1.2 LVDS Transmitter DS90FC383 (U1,U2)

The DS90FC383 transmitter converts 28 bits of TTL data into four LVDS (Low Voltage Differential Signaling) data streams. A phase-locked transmit clock is transmitted in parallel with the data streams over a fifth LVDS link. At a transmit clock frequency of 85 MHz, 24 bits of RGB data and 3 bits of LCD timing and control data (FPLINE, FPFRAME, DRDY) are transmitted at rate of 595 Mbps per LVDS data channel. U1 AS the ODD pixel transmitter , U2 as the EVEN pixel transmitter.

2. Power Module

followings:

2.1 Power characteristics.

Input	Rated Input Voltage	90~240 Vac , 50/60 Hz
	Operation Input Voltage Range	90~260 Vac, 47~63 Hz
	Max Input AC Current	< 1.5A
	Efficiency	5Vdc load 1A 3.3Vdc load 1A 2.5Vdc load 0.3A Brightness Voltage from 0.3 ~ 3.3Vdc ON / OFF Voltage : High(3.3Vdc)/ Low(0Vdc)
	Brightness Voltage (Vadj)	0.3(Max.) ~ 3.3Vdc (min)
	On / Off Voltage	High (3.3Vdc) / Low(0Vdc)
	Audio Mute Voltage	0Vdc (Mute enable) / 3.3Vdc (Mute Disable)
	Audio Voltage Voltage	0.4Vdc (Min.) ~ 3.3Vdc(Max)
Output	Static Output Characteristics	5V /1A Output : 4.75Vdc ~ 5.1Vdc 3.3V/1A Output : 3.135Vdc ~ 3.465Vdc 2.5V/0.3A Output : 2.375Vdc ~ 2.625Vdc

2.2 Inverter output characteristics.

Rated Output kick-off Voltage	1150 ~ 2000Vrms
Rated Output Voltage Voltage	725Vrms
Rated Output Frequency	50 ~ 60Khz
Rated Output Current per tube	8mArms

2.3 Audio output characteristics.

Audio amplifier	ST TDA7496
Maximum Audio Output Power	1W 2 @<3% Distortion , Speaker 1W2
Line Input Impedance	10K ohm

2.4 Power module of connector definition ;

- CN1 ; Pin 1 & 2 ----> Vdc Output (5V +/- 5%)
 Pin 3 -----> Vdc Output (3.3V +/- 5%)
 Pin 4 -----> GND
 Pin 5 -----> Vdc Output (2.5V +/- 5%)
 Pin 6 -----> GND
 Pin 7 -----> On /Off ("High" set Lamp on)
 Pin 8 -----> NA
 Pin 9 -----> Brightness Voltage
 Pin 10 -----> Audio Volume

Pin 11 -----> Audio Mute

CN2 ; Pin 1 -----> Speaker left1

Pin 2 -----> Speaker left2

Pin 3 -----> Speaker right1

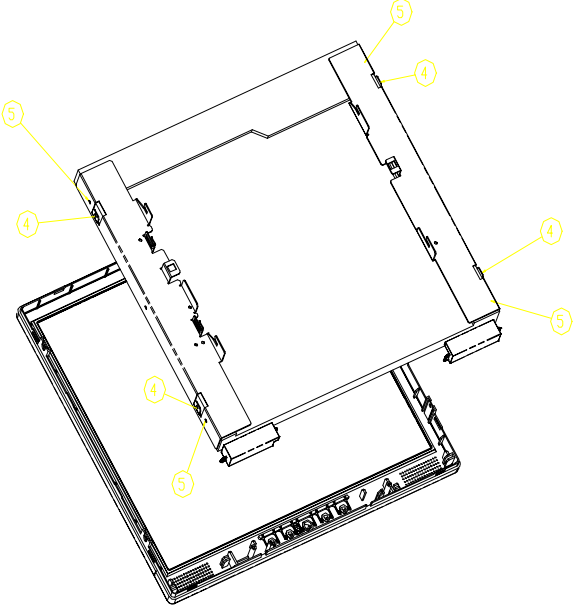
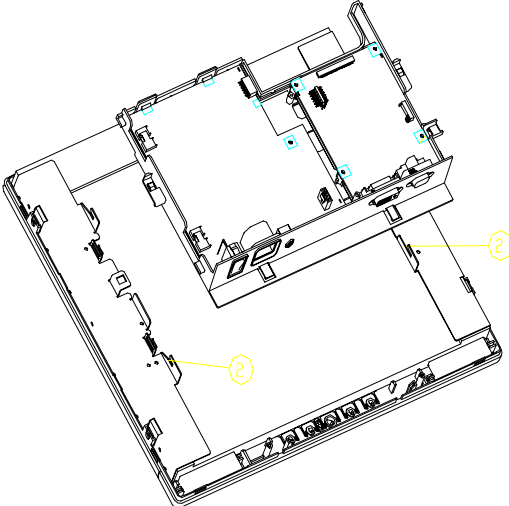
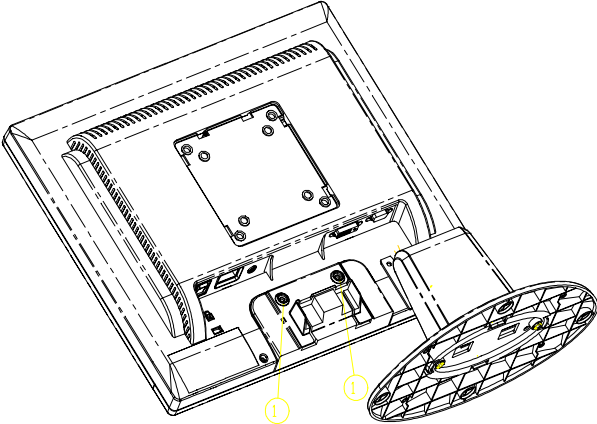
Pin 4 -----> Speaker right2

CN201 ~ CN204 ; Pin 1 -----> HV (High Voltage for CCFL)

Pin 2 -----> Return (Low Voltage for CCFL)

5. EXPLORED DRAWING & DISASSEMBLY INSTRUCTIONS

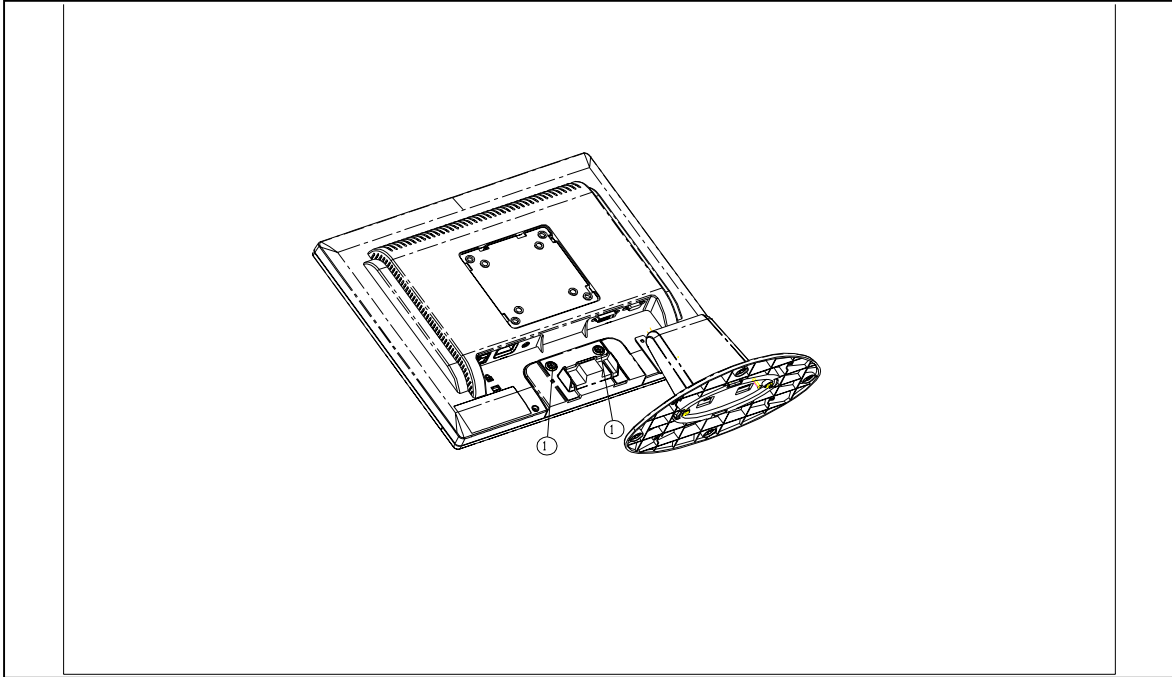
5.1 EXPLORED DRAWING



5.2 Disassembly

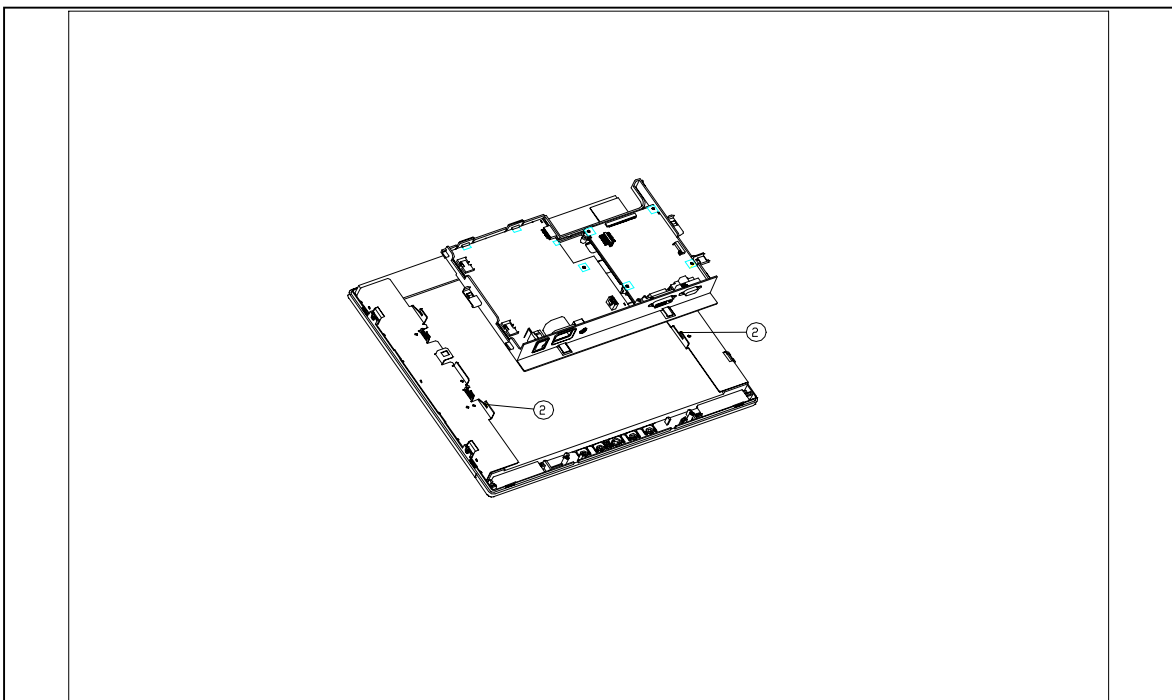
5.2.1 Stand base& rear cover removal

- 1.remove the two screws "1"from neck
- 2.remove the base
3. remove the rear cover



