

MAKENA Electric Co., Ltd. November, 2011
LCD TV Service Manual

Liquid Crystal Display Television

Service Manual

Chassis: MST6M181-7A

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Service Manual

1. Precautions and Notices

BEFORE SERVICING THE LCD TV, READ THE SAFETY PRECAUTIONS IN THIS MANUAL.

WHEN REPLACEMENT PARTS ARE REQUIRED, BE SURE TO USE REPLACEMENT PARTS SPECIFIED BY THE MANUFACTURER.

Proper service and repair is important to the safe, reliable operation of all MAKENA Electric Co., Ltd. The service procedures recommended by MAKENA and described in this Service Guide are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It is also important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. MAKENA could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, MAKENA has not undertaken any such broad evaluation. Accordingly, a serviceman that uses a service procedure or tools, which are not recommended by MAKENA, must first satisfy himself thoroughly that neither his safety nor the safe of the equipment will be jeopardized by the service method selected.

Hereafter throughout this manual, MAKENA Electric Co., Ltd will be referred to as MAKENA.

1.1 WARNING

1.1.1

Critical components having special safety characteristics are identified with a by the Ref. No. in the parts list. Use of substitute replacement parts, which do not have the same specified safety characteristics, may create shock, fire, or other hazards. Under no circumstances should the original design be modified or altered without written permission from MAKENA. MAKENA assumes no liability, express or implied, arising out of any unauthorized modification of design. Serviceman assumes all liability.

DANGER CAUTION

TO ENSURE THE CONTINUED RELIABILITY OF THIS PRODUCT, USE ONLY ORIGINAL MANUFACTURER'S REPLACEMENT PARTS, WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF BOM.

1.1.2

All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential.

1. Never replace modules or other components while the unit is switched on.
2. When making settings, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

1.1.3

To prevent electrical shock, do not use this polarized ac plug with an extension cord, receptacle, or the outlet unless the blades can be fully inserted to prevent blade exposure.

To prevent electrical shock, match wide blade or plug to wide slot, fully insert.

1.1.4

When replacement parts are required, be sure to use replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.

1.1.5

Safety regulations require that after a repair the set must be returned in its original condition.

In particular attention should be paid to the following points.

Note: -The wire trees should be routed correctly and fixed with the mounted

-The insulation of the mains lead should be checked for external damage.

1.1.6

(1) Do not touch Signal and Power Connector while this product operates. Do not touch EMI ground part and Heat Sink of Film Filter.

(2) Do not supply a voltage higher than that specified to this product. This may damage the product and may cause a fire.

(3) Do not use this product in locations where the humidity is extremely high, where it may be splashed with water, or where flammable materials surround it. Do not install or use the product in a location that does not satisfy the specified environmental conditions. This may damage the product and may cause a fire.

(4) If a foreign substance (such as water, metal, or liquid) gets inside the panel module, immediately turn off the power. Continuing to use the product may cause fire or electric shock.

(5) If the product emits smoke, and abnormal smell, or makes an abnormal sound, immediately turn off the power. Continuing to use the product, it may cause fire or electric shock.

(6) Do not disconnect or connect the connector while power to the product is on. It takes some time for the voltage to drop to a sufficiently low level after the power has been turned off. Confirm that the voltage has dropped to a safe level before disconnecting or connecting the connector.

(7) Do not pull out or insert the power cable from/to an outlet with wet hands. It may cause electric shock.

(8) Do not damage or modify the power cable. It may cause fire or electric shock. (9) If the power cable is damaged, or if the connector is loose, do not use the product: otherwise, this can lead to fire or electric shock.

(10) If the power connector or the connector of the power cable becomes dirty or dusty, wipe it with a dry cloth. Otherwise, this can lead to fire.

(11) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

1.2 NOTES

Notes on Safe Handling of the LCD panel and during service

The work procedures shown with the Note indication are important for ensuring the safety of the product and the servicing work. Be sure to follow these instructions.

- Before starting the work, secure a sufficient working space.
- At all times other than when adjusting and checking the product, be sure to turn OFF the POWER Button and disconnect the power cable from the power source of the TV during servicing.
- To prevent electric shock and breakage of PC board, start the servicing work at least 30 seconds after the main power has been turned off. Especially when installing and removing the power board, start servicing at least 2 minutes after the main power has been turned off.
- While the main power is on, do not touch any parts or circuits other than the ones specified. If any connection other than the one specified is made between the measuring equipment and the high voltage power supply block, it can result in electric shock or activation of the leakage-detection circuit breaker.
- When installing the LCD module in, and removing it from the packing carton, be sure to have at least two persons perform the work.
- When the surface of the panel comes into contact with the cushioning materials, be sure to confirm that there is no foreign matter on top of the cushioning materials before the surface of the panel comes into contact with the cushioning materials. Failure to observe this precaution may result in, the surface of the panel being scratched by foreign matter.
- When handling the circuit board, be sure to remove static electricity from your body before handling the circuit board.
- Be sure to handle the circuit board by holding the large parts as the heat sink or transformer. Failure to observe this precaution may result in the occurrence of an abnormality in the soldered areas.
- Do not stack the circuit boards. Failure to observe this precaution may result in problems resulting from scratches on the parts, the deformation of parts, and short-circuits due to residual electric charge.
- Routing of the wires and fixing them in position must be done in accordance with the original routing and fixing configuration when servicing is completed. All the wires are routed far away from the areas that become hot (such as the heat sink). These wires are fixed in position with the wire clamps so that the wires do not move, thereby ensuring that they are not damaged and their materials do not deteriorate over long periods of time. Therefore, route the cables and fix the cables to the original position and states using the wire clamps.
- Perform a safety check when servicing is completed. Verify that the peripherals of the serviced points have not undergone any deterioration during servicing. Also verify that the screws, parts and cables removed for servicing purposes have all been returned to their proper locations in accordance with the original setup.

2. Factory/Service OSD Menu and Adjustment

2.1 To enter the Factory OSD Menu

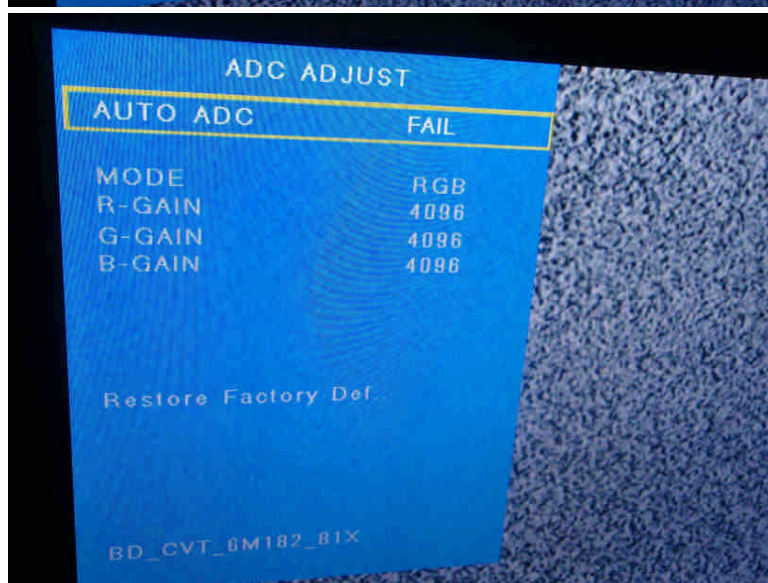
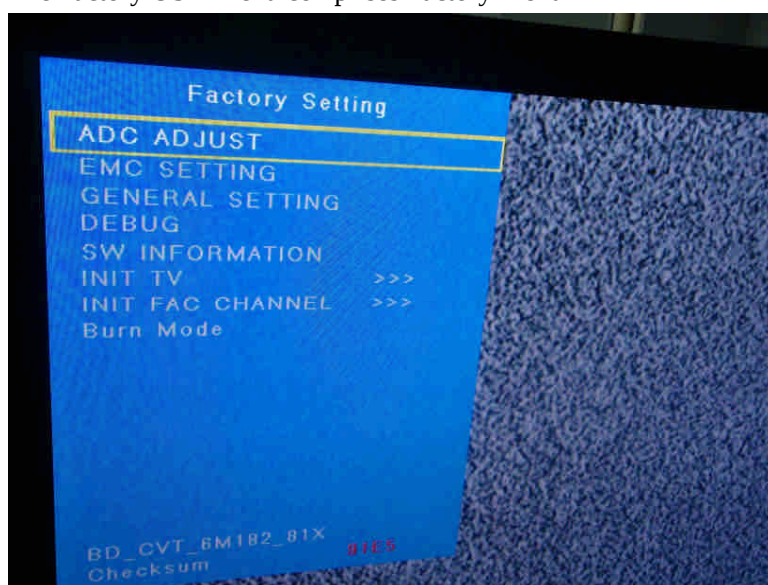
With factory RC (remote control)

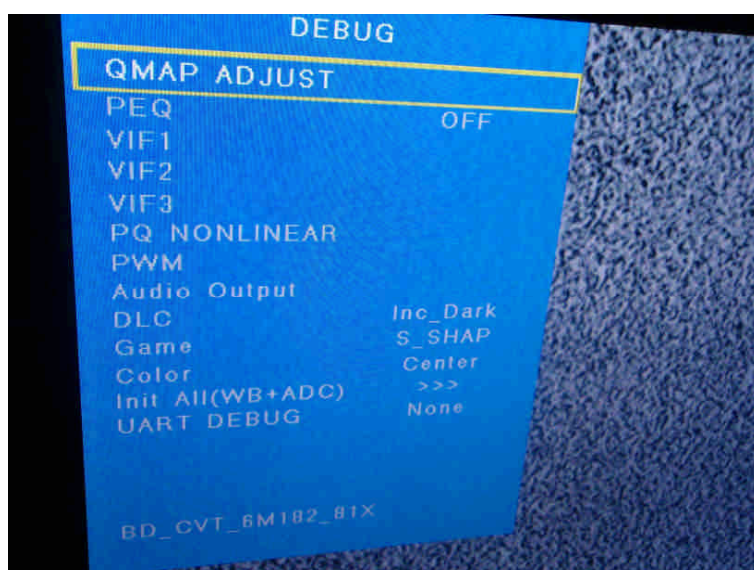
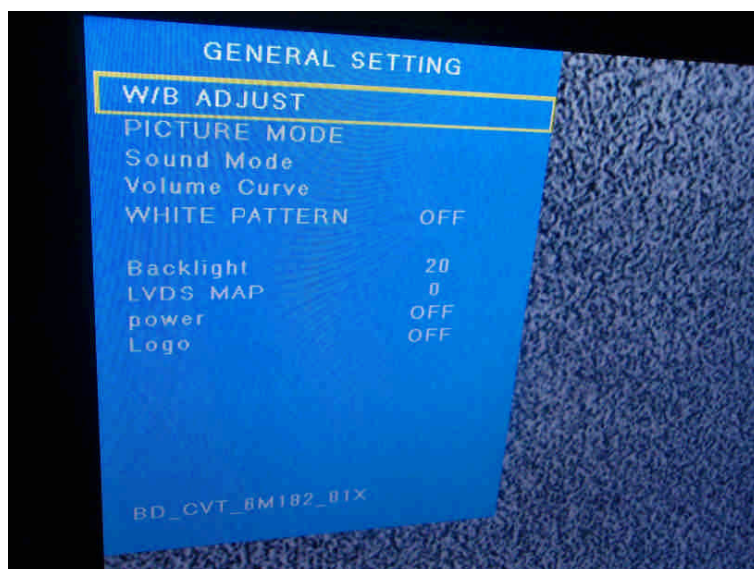
1. Press “Menu” button, then “1147” to enter factory mode.
2. Press “CH+”/“CH-” button select the function menu, press “VOL+”/“VOL-” enter the selected function menu. Press “VOL+”/“VOL-” button adjust values in the menu.
3. Press “Menu” button to go back to previous page.
4. Press “Exit” button exit factory mode in the factory OSD menu.