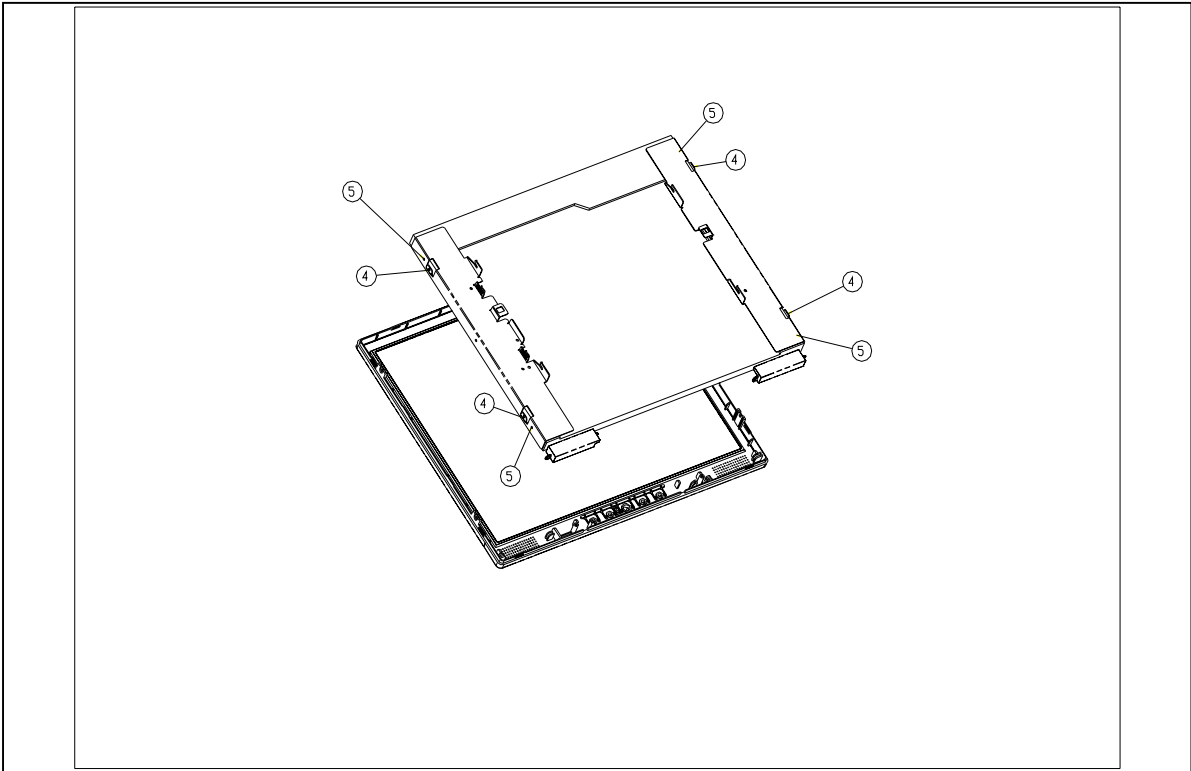
5.2.2. PCB holder removal

- 1.slide the pcb holder from the panel model
- 2.remove the pcb holder



5.2.3. Panel module removal

- 1) remove four screws "4,5"
- 2) remove the Panel module



6. CONTROL LOCATION

6.1 Front Panel Definition

This Section defines the front panel User Interface for Led Indicator and Key function.

6.1.1 Key Definition

There are seven keys defined in this system and described bellows.

Name	Function
Menu	Active main menu when <i>OSD-Off</i> Turn OSD off when <i>OSD-On</i>
Select	Select/Escapes the sub menu or enter item adjusting Auto configuration hot-key when OSD-Off <i>If audio exist. toggle mute on/off when volume scroll bar appear.</i>
+	In menu operation, change the selected item or increase adjusted value If audio exist, increase volume level
-	In menu operation, change the selected item or decrease adjusted value If audio exist, decrease volume level
Power	Power on/off (Soft Power)

6.1.2 LED Definition

The system equips one dual color (green/amber) led to indict system status and defined as bellows:

LED Color	System Status
Green	System in normal operation mode
Amber	System in power-saving mode
Dark	System in power-off mode

6.2 OSD Menu Definition

There are some OSD menus defined in this system

- ◆ Main Menu
- ◆ Volume menu
- ◆ Prompt menu

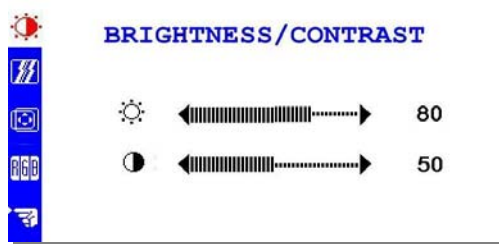
More detail descriptions are listed bellows:

6.2.1 Main Menu

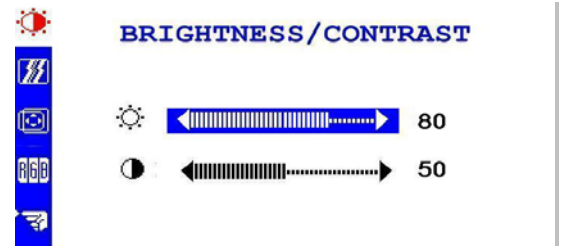
There are 5 sub functions in main menu. The selected function icon will show in red in

by press + or -Key and press Select key to enter the sub function.

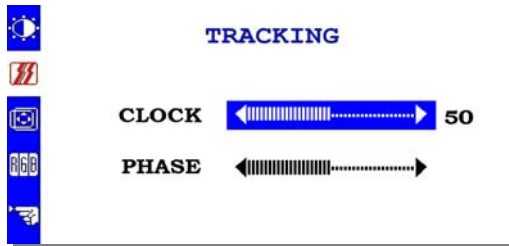
** Brightness/Contrast Function*



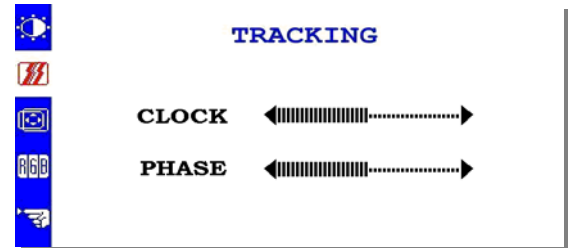
Selec



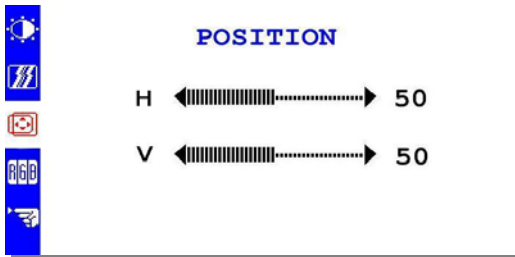
** Tracking Function*



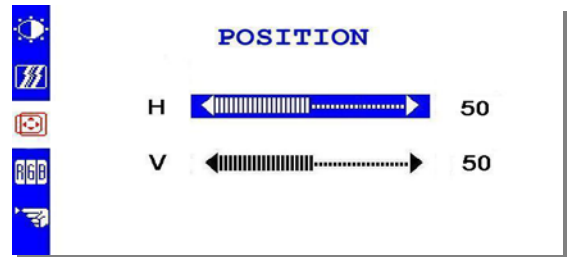
Selec



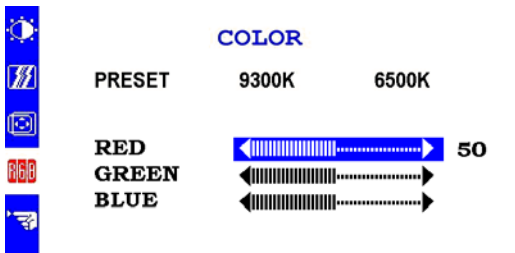
** Position Function*



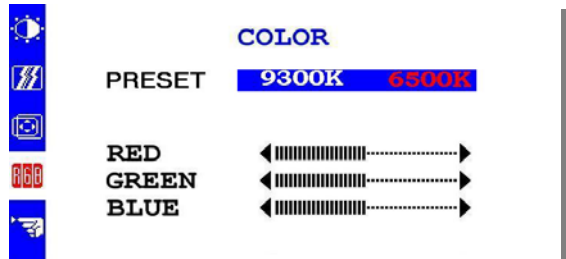
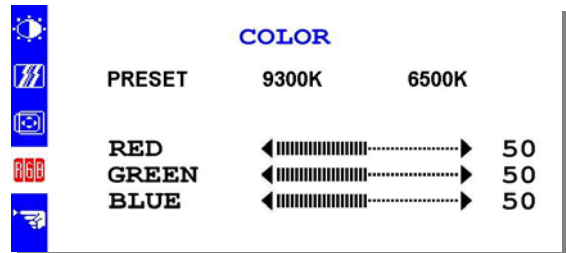
Selec



** Color Function*

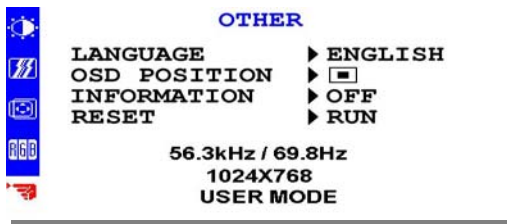


Selec



** Other Function*





Selec



6.2.2 Volume Menu



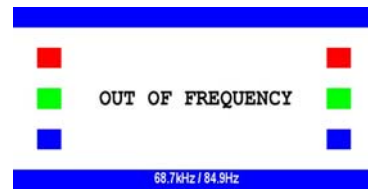
6.2.3 Prompt menu

There are several prompt menu list here.

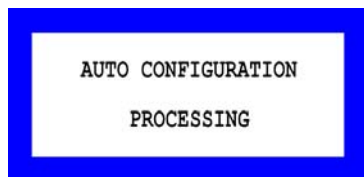
No Signal



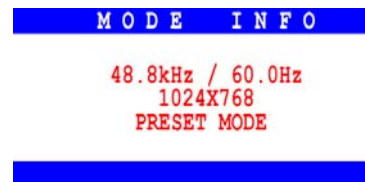
Out of Frequency



Auto Configuration



Mode Information



6.3 Menu Navigation

6.3.1 Main Menu Operation

The system defines a consistent key operation idea. Use **+** or **-** button to change the item to be adjusted and the **Select** to confirm the selection and **+** or **-** are used to adjust the value. The **Menu** key will act as quit and back to OSD off during the main

Step 1:

The **Menu** button can back to OSD-ON

To use **+** or **-** button to select the Brightness/Contrast, Tracking, Position, Color and Other
The **Select** button can enter function adjustment and goto next step.

The **Menu** button can back to OSD-OFF.

Step 2:

To use **+** or **-** button to select the item to be adjusted.

The **Select** button is to start adjustment and goto next step.
The **Menu** button can back to Setp1.

Step 3:

To use **+** or **- button is** to adjust the item value.

The **Select** or **Menu** button is to finish adjustment and then back to Step 2.

6.3.2 Volume Menu Operation

Use **+** or **-** to adjust Volume level and Select to toggle mute on/off.

Menu to quit Volume adjust operation

6.3.3 OSD Time out

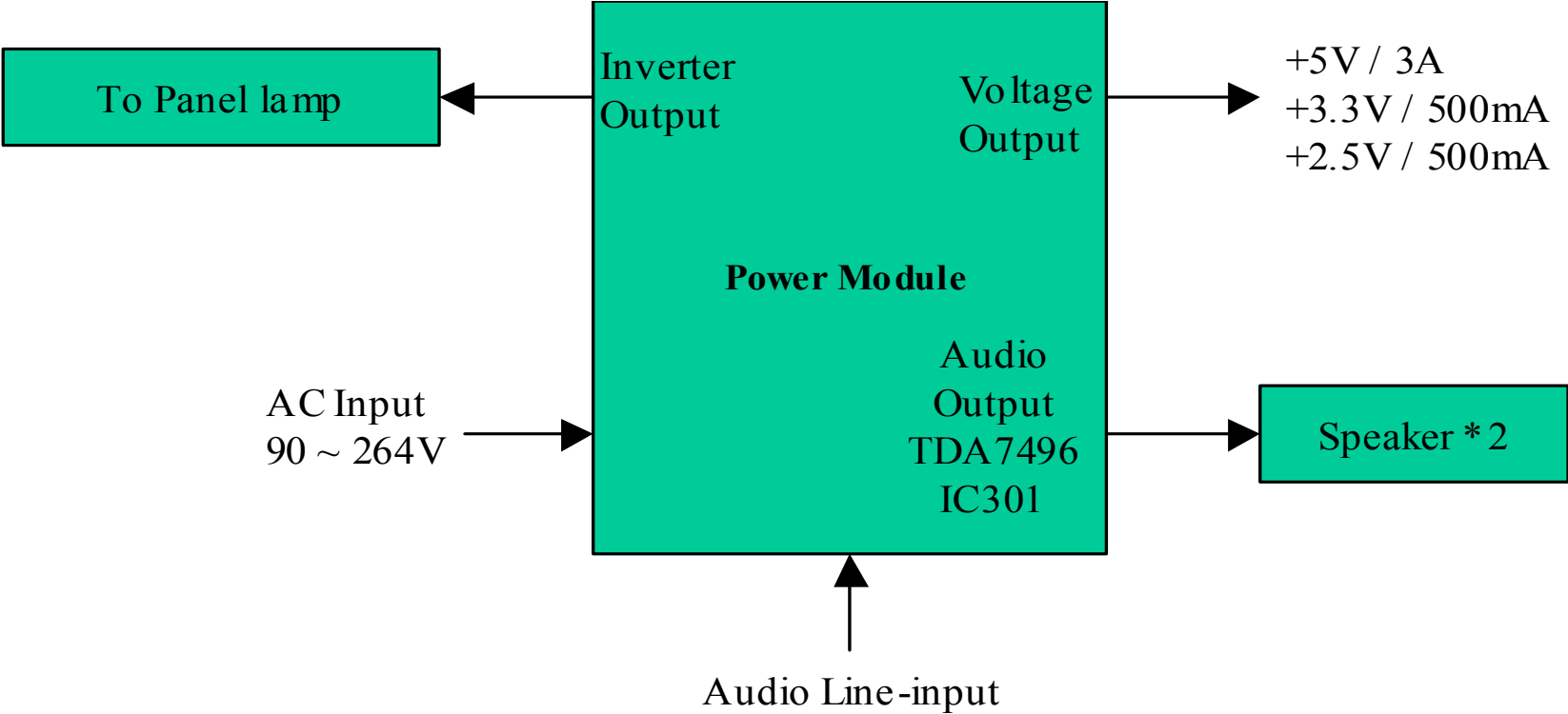
The OSD Time out is defined to 20 sec.

7. NECESSARY EQUIPMENT LIST

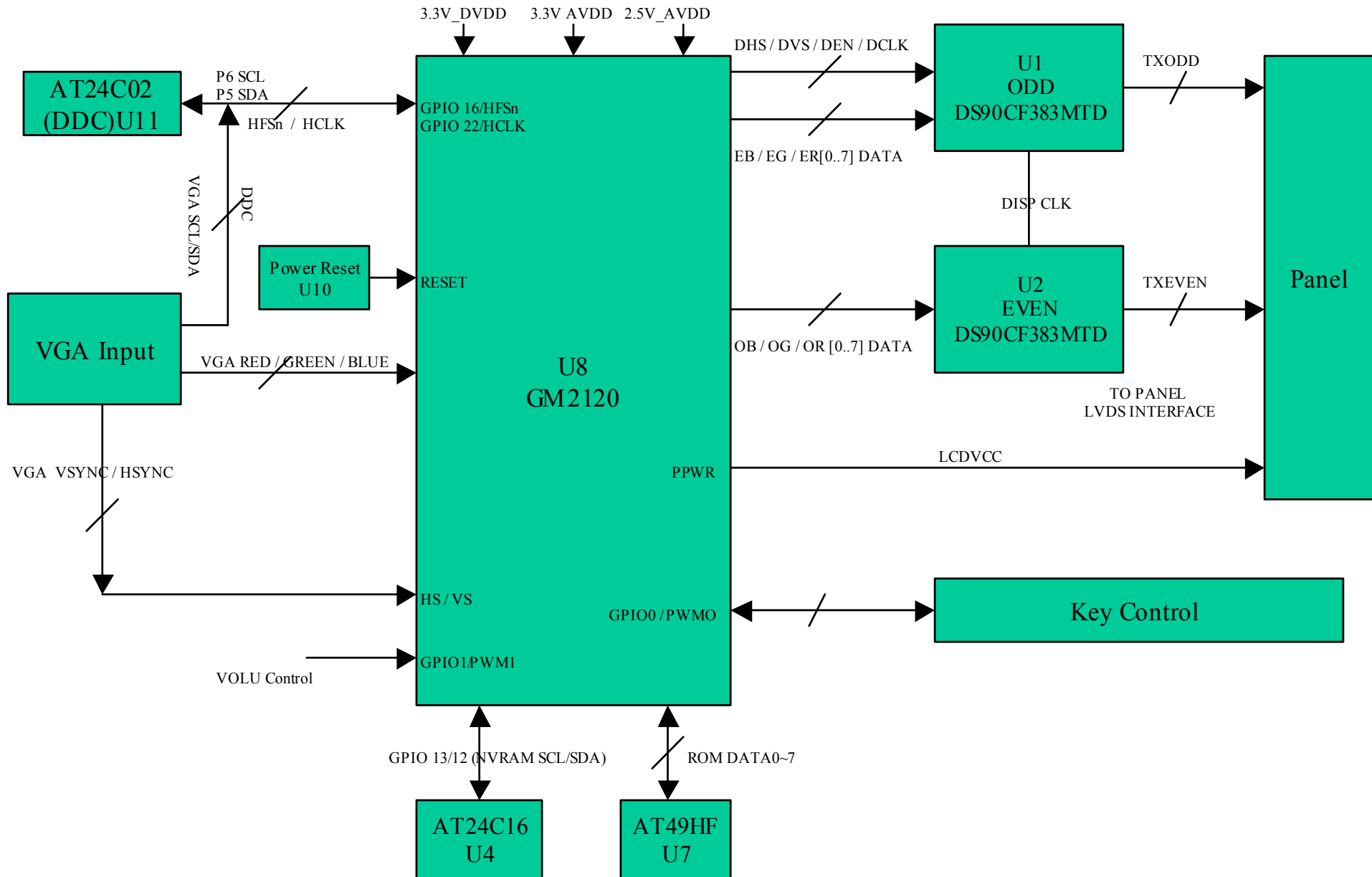
Item	Discription
1	Personal Computer with Windows 98 or above version
2	Luminance Meter Minolta CA 110
3	Video Gnerator : Chroma 2000,2135,2250 or equivalent
4	Colour Analyzer : Minolta , Chroma or equivalent
5	Watt / Power Meter
6	10 Times Magnifier