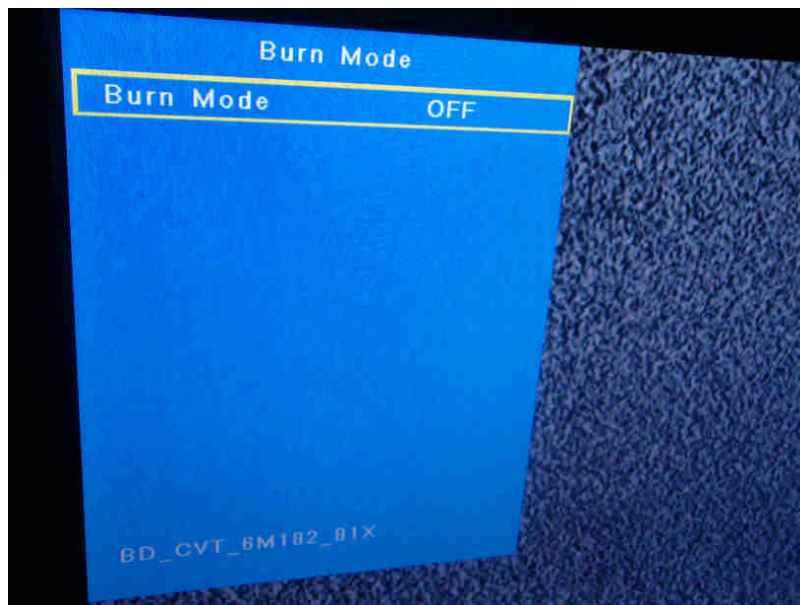
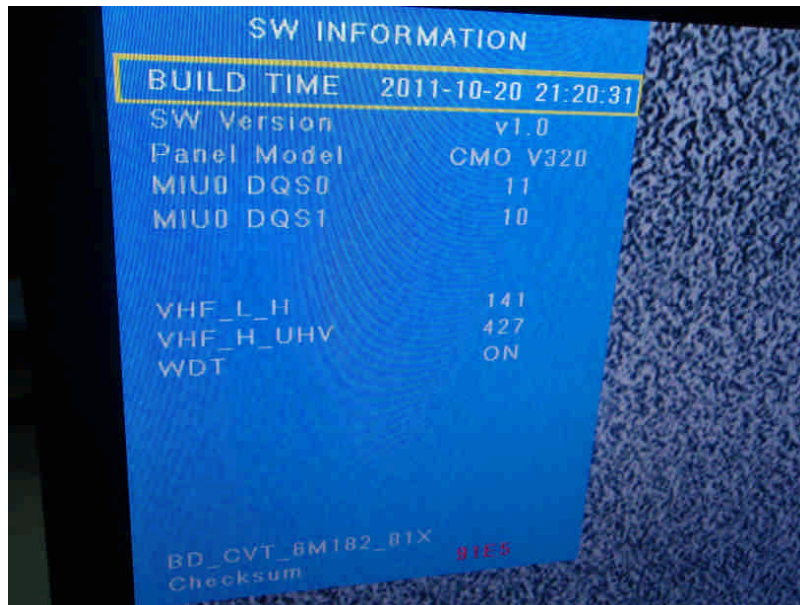
When TV outgoing factory, user can not enter factory OSD menu with Factory Remote control.

2.2 Factory OSD Menu

The Factory OSD Menu comprises Factory Menu





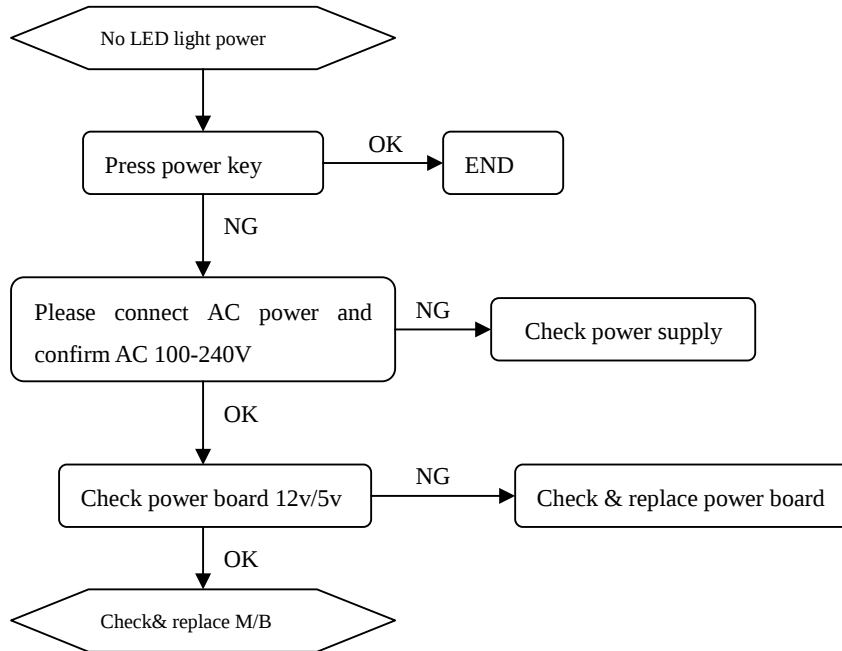


Note:

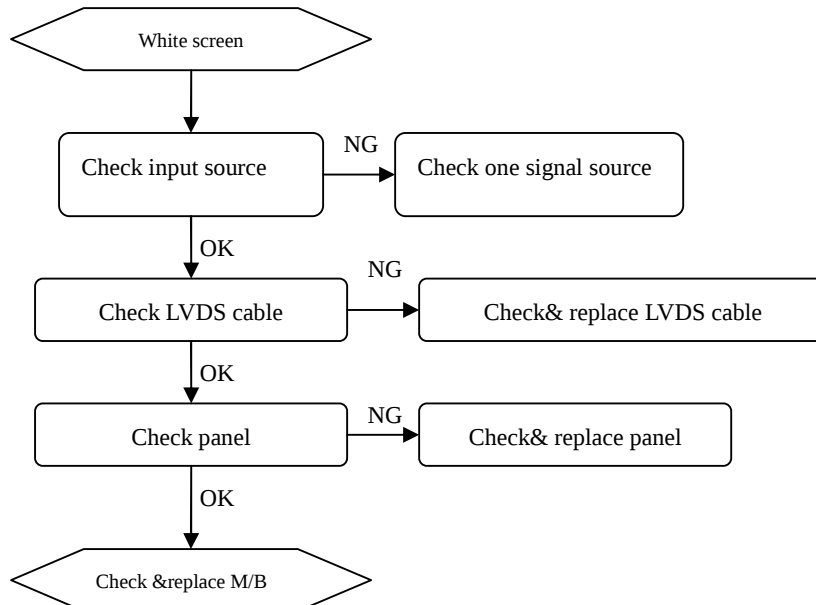
The above "Factory/Service OSD Menu" are reference only, please refer to the actual units to determine the appearances.

3. Trouble shooting

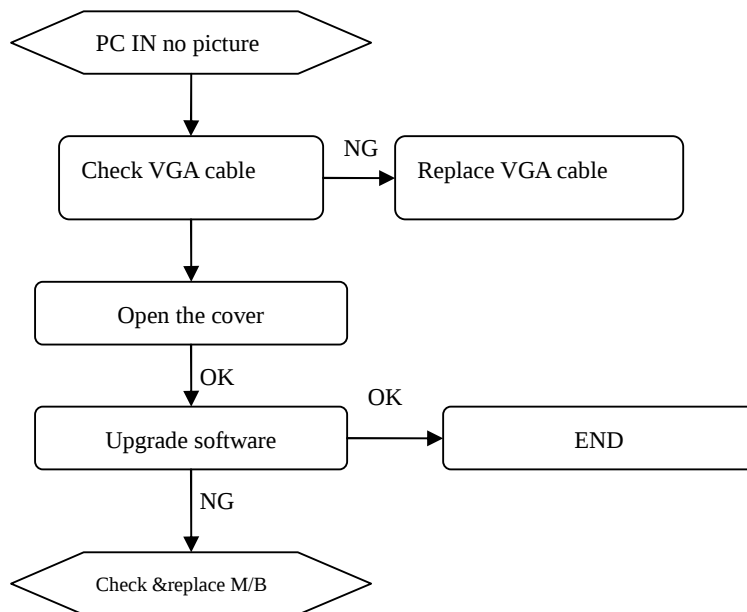
3.1 No LED light Power



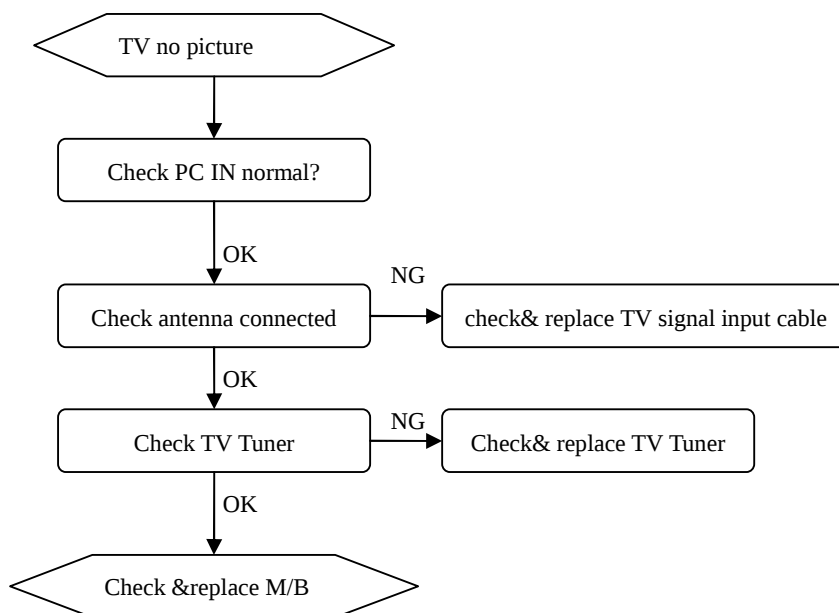
3.2 White Screen



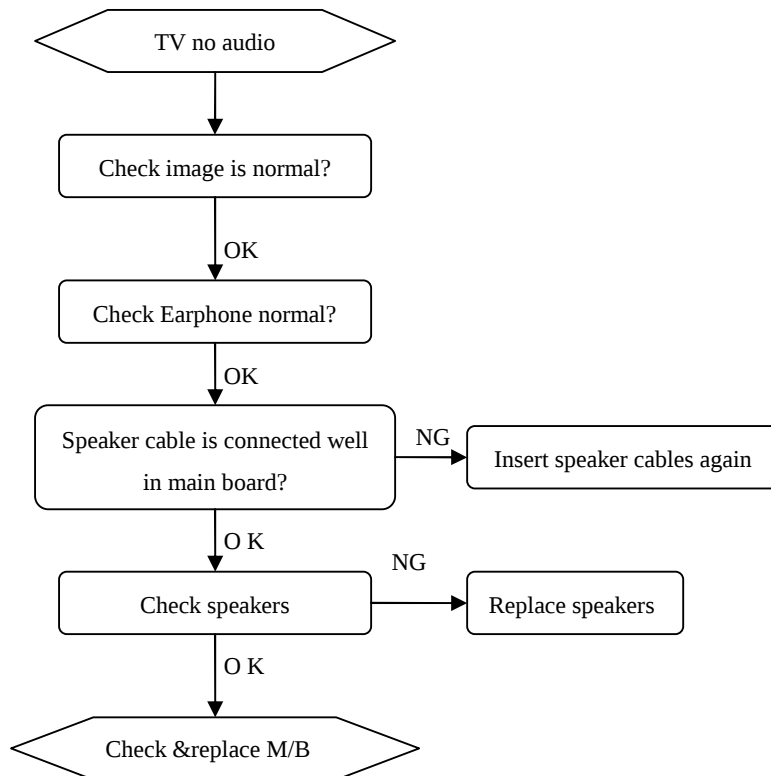
3.3 PC IN no picture



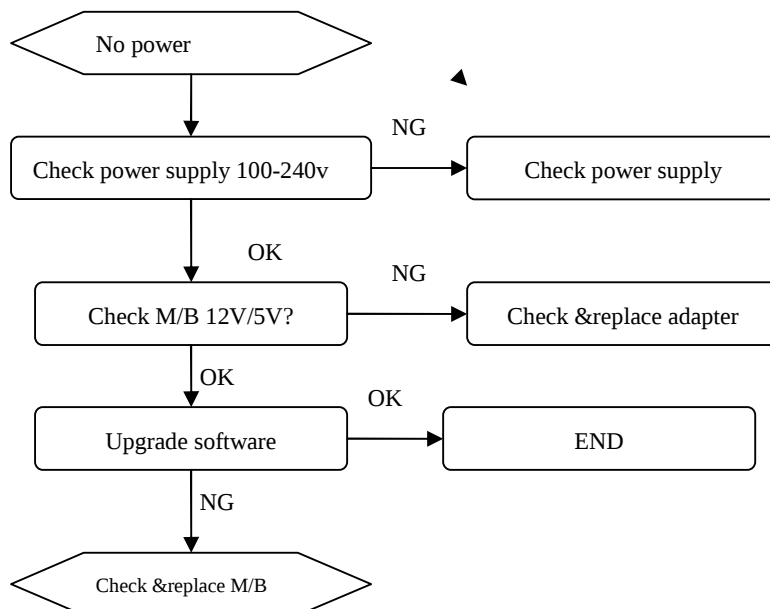
3.4 TV no picture



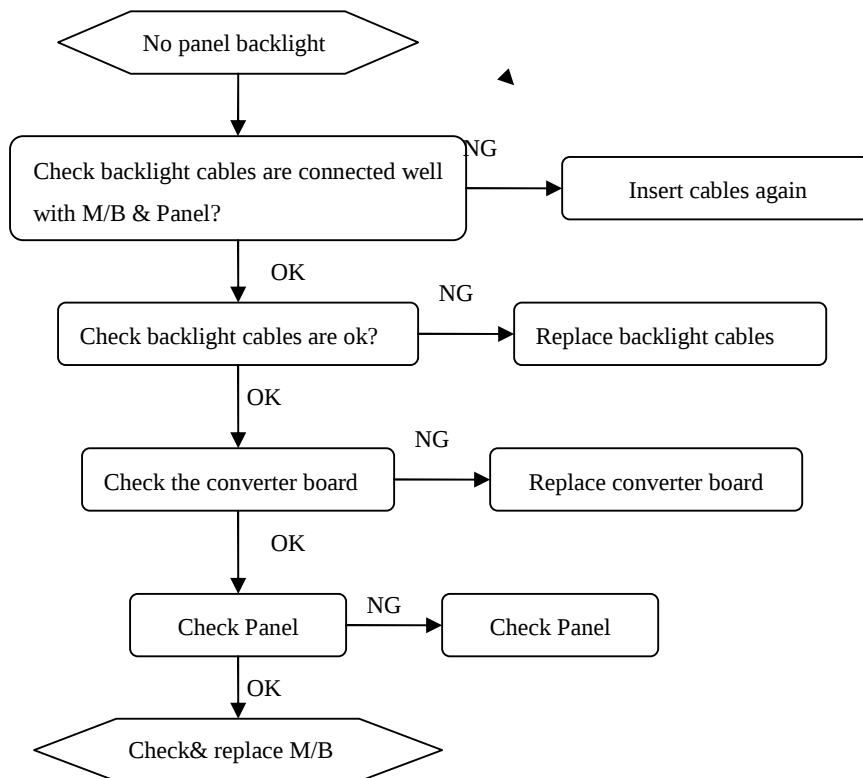
3.5 TV no audio



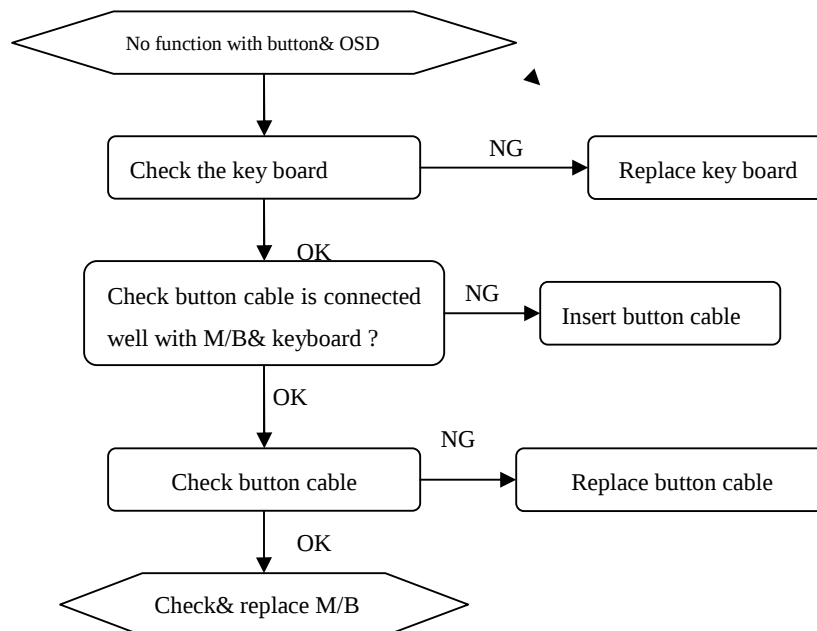
3.6 No Power



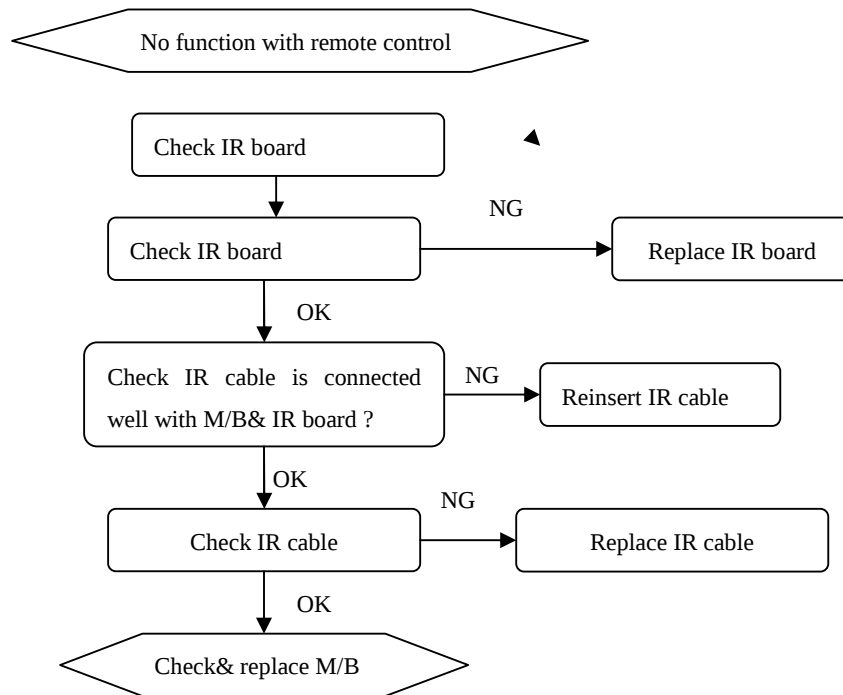
3.7 No Panel Backlight



3.8 Problem with key board&OSD



3.9 Problem with Remote Control



V1.1

TV CONTROL BOARD SPECIFICATION

MODEL: T.MS6M181.7X(Asia)

Part Number: MST-10120903

AUTHOR:  2010.12.13 21:25:08 +08'00'

CHECKED BY:  2010.12.13 22:03:42 +08'00'

RECHECKED1 BY:  2010.12.14 08:48:57 +08'00'

RECHECKED2 BY:  zhangzhuofeng
2010.12.14 09:52:28 +08'00'

APPROVED BY:  2010.12.14 10:52:28 +08'00'

PUBLISHED DATE: 2010-12-13

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REVISION HISTORY

VERSION	DATE	BOARD ID	PAGE	DESCRIPTION	AUTHOR
V1.0	2010.12.09	T.MS6M181.7A 10464	All	First issued	Fanny
V1.1	2011.01.17	T.MS6M181.7A 10464	6	Modify the PCB DIMENSIONS in part 4.	Fanny

1. GENERAL DESCRIPTION

T.MS6M181.7X is a multi-purpose LCD TV control board which can support LCD panel with dual/single LVDS interface. It supports LCD panel less than 26" which resolution is up to 1920×1080.

T.MS6M181.7X supports TELETEXT, NICAM/A2, ATV, USB, HDMI, PC-RGB, CVBS, component, AV out as well as Earphone and coaxial out. It includes an audio power amplifier which can support 2X3W (4Ω) output.