8. BLOCK DIAGRAM

8.1 Power Module

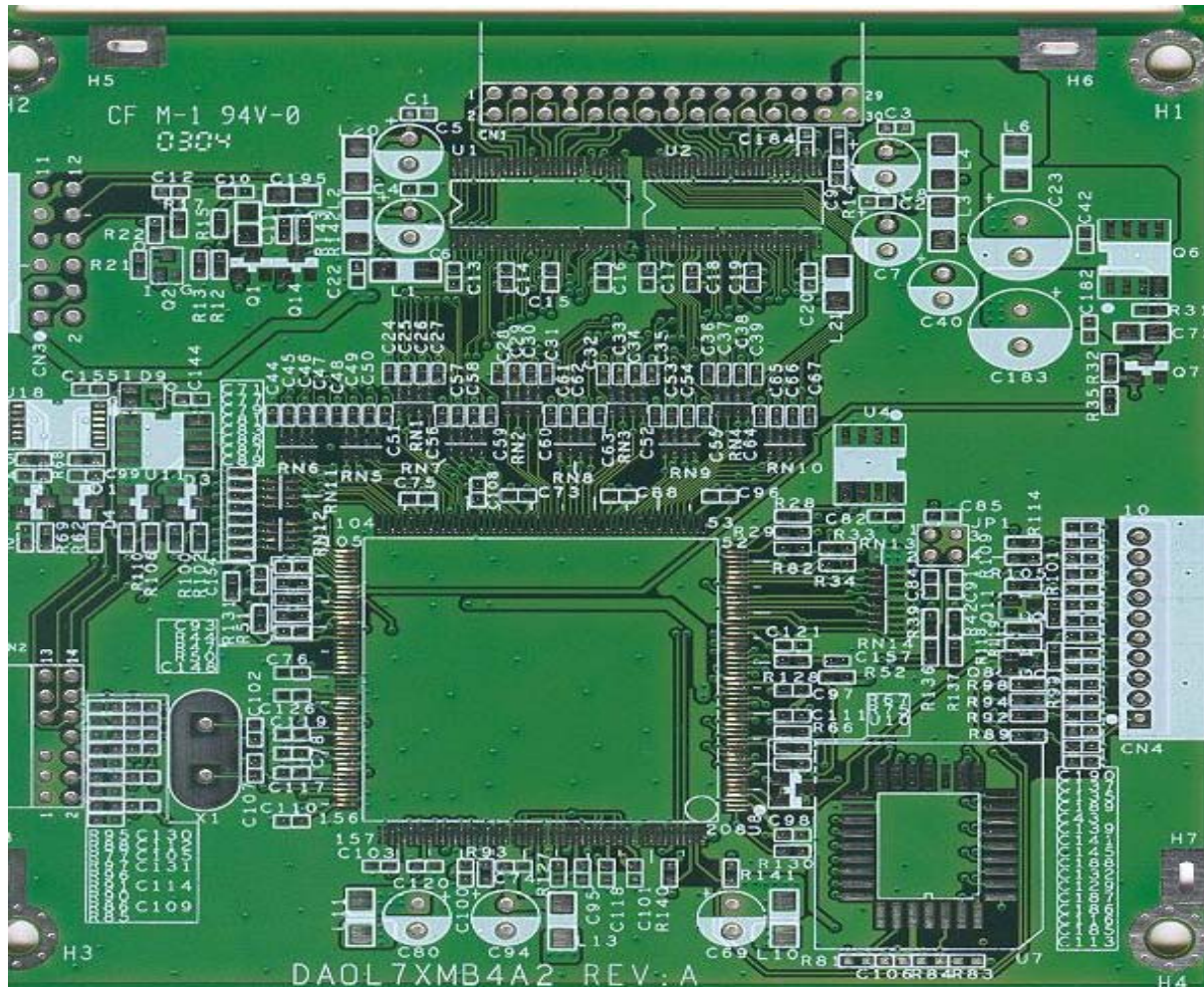


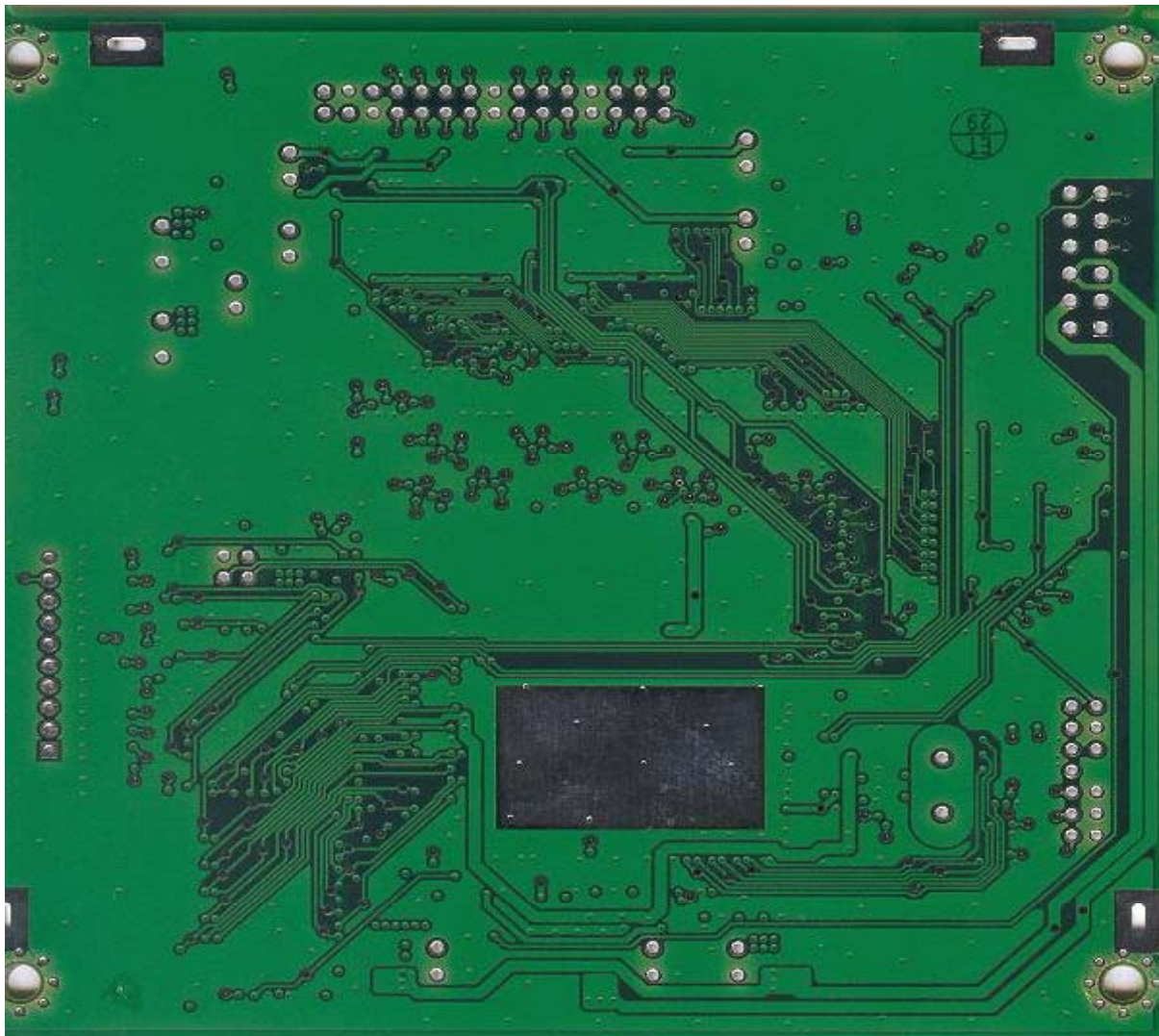
8.2 Main Board



9. PCB CONDUCTOR VIEW

9.1 Main Board





AL718

9.2 Button Board



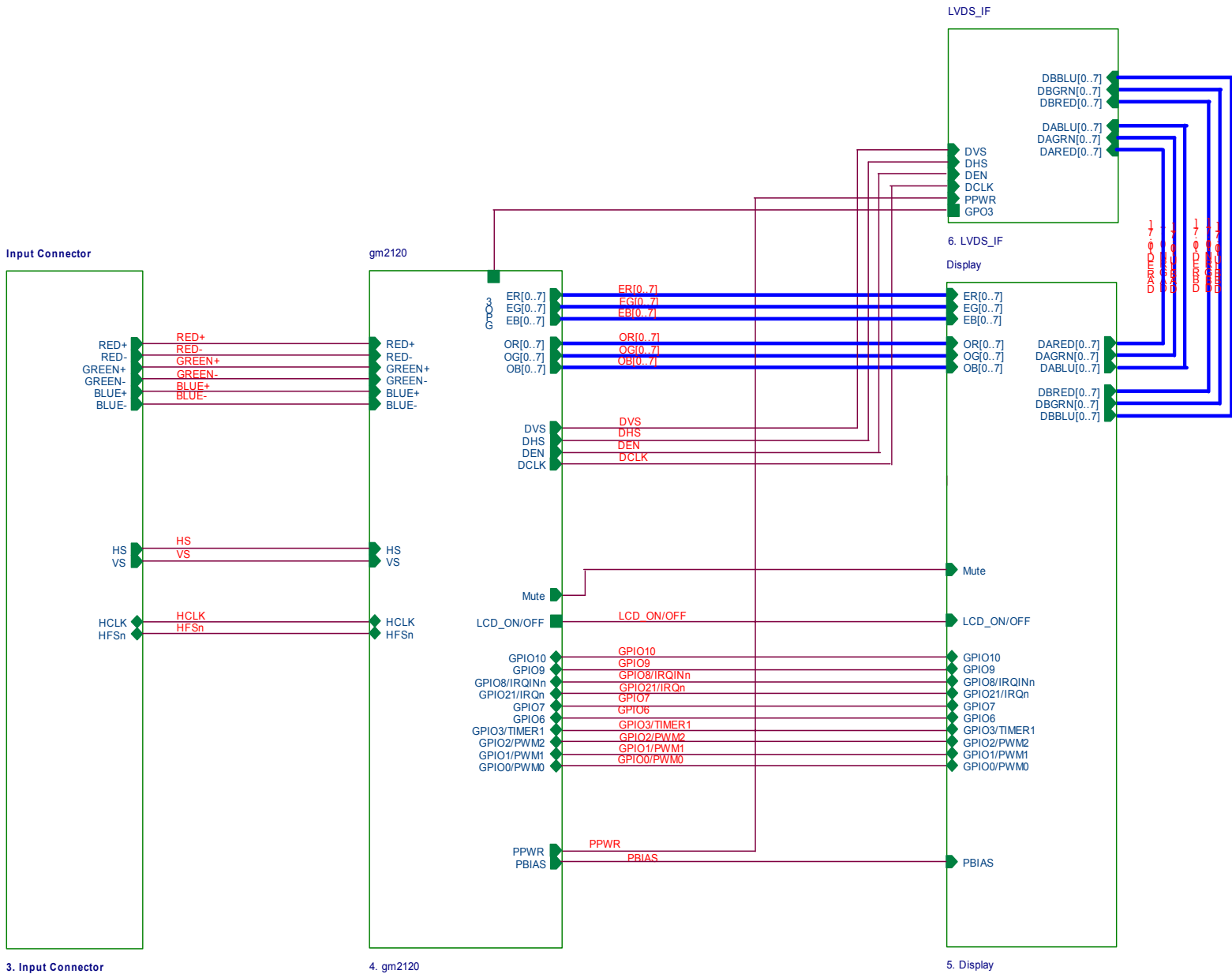
10. SCHEMATIC DIAGRAM

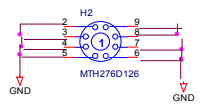
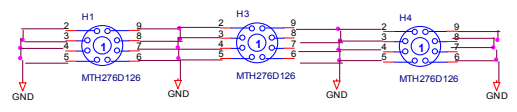
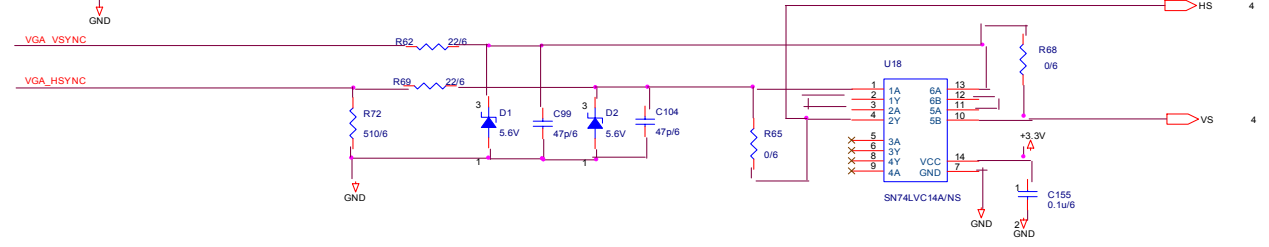
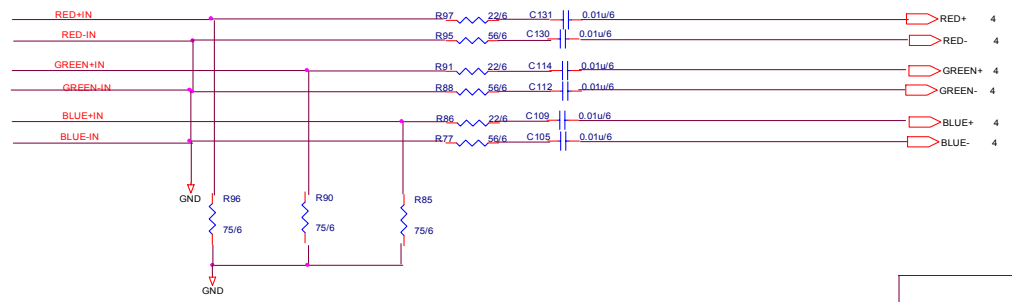
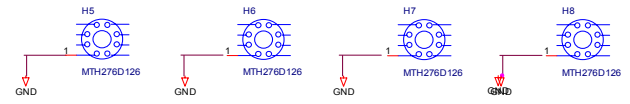
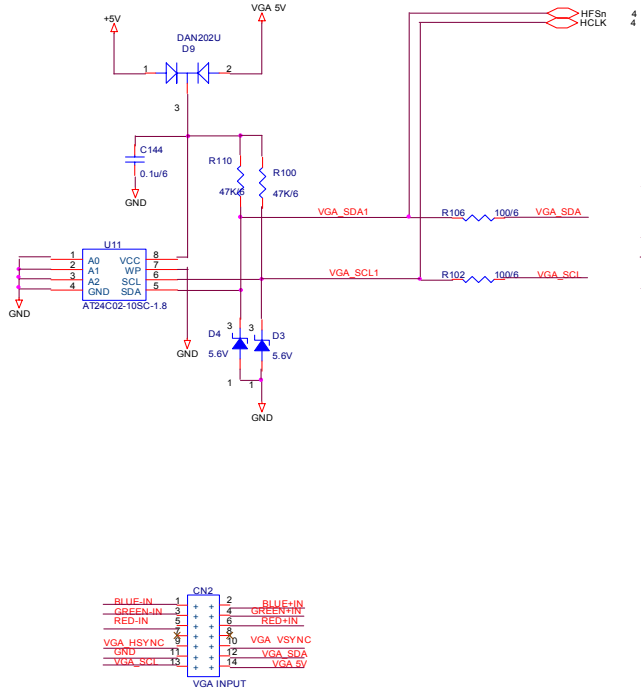
10.1 Main Board