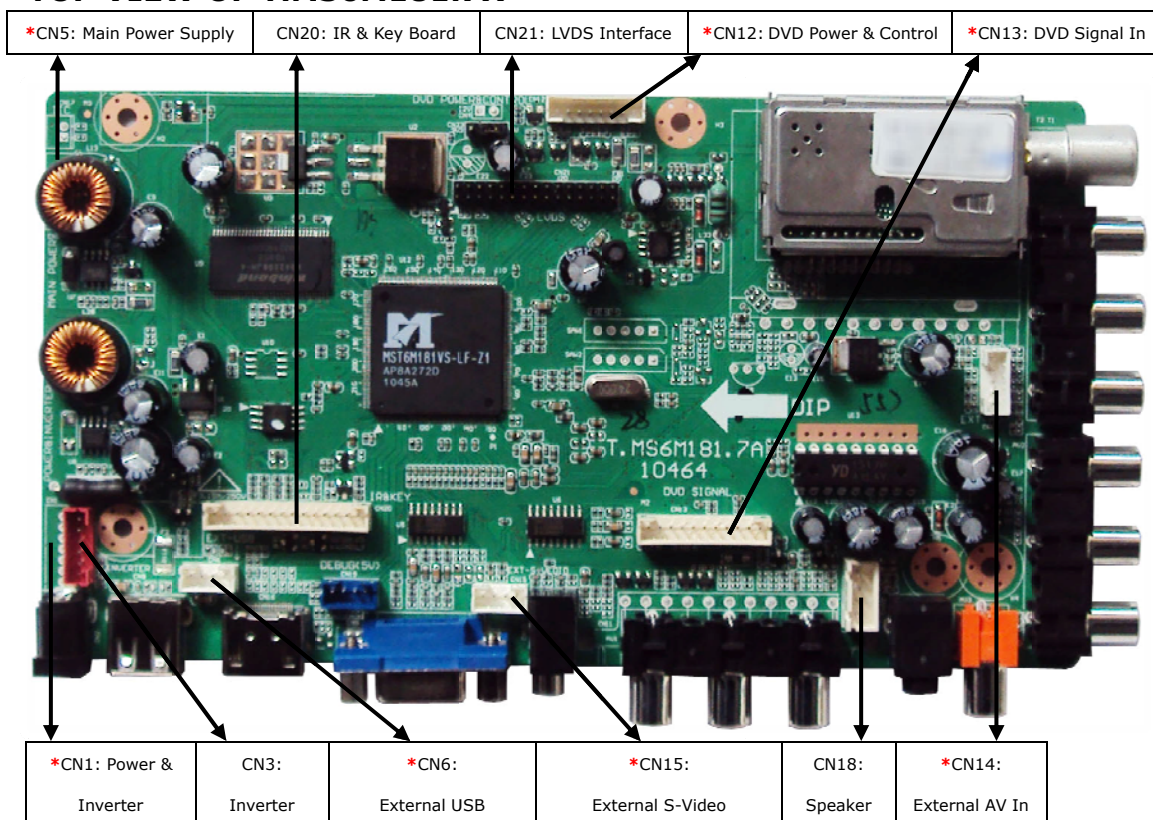
T.MS6M181.7X can connect with accessory modules to support extended functions such as built-in DVD, External AV, External S-Video and External USB. Its USB slot can be used for software upgrade and multimedia playback.

2. FUNCTION LAYOUT

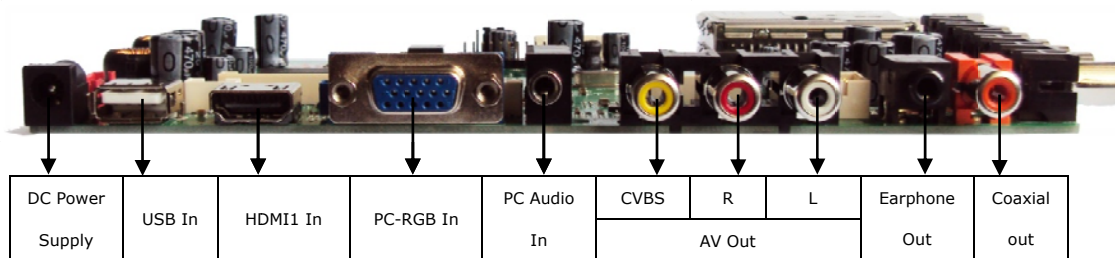
The picture is for a reference only, the actual item is the standard.

The optional connectors and terminals are marked with "*".

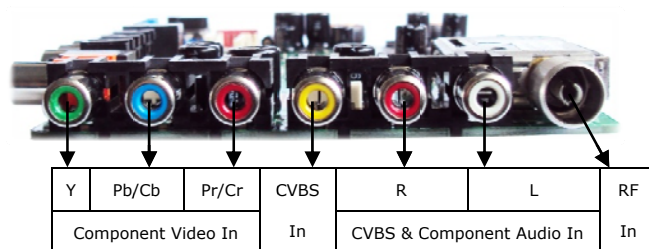
TOP VIEW OF T.MS6M181.7X



FRONT VIEW OF T.MS6M181.7X



SIDE VIEW OF T.MS6M181.7X



3. FEATURES

CHIPSET	MST6M181VS(without TELETEXT and NICAM) /MST6E181V (with TELETEXT and NICAM)		
MARKET AREA	Asia-Pacific, Middle-East		
OSD LANGUAGE	Chinese, English		
PANEL	Panel Type	LCD	
	Interface	Single/Dual LVDS Interface	
	Max Resolution	1920×1080	
VIDEO INPUT	TV	Receiving Range	48.25MHz-863.25MHz
		Input impedance	75Ω
		Video System	PAL/SECAM
		Sound System	B/G,D/K,I
			NICAM/A2
		Max storage Channels	200CH
		TELETEXT	1000Pages
	PC-RGB	Format	Up to SXGA@75Hz
	CVBS	Video System	PAL/NTSC/SECAM
		Video level	1.0 V _{P-P} ±5%
	Ext. S-Video	S-Y:0.714 V _{P-P} ±5%, S-C:0.286 V _{P-P} ±5%	
	Component	480i, 480p, 576i, 576p, 720p, 1080i, 1080p	
	HDMI	480i, 480p, 576i, 576p, 720p, 1080i, 1080p	
AUDIO INPUT	PC Audio	Earphone Input	0.2 ~ 2.0 V _{RMS}
	CVBS1 Audio	L/R RCA Input	0.2 ~ 2.0 V _{RMS}
	CVBS1 & Component Audio	L/R RCA Input	0.2 ~ 2.0 V _{RMS}
AUDIO OUTPUT	Frequency Response	120Hz~14KHz @±3dB (1KHz, 0dB reference signal)	
	Max Output power	2×3W(4Ω) THD+N<10%@1KHz (Power Supply: 12V, Audio Input: 0.5V _{RMS})	
POWER	Requirement	12V DC,12V(Built In),12V/5V(Built In), 12V/5V/5VSB(Built In)	
	To Panel	3.3V, 5V, 12V	
	Management	Standby Power Consumption < 0.5W(Board Only)	

COMB FILTER	3D		
DEINTERLACE	3D		
WEAK SIGNAL ENHANCEMENT	YES		
NOISE REDUCTION	YES		
USB FUNCTION	Multimedia, Software upgrade		
KEY FUNCTION	MENU, CH+, CH-, VOL+, VOL-, INPUT, POWER		
EXPANDABLE FUNCTION	DVD, External AV, External S-Video, External USB		
TERMINALS	INPUT	TV	1IEC-Connector 75Ω
		USB	1 USB Slot(horizontal)
		HDMI	1 HDMI terminal(horizontal)
		PC-RGB	1 D-SUB terminal(blue,15 pin)
		PC Audio	1 Earphone terminal(black)
		CVBS1	1 RCA terminal(yellow)
		Component	3 RCA terminals(green, blue, red)
		CVBS2	1 RCA terminal(yellow)
		CVBS2 & Component Audio	2 RCA terminals(red, white)
	OUTPUT	Coaxial(optional)	1 RCA terminal(orange)
		Earphone Out	1 Earphone terminal(black)

USB MULTIMEDIA PLAYBACK FORMAT

Media	File Ext.	Codec		Remark
		Video	Audio	
Movie	.avi	MJPEG	MP3, WMA, AAC MP2, PCM	Max Resolution And Frame Rate: 720p@30fps Max Data Rate: 10 Mbps
		Xvid, MPEG-2, MPEG-4		Max Resolution And Frame Rate: 720p@30fps Max Data Rate: 20 Mbps
	.mp4	MPEG-2, MPEG-4		
	.ts/ .trp	MPEG-2		
	.mkv/ .mov	MPEG-4		
	.mpg	MPEG-1, MPEG-2		
	.dat	MPEG-1	MP2	Max Resolution: 352×288 Max Data Rate: 20 Mbps
	.vob	MPEG-2		Max Resolution: 720×576 Max Data Rate: 20 Mbps
	.rm/ .rmvb	RV8, RV9, RV10	COOK	Max Resolution And Frame Rate: 720p@30fps Max Data Rate: 10 Mbps

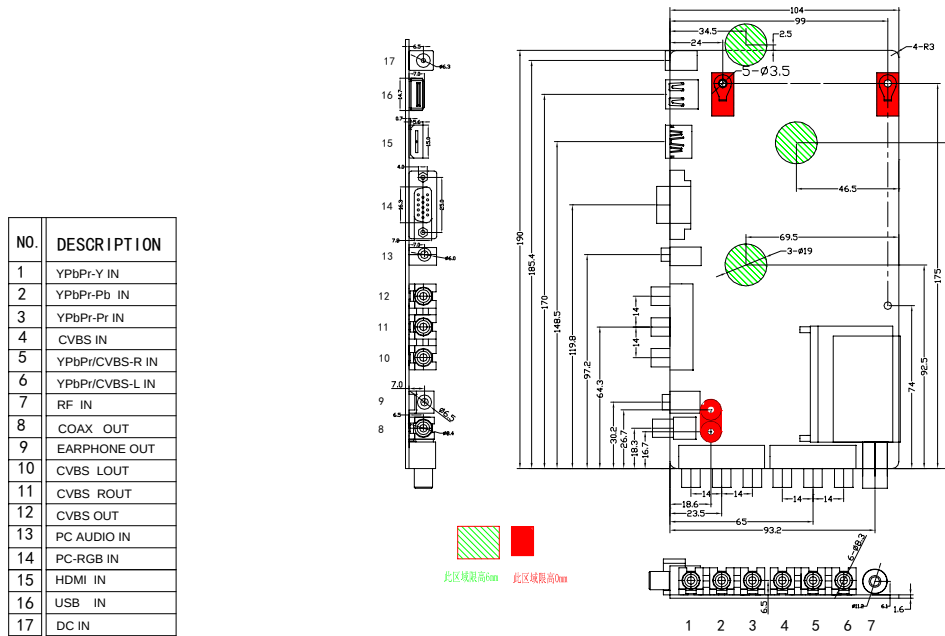
Media	File Ext.	Codec		Remark
		Video	Audio	
Music	.mp3	--	MP3	Sample Rate: 32K~48KHz Bit Rate: 32K~320Kbps Channel: Mono/Stereo
	.wma	--	WMA	
	.m4a/ .aac	--	AAC	Sample Rate: 8K~48KHz Bit Rate: 24K~384Kbps Channel: Mono/Stereo
Photo	.jpg/	Progressive JPEG		Max Resolution: 1024×768
	.jpeg	Baseline JPEG		Max Resolution: 15360×8640
	.bmp	--		Max Resolution: 9600×6400 Pixel Depth: 1/4/8/16/24/32 bpp
	.png	Non-Interlaced		Max Resolution: 9600×6400
		Interlaced		Max Resolution: 1200×800
File system: Hi Speed FS, FAT32, FAT16, NTFS(NTFS compressed file is not supported).				