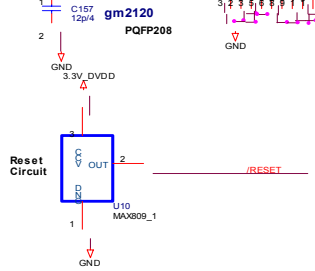
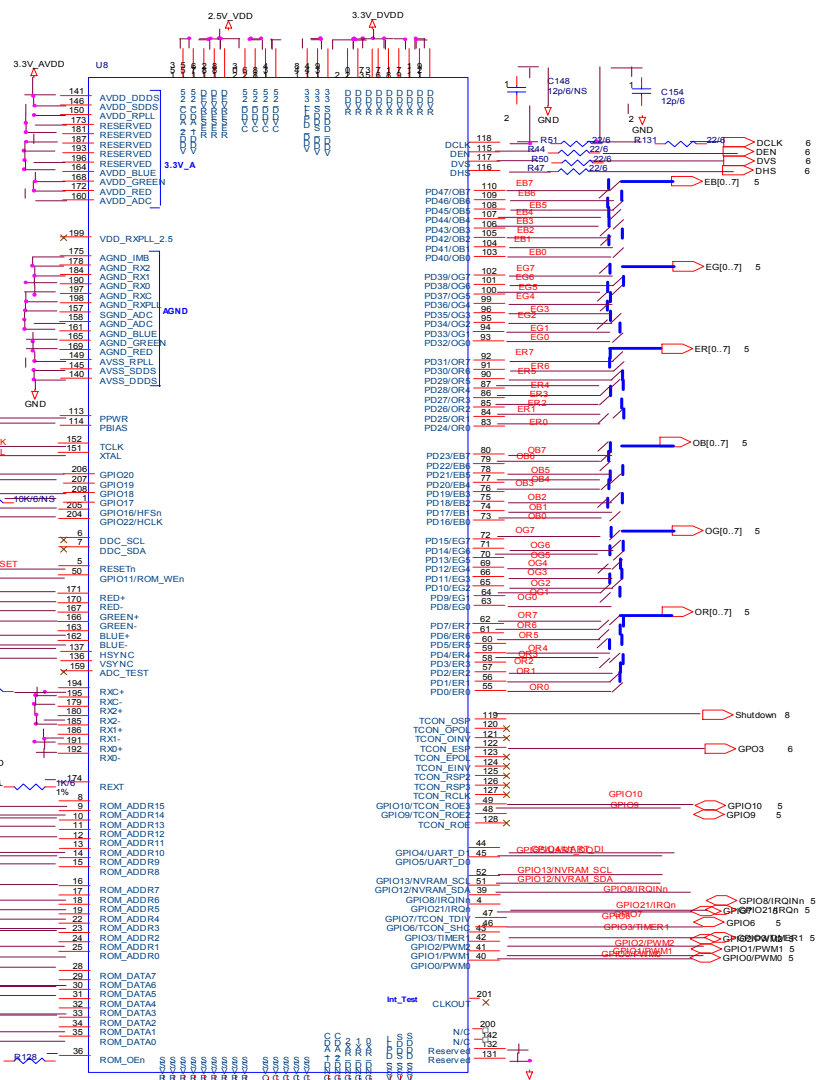
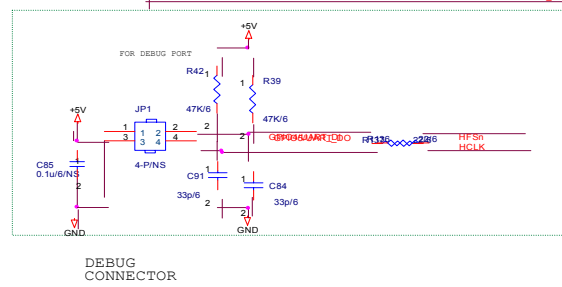
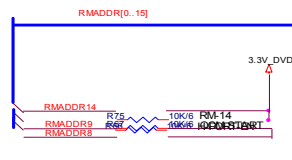
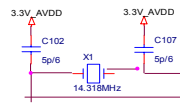
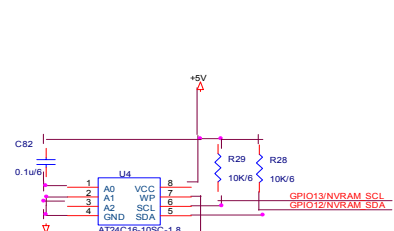
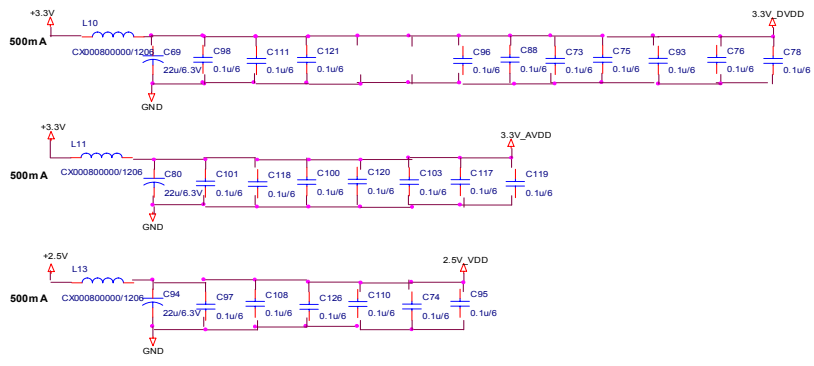


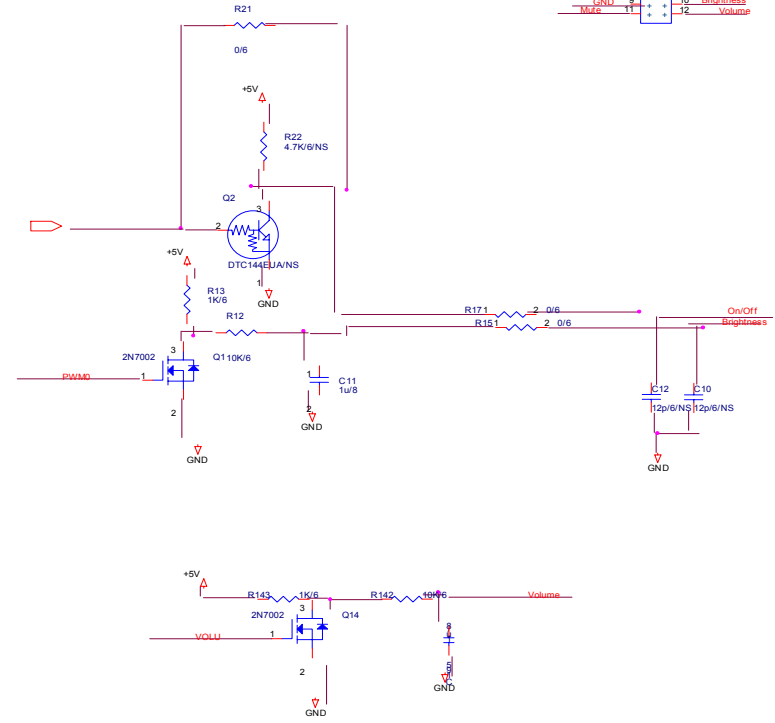
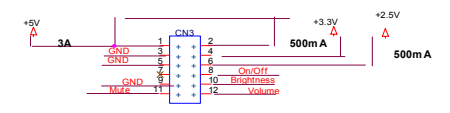
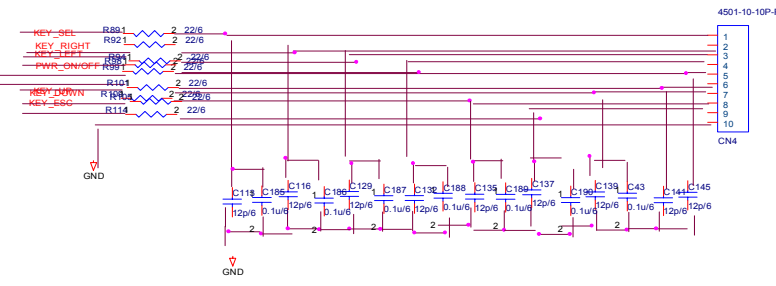
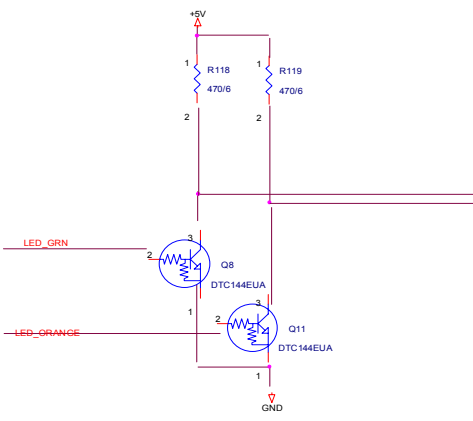
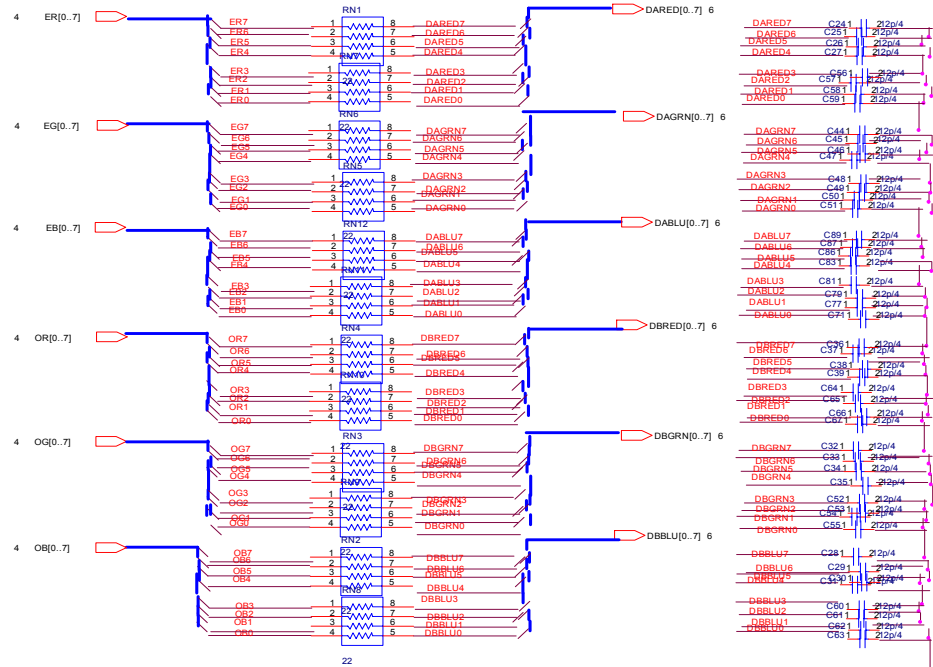
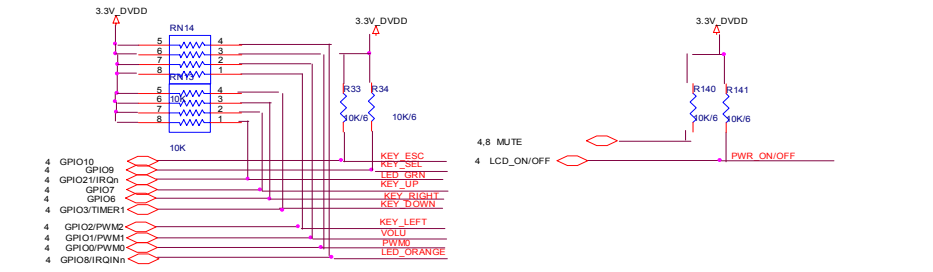
CONTENTS