ELECTRICAL CHARACTERISTICS & REQUIREMENTS

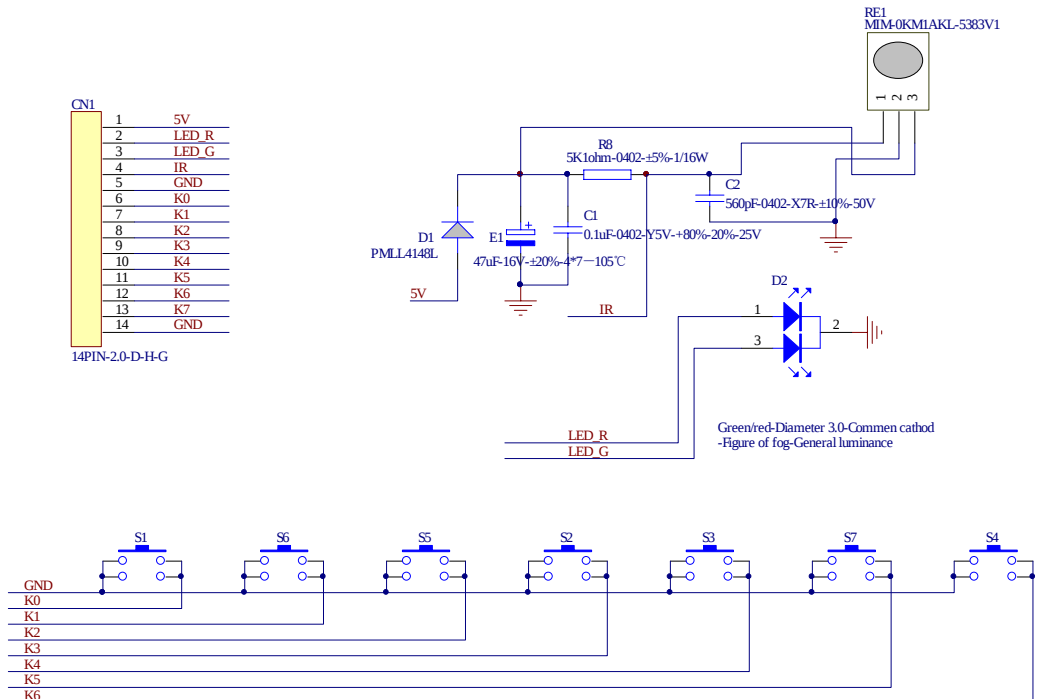
Power Supply Mode	Symbol	Voltage Range	Max Current	Ripple Voltage@25℃	Startup Time	Rise Time
12V (Ext. Adaptor)	12V	12V±0.6V	2000mA	120mV _{p-p}	≤100ms	≤50ms
12V (Built-In)	12V	12V±0.6V	2000mA	120mV _{p-p}	≤100ms	≤50ms
12V/5V (Built-In)	12V	12V±0.6V	1300mA	120mV _{p-p}	≤100ms	≤50ms
	5V	5.1V±0.05V	1500mA	50mV _{p-p}	≤100ms	≤50ms
12V/5V/5VSB (Built-In)	12V	12V±0.6V	1300mA	120mV _{p-p}	≤100ms	≤50ms
	5V	5.1V±0.05V	1400mA	50mV _{p-p}	≤100ms	≤50ms
	5VSB	5.1V±0.05V	150mA	50mV _{p-p}	--	≤50ms
Note: The current of panel, inverter and extension modules are not included in max current.						

4. PCB DIMENSIONS

The overall height of T.MS6M181.7X is 22 mm.



5. SCHEMATICS OF IR BOARD & KEY BOARD



6. INTERFACE DEFINITION

The optional connectors are marked with “*”.

◆ *CN1(10PIN/2.0): BUILT-IN POWER SUPPLY & INVERTER CONNECTOR

NO.	SYMBOL	DESCRIPTION
1	12V	+12V DC Power Supply
2	12V	
3	12V	
4	12V	
5	BLO	Back-Light ON/OFF Control for Panel
6	ADJ	Brightness Adjustment for Panel
7	GND	Ground
8	GND	Ground
9	GND	Ground
10	GND	Ground

◆ CN3(6PIN/2.0): INVERTER CONNECTOR

NO.	SYMBOL	DESCRIPTION
1	12V	+12V DC Power Supply for high-pressure bar
2	12V	
3	BLO	Back-Light ON/OFF Control for Panel
4	ADJ	Brightness Adjustment for Panel
5	GND	Ground
6	GND	

◆ *CN5(6PIN/2.0): 5V POWER SUPPLY CONNECTOR

NO.	SYMBOL	DESCRIPTION
1	5V	+5V DC Power Supply
2	5V	
3	GND	Ground
4	GND	
5	5VSB	+5V DC Power Supply for Standby Mode
6	PWON	Power On/Off

◆ *CN6(4PIN/2.0): EXTERNAL USB CONNECTOR

NO.	SYMBOL	DESCRIPTION
1	5V	+5V DC Power Supply for USB
2	DM	USB Data-
3	DP	USB Data+
4	GND	Ground

◆ *CN12(8PIN/2.0): DVD POWER SUPPLY & CONTROL CONNECTOR

NO.	SYMBOL	DESCRIPTION
-----	--------	-------------

NO.	SYMBOL	DESCRIPTION
1	D5V	+5V DC Power Supply for DVD
2	D5V	
3	GND	Ground
4	GND	
5	D12	+12V DC Power Supply for DVD
6	DIR	IR Data Transfer to DVD
7	DAT/RX	Data Receiver/Serial Data Receiver
8	STB/TX	DVD Standby Control/Serial Data Transmitter

◆ ***CN13(11PIN/2.0): DVD SIGNAL INPUT CONNECTOR**

NO.	SYMBOL	DESCRIPTION
1	COAX	DVD Digital Audio Coaxial Input
2	GND	Ground
3	DRI	DVD Audio Right Channel Input
4	GND	Ground
5	DLI	DVD Audio Left Channel Input
6	DPB	DVD Component-Pb Input
7	GND	Ground
8	DPR	DVD Component-Pr Input
9	GND	Ground
10	DY	DVD Component-Y Input
11	GND	Ground

◆ ***CN14(5PIN/2.0): EXTERNAL AV INPUT CONNECTOR**

NO.	SYMBOL	DESCRIPTION
1	CVBS	CVBS Input
2	GND	Ground
3	AV_L	CVBS Audio Left Channel Input
4	GND	Ground
5	AV_R	CVBS Audio Right Channel Input

◆ ***CN15(4PIN/2.0): EXTERNAL S-VIDEO INPUT CONNECTOR**

NO.	SYMBOL	DESCRIPTION
1	GND	Ground
2	S_C	External S-Video – C Input
3	GND	Ground
4	S_Y	External S-Video – Y Input

◆ **CN18 (4PIN/2.54): SPEAKER CONNECTOR**

NO.	SYMBOL	DESCRIPTION
1	LO	Audio Left Channel Output
2	GND	Ground
3	GND	
4	RO	Audio Right Channel Output

◆ **CN20(14PIN/2.0): KEY & IR BOARD CONNECTOR**

NO.	SYMBOL	DESCRIPTION
1	5V	+5V DC Power Supply
2	RED	Red Indicator
3	GRN	Green Indicator
4	IR	IR Receiver
5	GND	Ground
6	K0	Key0
7	K1	Key1
8	K2	Key2
9	K3	Key3
10	K4	Key4
11	K5	Key5
12	K6	Key6
13	K7	Key7(Reserved)
14	GND	Ground

◆ **CN21(2×15PIN/2.0): LVDS INTERFACE CONNECTOR**

NO.	SYMBOL	DESCRIPTION
1	VSEL	Power Supply for Panel
2	VSEL	
3	VSEL	
4	GND	Ground
5	GND	Ground
6	GND	
7	TXO0-	LVDS ODD 0- Signal
8	TXO0+	LVDS ODD 0+ Signal
9	TXO1-	LVDS ODD 1- Signal
10	TXO1+	LVDS ODD 1+ Signal
11	TXO2-	LVDS ODD 2- Signal
12	TXO2+	LVDS ODD 2+ Signal
13	GND	Ground
14	GND	
15	TXOC-	LVDS ODD Clock- Signal
16	TXOC+	LVDS ODD Clock+ Signal
17	TXO3-	LVDS ODD 3- Signal
18	TXO3+	LVDS ODD 3+ Signal
19	TXE0-	LVDS EVEN 0- Signal
20	TXE0+	LVDS EVEN 0+ Signal
21	TXE1-	LVDS EVEN 1- Signal
22	TXE1+	LVDS EVEN 1+ Signal
23	TXE2-	LVDS EVEN 2- Signal
24	TXE2+	LVDS EVEN 2+ Signal
25	GND	Ground

NO.	SYMBOL	DESCRIPTION
26	GND	
27	TXEC-	LVDS EVEN Clock- Signal
28	TXEC+	LVDS EVEN Clock+ Signal
29	TXE3-	LVDS EVEN 3- Signal
30	TXE3+	LVDS EVEN 3+ Signal

7. CONFIGURATION & GENERAL PRECAUTIONS

- **Relative humidity:** $\leq 80\%$.
- **Storage temperature:** $-10\sim 60^{\circ}\text{C}$.
- **Operation temperature:** $0\sim 40^{\circ}\text{C}$.
- **Protect the board from static electricity in case of damage to the IC.**
- **Keep the board away from conductor when it is working.**
- **Don't push or pull the connectors when the board is working.**
- **Don't press , distort or disassemble the board.**
- **Clean the board with soft dry cloth when it's dirty.**
- **Don't wire in the board to power supply before panel is correctly connected.**

MST6M181/MST6E181 software upgrades (After Service)

1. Software upgrade tools and materials

- u Personal computer (WINDOWS XP system, USB2.0)
- u AC100~240V power supply and power cord
- u ISP burning board and connecting line
- u USB flash disk (2.0 version, Capacity not more than 2G)

2. Preparatory work before the upgrade

Recorded all the ADC and the white balance data of all the message source in factory menu before upgrade (FLASH initialization may occur after the upgrade, flush color calibration data, then restore the data you have been recorded):

2.1 In the condition of YPbPr message source, press the MENU button after appear the main menu, then followed by 8202 number keys to enter the factory menu, select ADC ADJUST item, press the OK key to enter the next level menu, move the cursor to the MODE item, press the left / right Moving button and move the cursor selection in YPbPr (SD) item, record the R-GAIN/G-GAIN/B-GAIN value and R-OFFSET/G-OFFSET/B-OFFSET value.

2.2 In the ADC ADJUST item, press OK key to enter the next level menu, move the cursor to the MODE item, press the left / right cursor keys to select YPbPr (HD) item, record R-GAIN/G-GAIN/B-GAIN value and R-OFFSET/G-OFFSET/B-OFFSET value.