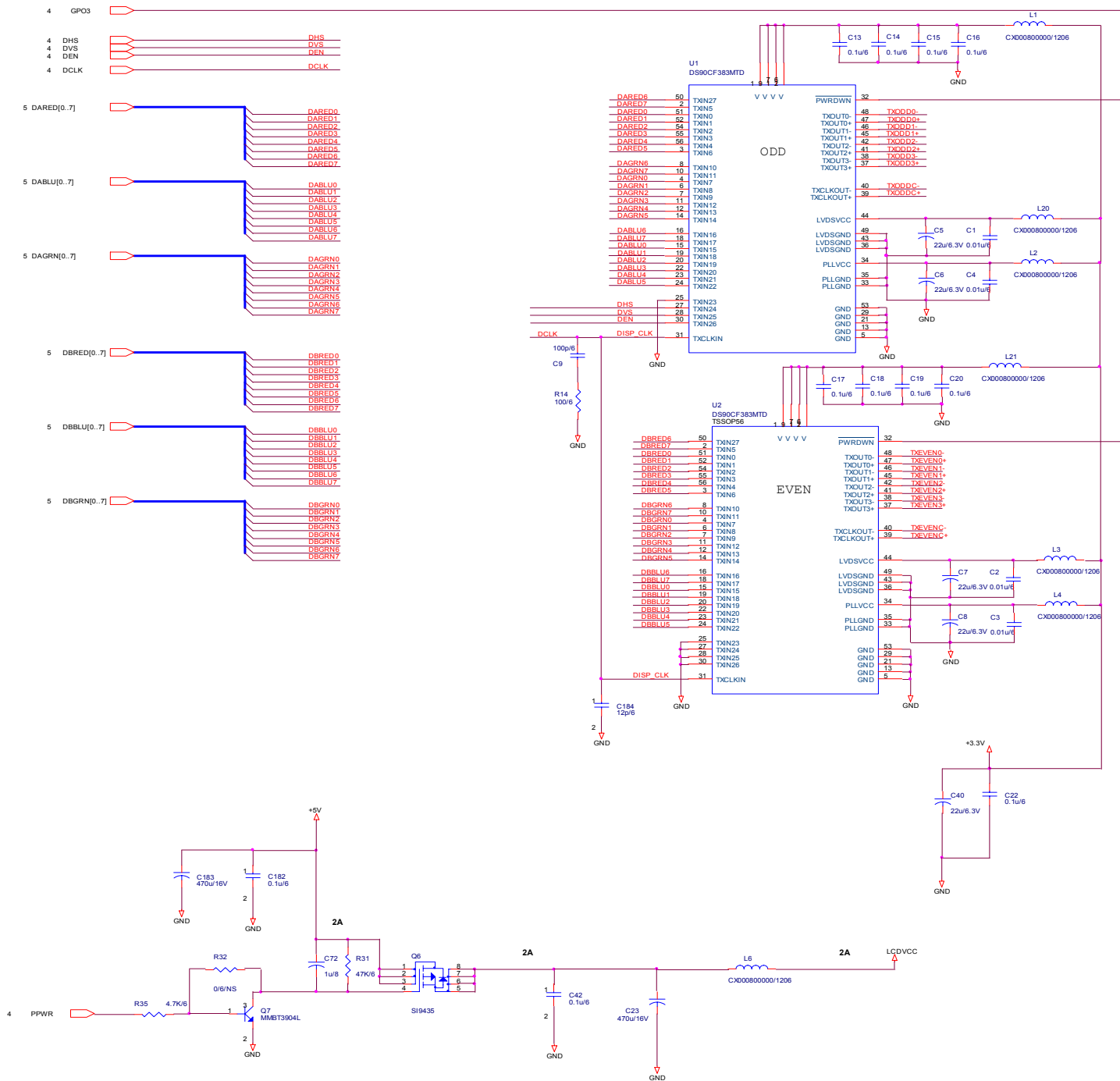
SCHEMATIC	SHEET
1. CONTENTS	1
2. TOP LEVEL	2
3. INPUT CONNECTOR	3
4. gm2120	4
5. DISPLAY	5
6.LVDS IF	6











CN1			
TXDD0-	1	2	TXDD0+
TXDD1-	3	4	TXDD1+
TXDD2-	5	6	TXDD2+
GND	7	8	GND
TXDDC-	9	10	TXDDC+
TXDD3-	11	12	TXDD3+
TXEVEN0-	13	14	TXEVEN0+
GND	15	16	GND
TXEVEN1-	17	18	TXEVEN1+
TXEVEN2-	19	20	TXEVEN2+
TXEVENC-	21	22	TXEVENC+
TXEVEN3-	23	24	TXEVEN3+
GND	25	26	GND
TXEVEN4-	27	28	TXEVEN4+
LCDVCC	29	30	LCDVCC

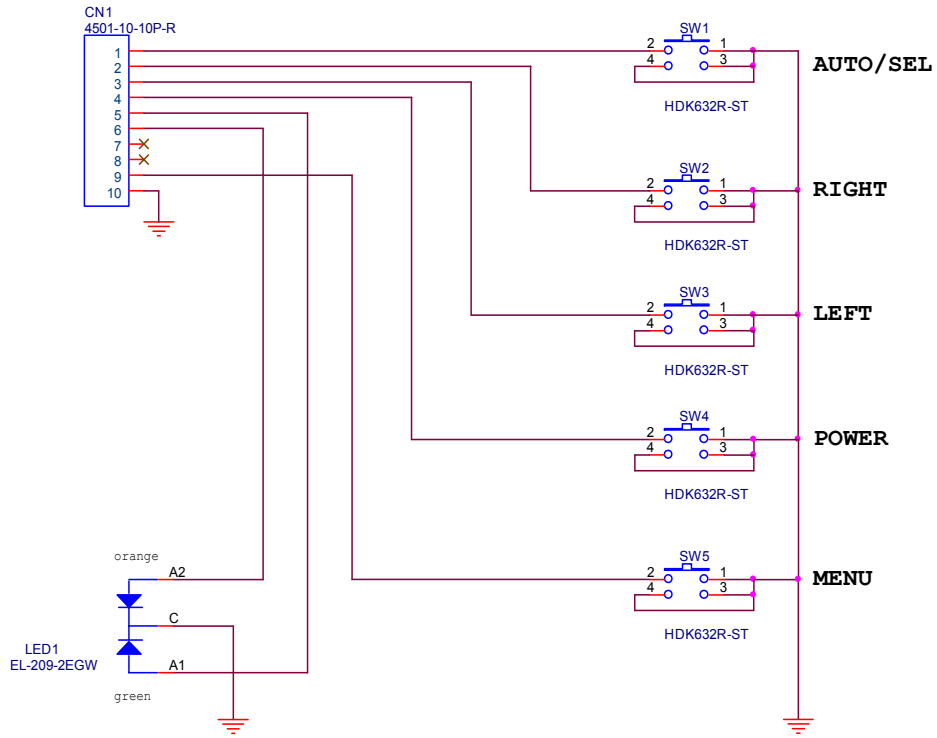
- 1. differential trace 10mil
- 2. differential trace spacing 12mil
- 3. per pairs +/- 10%
- 4. pairs and pairs +/- 20%