Factory Setting

- ADC ADJUST
- PICTURE MODE
- WB ADJUST
- SSC
- Other Setting
- VIF
- Power
- Aging
- CH Table1
- CH Table2
- UART DEBUG
- NONLINEAR
- Reset
- software update(USB)
- SW INFO
- VER:V.1 TUNER:PAL+NTSC+SECAM
- BD:T2BIG Mar 28 2011 11:12:05
- SAMSUNG LTA320AP18

ADC ADJUST

MODE	YPbPr(SD)
R-GAIN	4582
G-GAIN	4573
B-GAIN	4574
R-OFFSET	2048
G-OFFSET	256
B-OFFSET	2048
AUTO ADC	SUCCESS

ADC ADJUST

MODE	YPbPr(HD)
R-GAIN	4570
G-GAIN	4564
B-GAIN	4632
R-OFFSET	2048
G-OFFSET	256
B-OFFSET	2048
AUTO ADC	SUCCESS

Record the R/G/B-GAIN and R/B/G-OFFSET value under the YPbPr(SD) and YPbPr(HD) mode, to be replaced the recorded value after the machine software upgrade

VER:V.1
Aug 20 2010 LC320EUD-SBA1_120

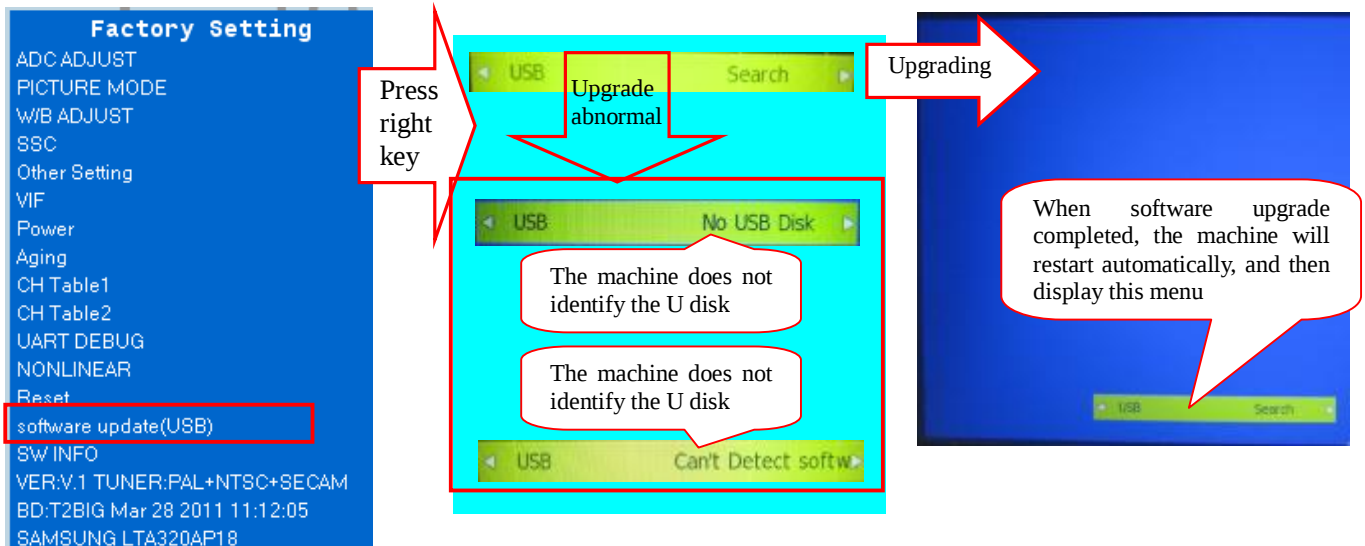
2.3 Operations and procedure of software upgrading:

2.3.1. Changed the file name to "MERGE.bin", then stored software in the FAT32 format blank U disk.

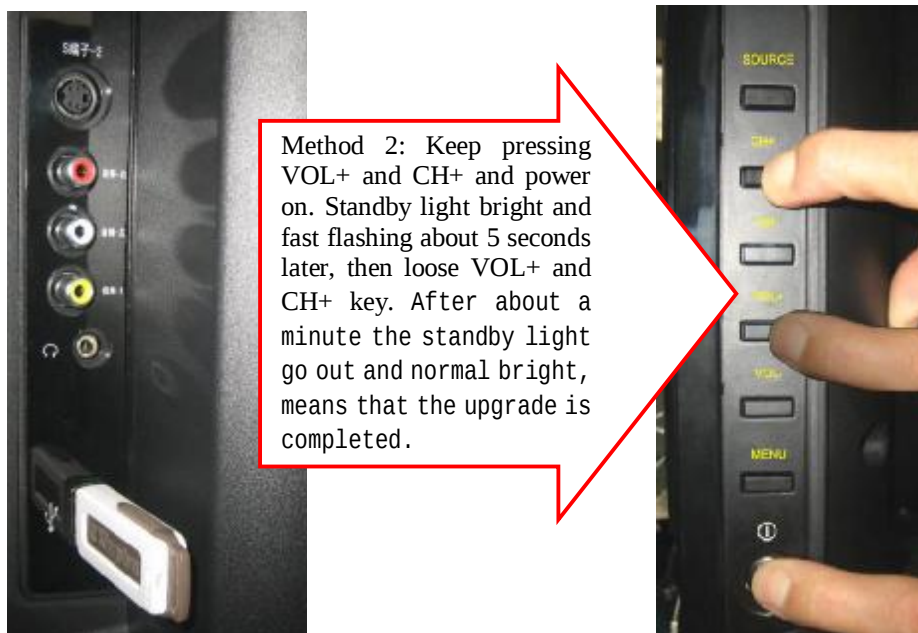
2.3.2. Insert USB flash disk into the USB upgrade port, upgrade the software according to the following the operating instructions:

Method 1:

- ①. Start the machine and wait the normal picture display, press the MENU button on the remote control, will be popping up the main menu, press the 8202 number keys and enter the Factory Setting menu.
- ②. Press up/down keys to move the cursor to "USB" function menu, then press the right key to enter the next level menu "USB-Search", press the left/right keys to implement USB search command:
 - a. After the machine blue screen prompt "Can't Detect software file", means that the machine have been find USB device, but did not find the needing upgrade software, please check the software name is correct or format the U disk again and then copy software.
 - b. After the machine blue screen prompt "No USB Disk", means that the machine does not find USB device, check if the USB device has been inserted into, or change another U disk and try again.
- ③. The machine blue screen and displays " USB-Search " after about 10 seconds, the machine black screen and restart automatically, means that the machine complete the upgrade process, turn off the machine first, then pull out the U disk.



Method 2: Keep pressing VOL+ and CH+ keys on the machine panel, power on the machine, the standby light flashes quickly after about 5 seconds, standby light extinguish and turn into lighting after about a minute, means that the upgrade is completed.



2.5. Notice:

- ①. When the machine Upgrading (U disk light flash), do not remove U disk or switch off the power, otherwise it will destroy the software and lead can not upgrade.
- ②. The machine must be power off when inserted or pulled out U disk, to avoid U disk or damage the machine.
- ③. Because of compatibility of machine and U disk, some machines won't have the standby light flashing phenomenon during upgrading. This phenomenon suggest replacing U disk(The capacity of U disk not more than 2G) or use "method 1" to upgrade.
- ④. If the display screen which upgrading use can not display menu normally, you can not use "method " to upgrade. You can also use Mstar ISP Tools to upgrade according to "Mstar TV mainboard program burning".

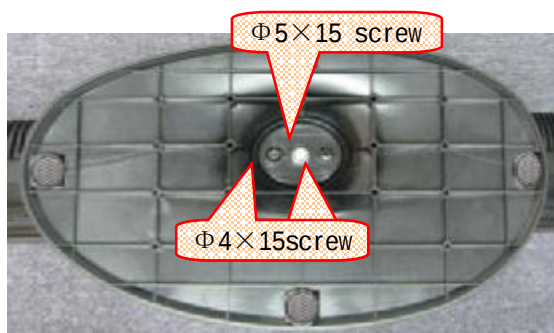
3. When cannot upgrade in accordance with the step two, or upgrade failed, can only ISP upgrade, please refer to the following instructions.

A. Structure demolition process:

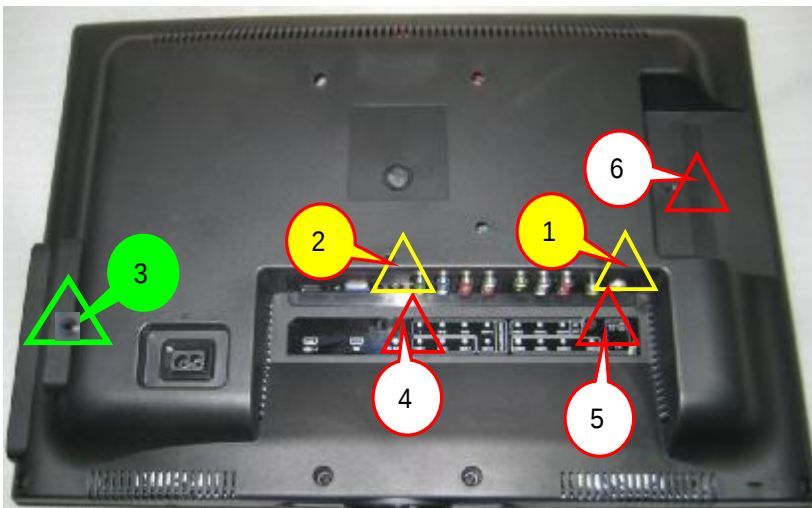
- 3.1. Remove the protective package from machine and clean the table.
- 3.2. Put bubble bag on the table, then put the machine on bubble bag with it display face downwards, to avoid cover scratch..



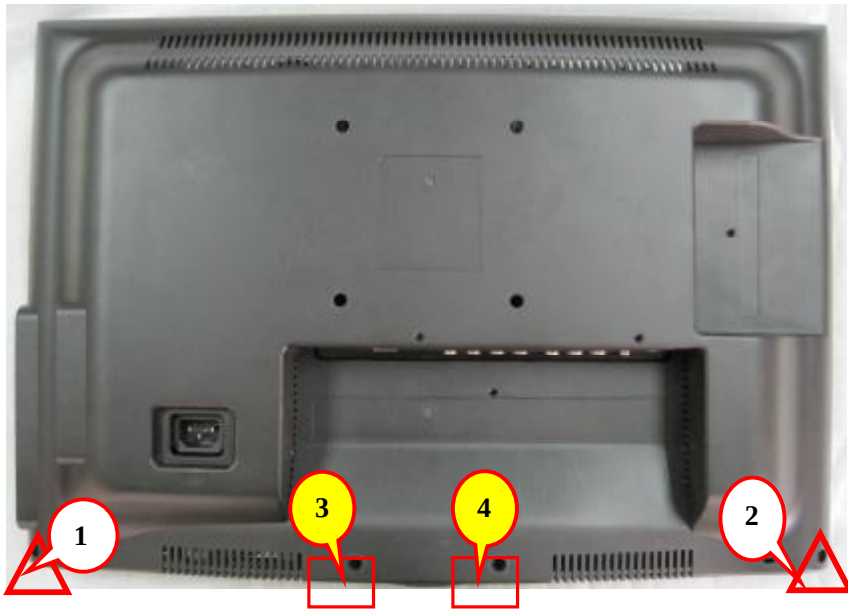
3.3. Take one $\Phi 5 \times 15$ mm P-head white-zinc-plated tapping screws with flat washers and two $\Phi 4 \times 15$ mm B-head pointed-tail nickel-plated tapping screws which fasten on the base, move the base assembly from the machine.