10.2 Button Board

BUTTON BOARD

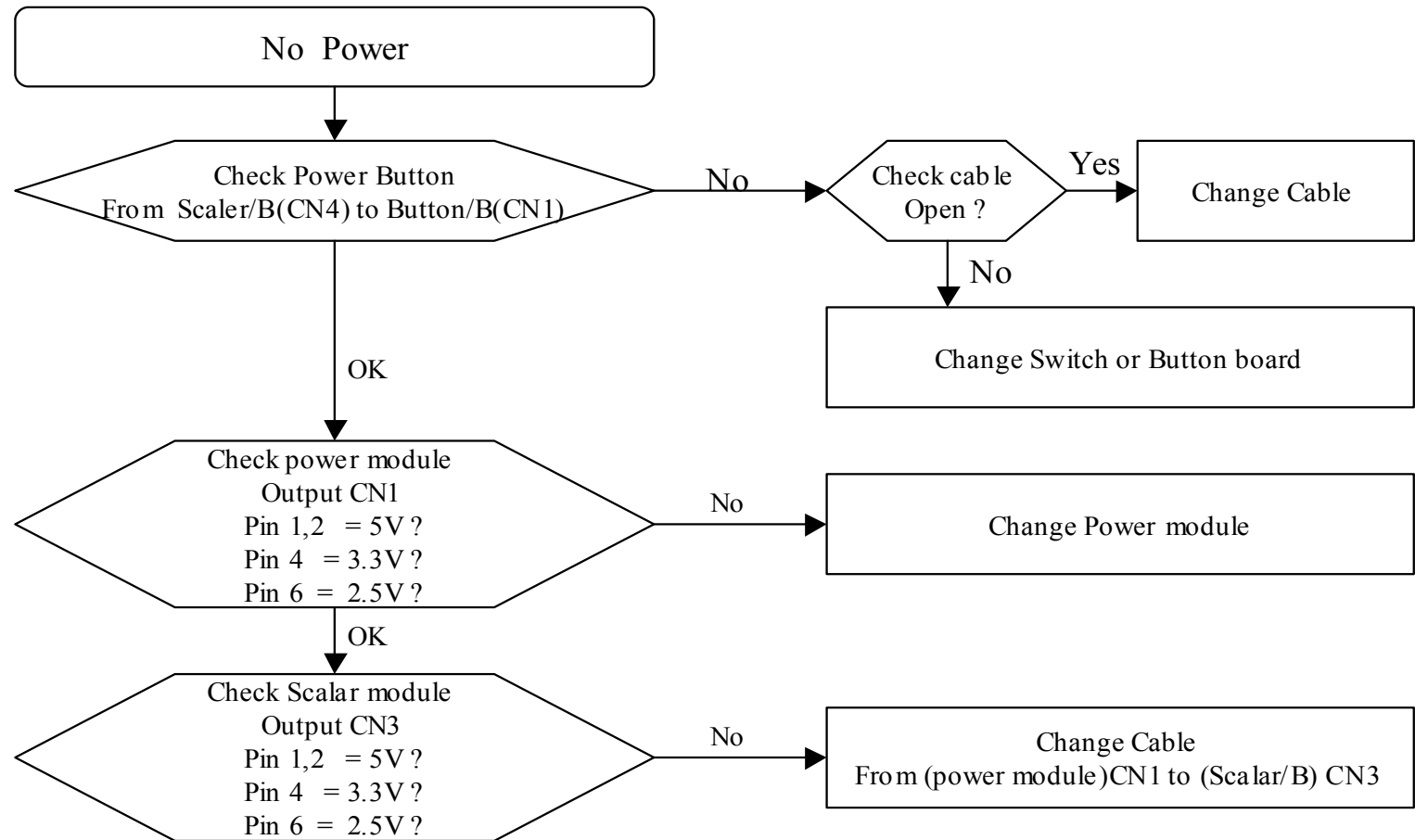
CONTENTS

SCHEMATIC	SHEET
CONTENT	1
I/O INTERFACE	2

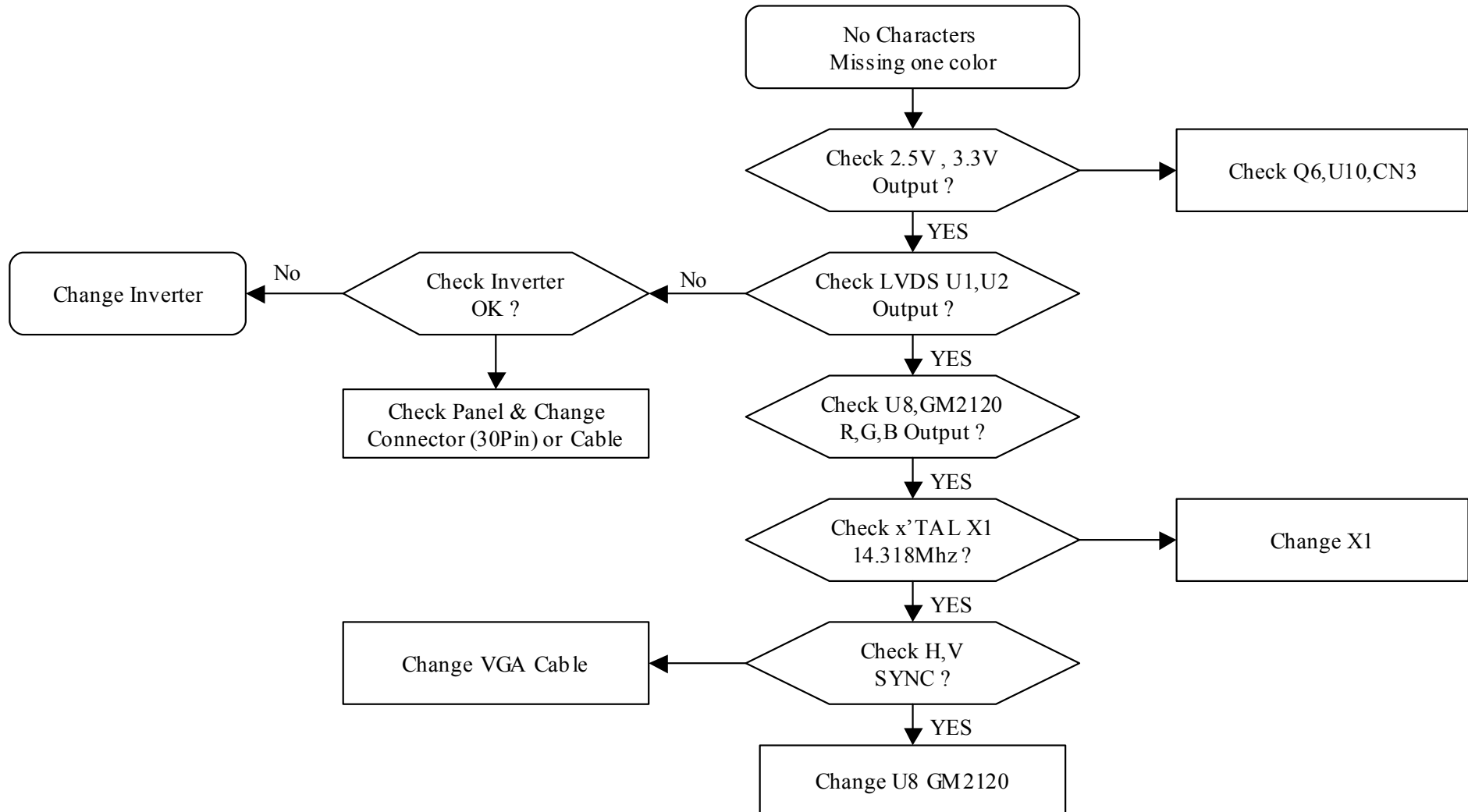


11. TROUBLE SHOOTING HINTS

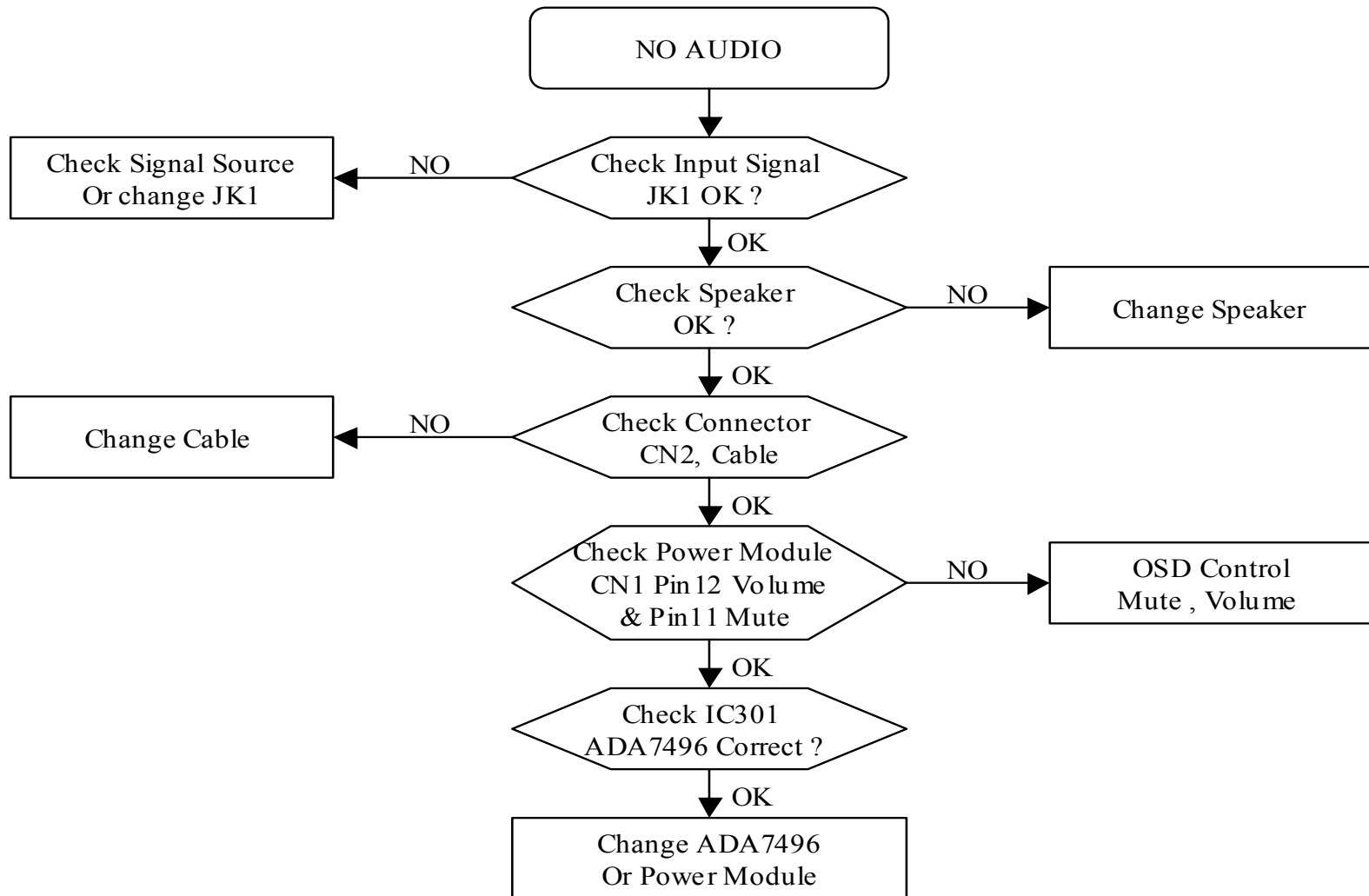
1. No Power



2. No Characters , Missing one Color



3. No Audio



12. BOM LIST

Unit Part No.: 1L70ZZTZ00

No.	Level	Material	Description	Qty
1	1	21L70SB0061	L70L-T SCALAR/B ASSY	1
2	2	31L70SS0063	L70L-T SCALAR/B S/S ASSY	1
3	3	AJ02120^C10	IC(208P) GM2120-CG (162MHZ,FQFP)	1
4	3	AJ058280K03	IC(56P) CS5828N(TSSOP)24BITS,3.3V	0
5	3	AJVDM830K04	IC(56P) THC63LVDM83A(SSOP)24bits,3.3V	2
6	3	AKE1A800Y02	IC EEPROM(8P,5V) 24LC02B(2K*1,SOP)	1
7	3	AKE1B8APN03	IC(32P) FLASH ROM W39F010P-70B(PLCC)	1
8	3	AKE3A8S0Y01	IC,EEPROM(8P) 24LC16B/SN(2K*8,100KHZ)	1
9	3	AL006326007	IC(3P) MAX6326UR29(SOT23)	1
10	3	BA001440Z87	TRANSISTOR SMD PDTTC144EU (50V,30MA)	0
11	3	BA144EUAZ04	TRANSISTOR SMD DTC144EUA(50V,30MA)	2
12	3	BA039040Z01	TRANSISTOR,SMD MMBT3904(40V,200mA)	1
13	3	BAM9435YZ09	TRANSISTOR MOSFET SI9435DY(-30V,5.1A)	1
14	3	BAN70020T04	TRANSISTOR MOSFET 2N7002(60V,0.115A)	2
15	3	BCAN202UZ01	DIODE,SMD DAN202U(80V,100mA,SMD)	1
16	3	BD05232BZ09	DIODE,ZENER,SMD MMBZ5232B(5.6V,SOT23)	4
17	3	CH00506J904	CAPACITOR CHIP 5P,50V(+5%,NPO,0603)	2
18	3	CH01206J906	CAPACITOR CHIP 12P 50V(+5%,NPO,0603)	11
19	3	CH01506JB06	CAP CHIP 15P 50V(+5% COG 0402)	49
20	3	CH03306J905	CAPACITOR CHIP 33P 50V(+5%,NPO,0603)	2
21	3	CH04706J902	CAPACITOR CHIP 47P 50V(+5%,NPO,0603)	2
22	3	CH11006J901	CAPACITOR CHIP 100P 50V(+5%,NPO,0603)	1
23	3	CH31006K919	CAP CHIP 0.01U 50V(+10%,X7R,0603)	10
24	3	CH41004Z931	CAP CHIP 0.1u,25V(+80-20%,Y5V,0603)	45
25	3	CJ022084N10	RES ARRAY CHIP 22,1/16W(+5%,8P4R)R-PIN	12
26	3	CJ310084N15	RES ARRAY CHIP 10K,1/16W(5%,8P4R)R-PIN	2
27	3	CS00003J900	RESISTOR CHIP 0 1/10W+5%(0603)	7
28	3	CS02203J902	RES CHIP 22 1/10W +5%(0603)	22
29	3	CS05603F903	RES CHIP 56 1/10W +-1%(0603)	3
30	3	CS07503J907	RES CHIP 75 1/10W +5%(0603)	3
31	3	CS11003J904	RESISTOR CHIP 100 1/10W +-5%(0603)	3
32	3	CS14703J908	RESISTOR CHIP 470 1/10W+5%(0603)	2
33	3	CS15103J909	RESISTOR CHIP 510 1/10W +-5%(0603)	1
34	3	CS21003F904	RESISTOR CHIP 1K,1/10W,+1%(0603)	1
35	3	CS21003J906	RES CHIP 1K 1/10W +-5%(0603)	2
36	3	CS24703J900	RES CHIP 4.7K 1/10W +5%(0603)	1
37	3	CS31003J908	RES CHIP 10K 1/10W +5%(0603)	15
38	3	CS34703J901	RES CHIP 47K 1/10W +-5%(0603)	5
39	3	CX0P121R000	EMI FILTER CHIP HI1206P121R-00(120 6A)	10
40	3	DA0L7XMB4A2	PCB(M/B) L7X MB(4L,100*95,REVA)	1

41	3	DGP320001Z0	IC SOCKET,SMD PLCC 32P(LOW PROFILE,SM	1
42	3	CH51004MA32	CAPACITOR CHIP 1UF 25V(+20%,Y5V,0805)	3
43	3	AZL70SWB105	L70L-T SW BIOS IMAGE	1
44	2	BG614318D55	XTAL DIP 14.318MHZ(+30PPM,07010-X-136-2	1
45	2	CC62204MD23	CAP ELEC 22U 25V(+20%,105C,5*11,2000HR)	8
46	2	CC73303MD51	CAP ELEC 330U 16V(+20%,105C,8*11,2000HR)	2
47	2	DFHD10MR316	CONN DIP HEADER 10P 1R MR(P2.0,H4.1)	1
48	2	DFHD12MR242	CONN DIP HEADER 12P 2R MR(P2.54,H5.1)	1
49	2	DFHD14MS264	CONN DIP HEADER 14P 2R MS(P2.0,H6.0)	1
50	2	DFHD30MR259	CONN DIP HEADER 30P 2R MR(P2.0,H4.0)	1
51	1	AS020126031	ADP/INV/AUD W/O SW,ADP-42AFD,90~264V	1
52	1	23L70BBTN02	L70L-T BUTTON/B ASSY	1
53	1	24L70LBTN03	L70L-T LCD BEZEL ASSY	1
54	2	32L70LBTN01	L70L-T LCD BEZEL SUBASSY	1
55	2	AA17EL07012	LCD(TFT) 17" QD17EL07 REV:A	1
56	2	DN002514005	SPEAK ASSY L70L FG-2514H8 1.5WX2	1
57	2	36L70PASY07	L70L-N PCB HOLDER ASSY	1
58	2	37L70PBSY03	L70L-N POWER/B SHIELD ASSY	1
59	2	FAL70012011	LCD BKT-L L70L-N(FAL70012,REV3A)	1
60	2	FAL70013017	LCD BKT-R L70L-N(FAL70013,REV3A)	1
61	2	FBL70002016	GND PLATE-P L70B(FBL70002,REV3A)-L	1
62	2	FBL70003012	GND PLATE-S L70B(FBL70003,REV3A)-L	1
63	2	MF30060PBJ5	SCREW F3.0*6.0-P(NI)	3
64	2	MM30030IBJ4	SCREW M3*3-I-NI	6
65	2	MM30060IBJ8	SCREW M3.0*6.0-I(NI)	4
66	2	FBL5T001017	AL FOIL-BKT L5TL(FBL5T001,REV3A)	2
67	2	MS35050IBW8	SCREW M3.5*5-I(NI),W	1
68	2	MM30060BBJ3	SCREW M3.0*6,B(NI)	1
69	2	MF30050IBJ6	SCREW F3*5-I(NI)	2
70	2	MF30080BBJ5	SCREW F3.0*8L,B,NI	5
71	1	25L70LC0003	L70L-B LCD COVER ASSY	1
72	1	26L70SA0001	L70L-B STAND ASSY	1
73	2	DDL70LLC006	CABLE ASSY L70L MB-LCD(30P,REV1A)	1
74	2	DDL70LPB006	CABLE ASSY L70L MB-POWER(12P,REV1A)	1
75	2	DDL70LPC002	CABLE ASSY L70L MB-VGA(14/15P,REV1A)	1
76	2	DDL70LTH006	CABLE ASSY L70L MB-BUTTON(10P,REV1A)	1
77	2	MM40080BCI5	SCREW M4.0*8-B(NI,NYLOK)	2
78	2	MF30080BBJ5	SCREW F3.0*8L,B,NI	2
79	2	DDL5TLTH101	CABLE ASSY L5TL POWER-CHASSIS(1P,REV	1
80	1	29L70BATN02	L70L-T BASE ASSY	1

13. ELECTRICAL REPLACEMENT PARTS

13.1 Main Board Replacement Parts List

P/N : 21L70SB0061

Level	Part Number	Part Description	Qty	UOM	Location
2	31L70SS0063	L70L-T SCALAR/B S/S ASSY	1	KT	
3	AJ02120^C10	IC(208P) GM2120-CG (162MHZ,FQFP)	1	PC	U8
3	AJVDM830K04	IC(56P) THC63LVDM83A(SSOP)24BITS,3.3V	2	PC	U1,U2
3	AKE1A800Y02	IC EEPROM(8P,5V) 24LC02B(2K*1,SOP)	1	PC	U11
3	AKE1B8APN03	IC(32P) FLASH ROM W39F010P-70B(PLCC)	1	PC	U7
3	AKE3A8S0Y01	IC,EEPROM(8P) 24LC16B/SN(2K*8,100KHZ)	1	PC	U4
3	AL006326007	IC(3P) MAX6326UR29(SOT23)	1	PC	U10
3	BA001440Z87	TRANSISTOR SMD PDTC144EU (50V,30MA)	2	PC	Q8,Q11
3	BA144EUAZ04	TRANSISTOR SMD DTC144EUA(50V,30MA)	2	PC	Q8,Q11
3	BA039040Z01	TRANSISTOR,SMD MMBT3904(40V,200MA)	1	PC	Q7
3	BAM9435YZ09	TRANSISTOR MOSFET SI9435DY(-30V,5.1A)	1	PC	Q6
3	BAN70020T04	TRANSISTOR MOSFET 2N7002(60V,0.115A)	2	PC	Q1,Q14
3	BCAN202UZ01	DIODE,SMD DAN202U(80V,100MA,SMD)	1	PC	D9
3	BD05232BZ09	DIODE,ZENER,SMD MMBZ5232B(5.6V,SOT23)	4	PC	D1,D2,D3,D4
3	CH00506J904	CAPACITOR CHIP 5P,50V(+/-5%,NPO,0603)	2	PC	C102,C107
3	CH01206J906	CAPACITOR CHIP 12P 50V(+/-5%,NPO,0603)	11	PC	C113,C116,C129,C132 ,C135,C137,C139,C14 1,C145,C154,C184
3	CH01506JB06	CAP CHIP 15P 50V(+/-5% COG 0402)	49	PC	C24,C25,C26,C27,C28 ,C29,C30,C31,C32,C3 3,C34,C35,C36,C37,C 38,C39,C44,C45,C46, C47,C48,C49,C50,C51 ,C52,C53,C54,C55,C5 6,C57,C58,C59,C60,C 61,C62,C63,C64,C65, C66,C67,C71,C77,C79 ,C81,C83,C86,C87,C8
3	CH03306J905	CAPACITOR CHIP 33P 50V(+/-5%,NPO,0603)	2	PC	C84,C91
3	CH04706J902	CAPACITOR CHIP 47P 50V(+/-5%,NPO,0603)	2	PC	C99,C104
3	CH11006J901	CAPACITOR CHIP 100P 50V(+/-5%,NPO,0603)	1	PC	C9
3	CH31006K919	CAP CHIP 0.01U 50V(+/-10%,X7R,0603)	10	PC	C1,C2,C3,C4,C105,C1 09,C112,C114,C130,C 131

	CH41004Z931	CAP CHIP 0.1U,25V(+80-20%,Y5V,0603)	45	PC	C13,C14,C15,C16,C17,C18,C19,C20,C22,C42,C43,C73,C74,C75,C76,C78,C82,C88,C93,C95,C96,C97,C98,C100,C101,C103,C106,C108,C110,C111,C117,C118,C119,C120,C121,C126,C144,C155,C182,C185,C186,C187,C188,C189,C190
3	CJ022084N10	RES ARRAY CHIP 22,1/16W(+5%,8P4R)R-PIN	12	PC	RN1,RN2,RN3,RN4,RN5,RN6,RN7,RN8,RN9,RN10,RN11,RN12
3	CJ310084N15	RES ARRAY CHIP 10K,1/16W(5%,8P4R)R-PIN	2	PC	RN13,RN14
3	CS00003J900	RESISTOR CHIP 0 1/10W+-5%(0603)	7	PC	R15,R17,R21,R65,R68,R82,R84
3	CS02203J902	RES CHIP 22 1/10W +-5%(0603)	22	PC	R44,R47,R50,R51,R62,R69,R86,R89,R91,R92,R94,R97,R98,R99,R101,R105,R109,R114,R128,R131,R136,R137
3	CS05603F903	RES CHIP 56 1/10W +-1%(0603)	3	PC	R77,R88,R95
3	CS07503J907	RES CHIP 75 1/10W +-5%(0603)	3	PC	R85,R90,R96
3	CS11003J904	RESISTOR CHIP 100 1/10W +-5%(0603)	3	PC	R14,R102,R106
3	CS14703J908	RESISTOR CHIP 470 1/10W+-5%(0603)	2	PC	R118,R119
3	CS15103J909	RESISTOR CHIP 510 1/10W +-5%(0603)	1	PC	R72
3	CS21003F904	RESISTOR CHIP 1K,1/10W,+-1%(0603)	1	PC	R93
3	CS21003J906	RES CHIP 1K 1/10W +-5%(0603)	2	PC	R13,R143
3	CS24703J900	RES CHIP 4.7K 1/10W +-5%(0603)	1	PC	R35
	CS31003J908	RES CHIP 10K 1/10W +-5%(0603)	15	PC	R12,R28,R29,R33,R34,R52,R66,R67,R75,R81,R83,R127,R140,R141,R142
3	CS34703J901	RES CHIP 47K 1/10W +-5%(0603)	5	PC	R31,R39,R42,R100,R110
3	CX0P121R000	EMI FILTER CHIP HI1206P121R-00(120 6A)	10	PC	L1,L2,L3,L4,L6,L10,L11,L13,L20,L21
3	DA0L7XMB4A2	PCB(M/B) L7X MB(4L,100*95,REVA)	1	PC	
3	DGP320001Z0	IC SOCKET,SMD PLCC 32P(LOW PROFILE,SM	1	PC	U7
3	CH51004MA32	CAPACITOR CHIP 1UF 25V(+20%,Y5V,0805)	3	PC	C11,C72,C195
3	AZL70SWB105	L70L-T SW BIOS IMAGE	1	PC	
2	BG614318D55	XTAL DIP 14.318MHZ(+30PPM,07010-X-136-2	1	PC	X1

2	CC62204MD23	CAP ELEC 22U 25V(+20%,105C,5*11,2000HR)	8	PC	C5,C6,C7,C8,C40,C69 ,C80,C94
2	CC73303MD51	CAP ELEC 330U 16V(+20%,105C,8*11,2000HR)	2	PC	C23,C183
2	DFHD10MR316	CONN DIP HEADER 10P 1R MR(P2.0,H4.1)	1	PC	CN4
2	DFHD12MR242	CONN DIP HEADER 12P 2R MR(P2.54,H5.1)	1	PC	CN3
2	DFHD14MS264	CONN DIP HEADER 14P 2R MS(P2.0,H6.0)	1	PC	CN2
2	DFHD30MR259	CONN DIP HEADER 30P 2R MR(P2.0,H4.0)	1	PC	CN1

13.2 Button Board Replacement Parts List

P/N : 23L70BBTN02

	Part Number	Part Description	Qty	UOM	Location
2	BEYG0024DA5	LED(DIP) YELLOW/GREEN(L-3WAFN/1GYW)	1	PC	LED1
2	DAL70TB42A4	PCB(BUTTON) L70L-T TB(2L,143.5*15,REVA)	1	PC	
2	DFHD10MR316	CONN DIP HEADER 10P 1R MR(P2.0,H4.1)	1	PC	CN1
2	DHP00062N10	SWITCH PUSH BUTTON(DTSA-62N,50MA,12V)	5	PC	SW1,SW2,SW3,SW4, SW5

13.3 Power Board Replacement Parts List

P/N : AS020126031

14. SPARTS PARTS LIST

No.	Part Number	Part Description	Qty	Remark
1	1L70ZZZTN00	L70L-T LCD MONITOR(ET.L0207.008,AAP)		Complete Set
2	21L70SB0061	L70L-T SCALAR/B ASSY	1	Main board
3	AS020126031	ADP/INV/AUD W/O SW,ADP-42AFD,90~264V 1A	1	Power board
4	23L70BBTN02	L70L-T BUTTON/B ASSY	1	Button board
5	24L70LBTN03	L70L-T LCD BEZEL ASSY	1	
6	25L70LC0003	L70L-B LCD COVER ASSY	1	
7	26L70SA0001	L70L-B STAND ASSY	1	
8	29L70BATN02	L70L-T BASE ASSY	1	
9	DDL70LLC006	CABLE ASSY L70L MB-LCD(30P,REV1A)	1	
10	DDL70LPB006	CABLE ASSY L70L MB-POWER(12P,REV1A)	1	
11	DDL70LPC002	CABLE ASSY L70L MB-VGA(14/15P,REV1A)	1	VGA cable
12	DDL70LTH006	CABLE ASSY L70L MB-BUTTON(10P,REV1A)	1	
13	DDL5TLTH101	CABLE ASSY L5TL POWER-CHASSIS(1P,REV1A)	1	