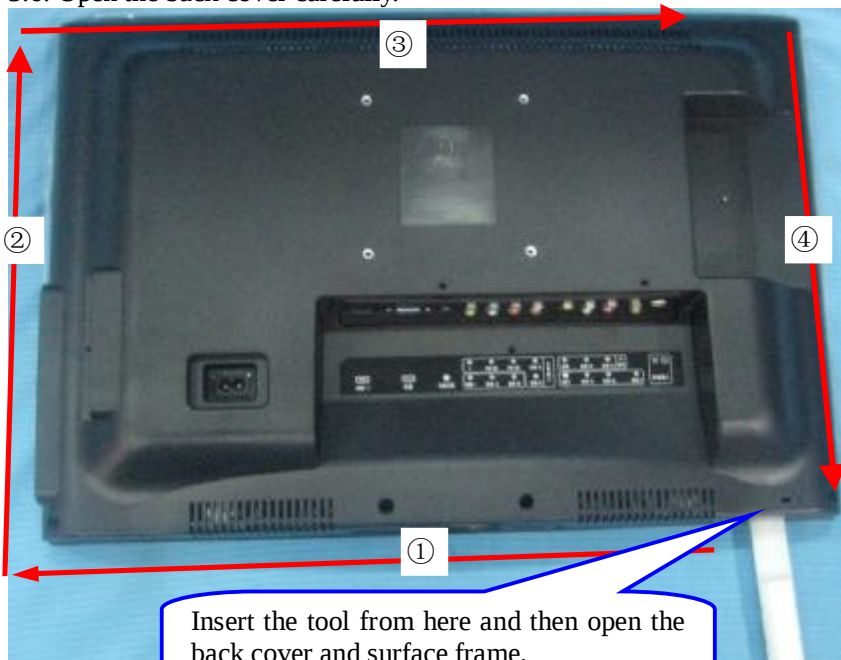
3.4. Take the $\Phi 3 \times 14$ sink-head pointed-tail black-zinc-plated tapping screws(1-2# screws) 、 $\Phi 3 \times 10$ sink-head pointed-tail black-zinc-plated tapping screws(1# screw) and $\Phi 3 \times 10$ sink-head machine screws (4, 5, 6# screws) which fasten on the back cover.



3.5. Take two $\Phi 4 \times 15$ mm round-head pointed-tail tapping screws (NO.1-2 screws) and two $\Phi 4 \times 20$ mm round-head pointed-tail tapping screws (NO.3-4 screws)



3.6. Open the back cover carefully.



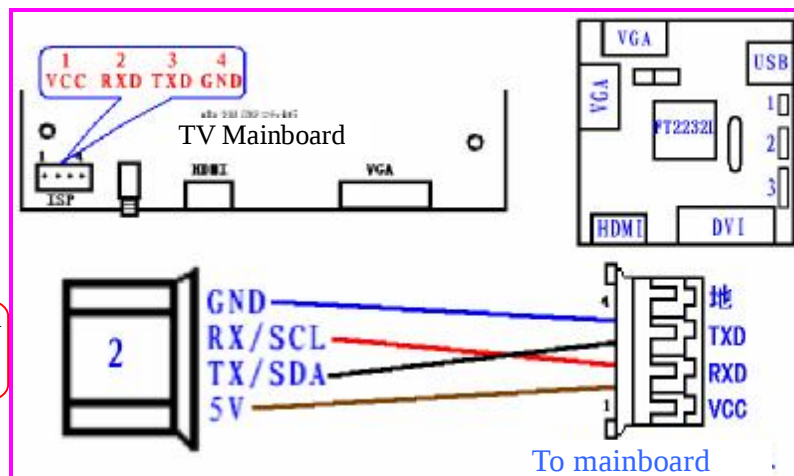
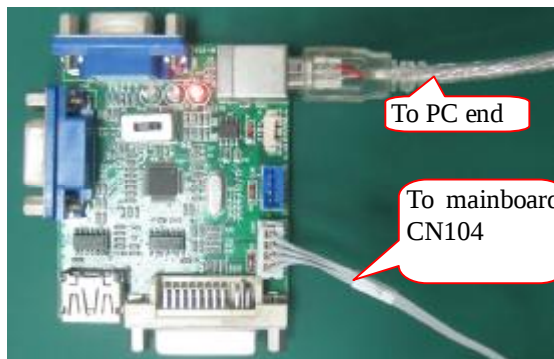
Notice:

- a). Need special tools to open. Do not force pull the back cover from surface frame, to avoid break out the button of surface frame, causing the back cover and the surface frame with big crevice. .
- b). Inserted in the back cover open tool as left illustrated marking position, and then paddling by Figure 9 ① / ② / ③ / ④, so that let the back cover separate to the surface frame.



B、ISP upgrade board driver installation

- (1). Connect the Upgrade board to computer with USB cable, then burning board light red, explain ISP board has been connected to the computer



(2) Insert the Mstar USB Tool into the USB port of your PC. The PC can recognize the new device. You can choose to install it in the list, or choose to install at a specified directory and specify the path to the drive file. See the figure below:



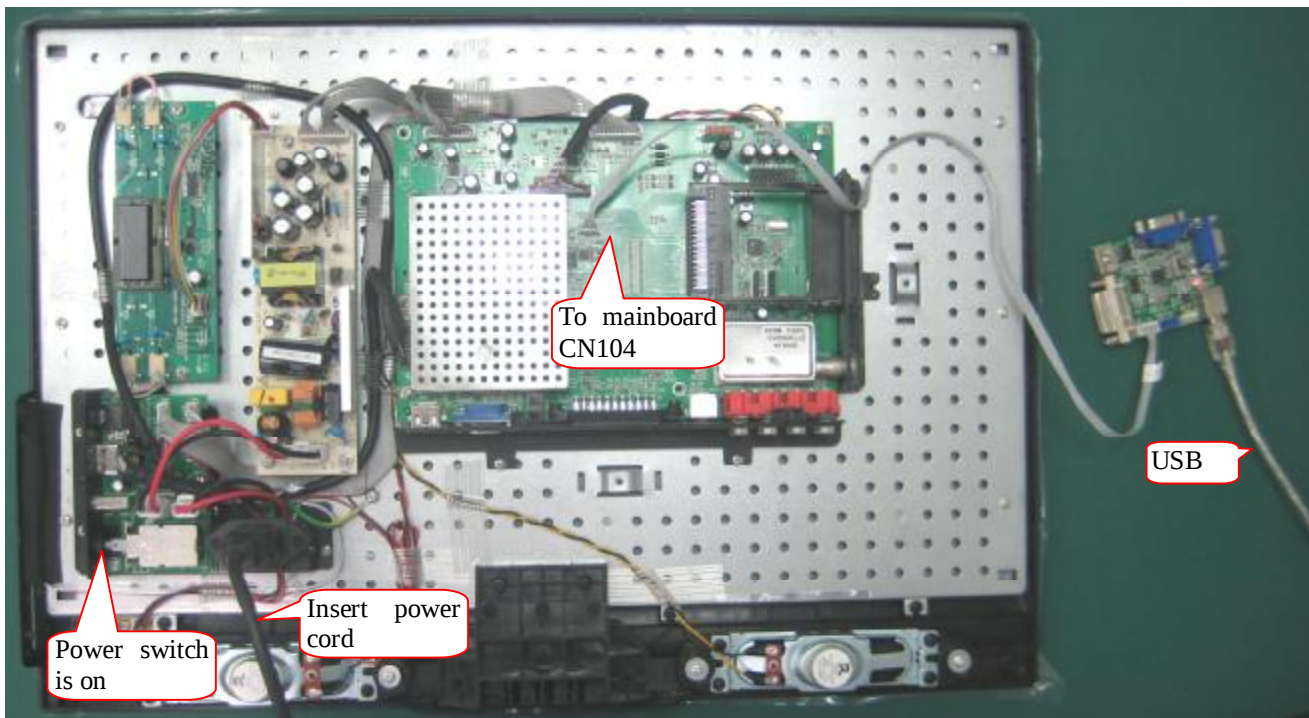


(3) When the PC finds the drive file, it will give the prompts as in the figure below during the installation process. Please click "Continue" to go ahead. The system will go through three drive installation processes, including Mstar USB Debug Tool A, Mstar USB Debug Tool B, and Mstar USB SerialPort. They will be installed one by one.

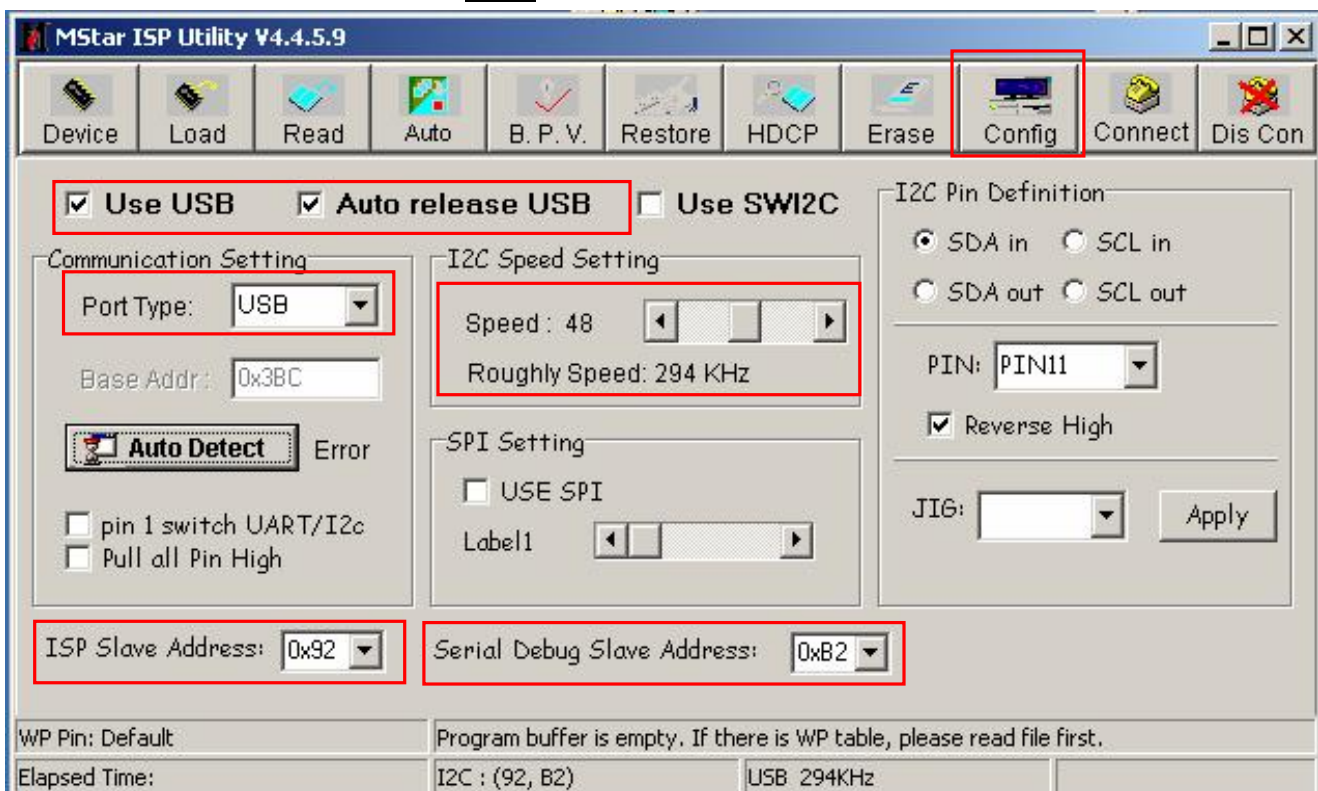


C. Program burning

1. When the drives are installed, connect the Mstar USB Tool board to TV in such a way as specified below. Then, connect the TV power cord and run the software ISP_Tool.4.4.5.9.exe to burn the program into the TV drive board.

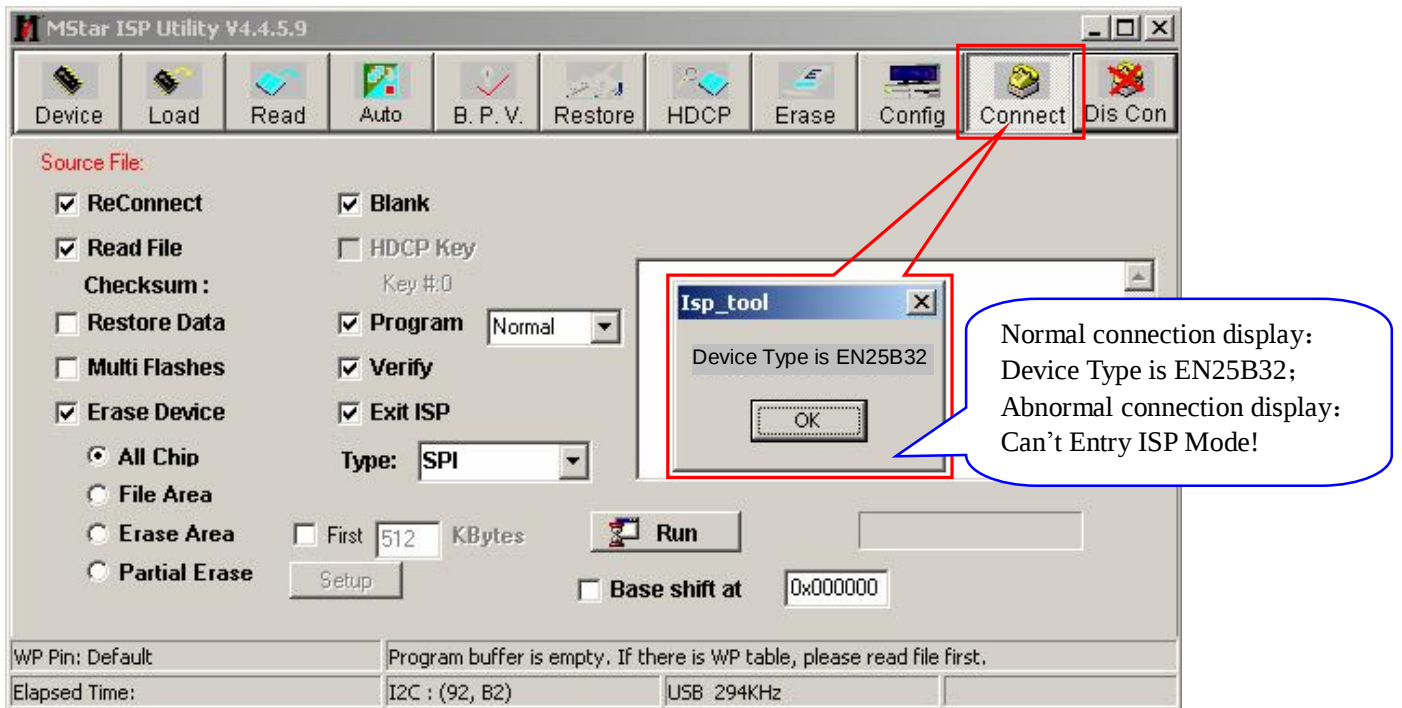


2. In the **config** menu bar to select **Use USB** and **Auto release USB**, Communication Setting items corresponding to the Port Type menu select **USB**. Set the burning speed of **48** in I2C Speed Setting item, ISP Slave Address item menu select **0X92**, Serial Debug Slave Address menu select **0XB2**.

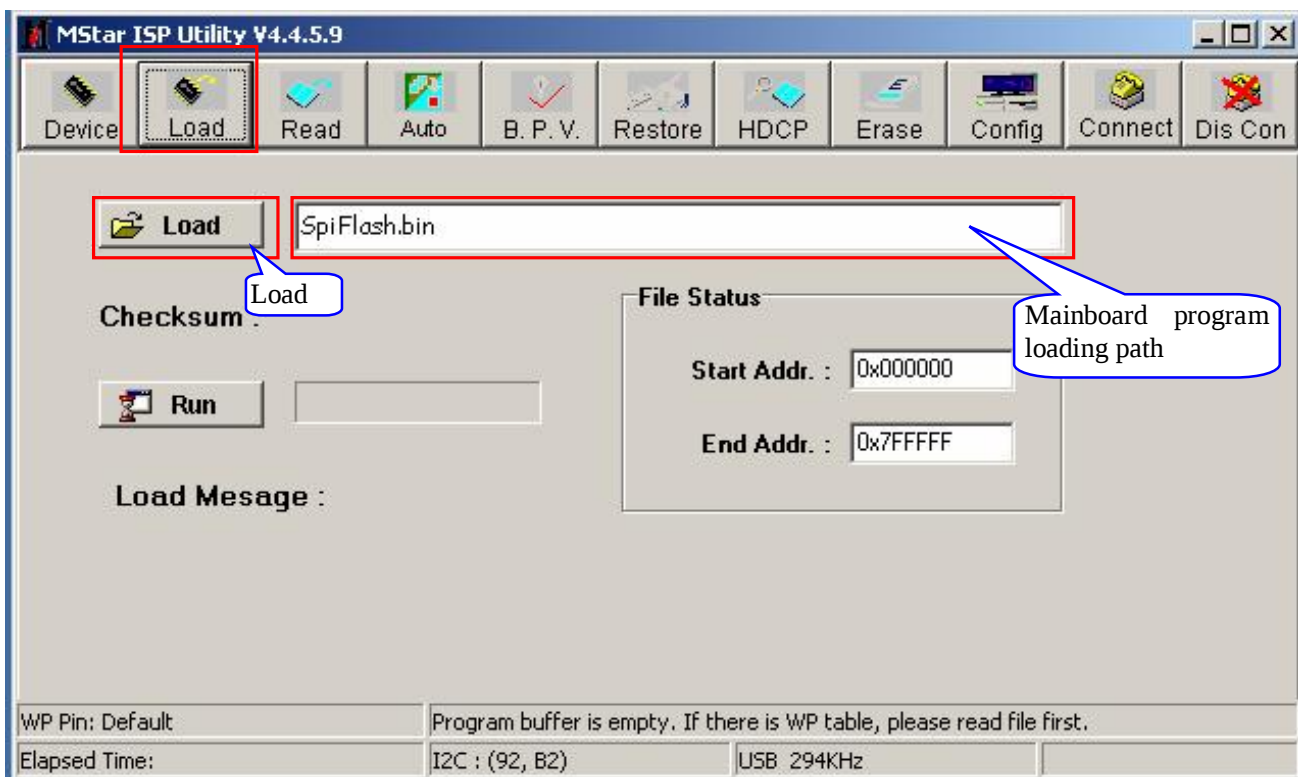


3. Power on the machine and click **Connect** button in the main menu to test the current hardware connection. If it prompts “Can’t Entry ISP Mode!”, that means there is poor connection or the TV is not connected to the power, please have a check. (Try to slow down the speed. If this doesn’t work, close the software and unplug & plug the Mstar USB Tool board once again.)

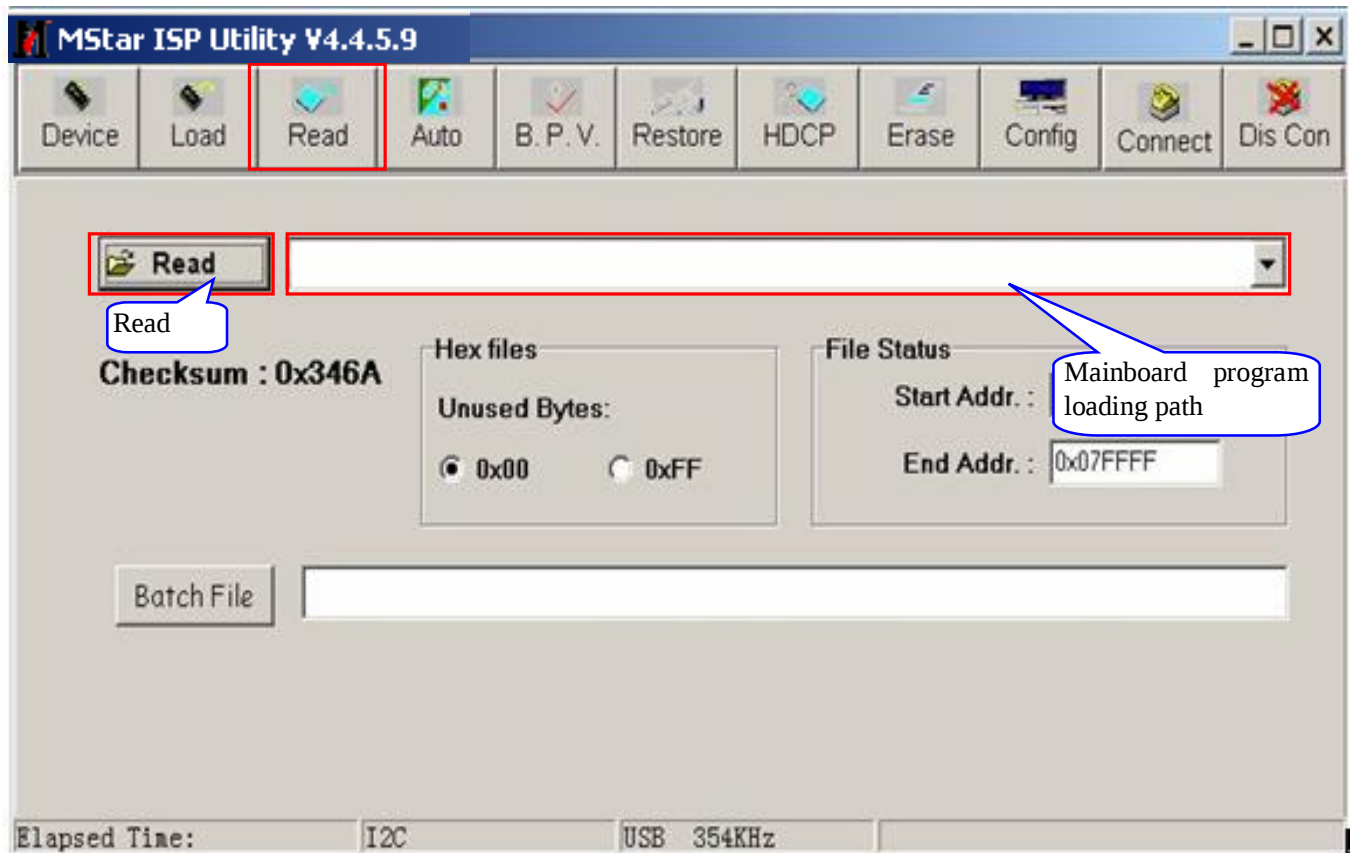




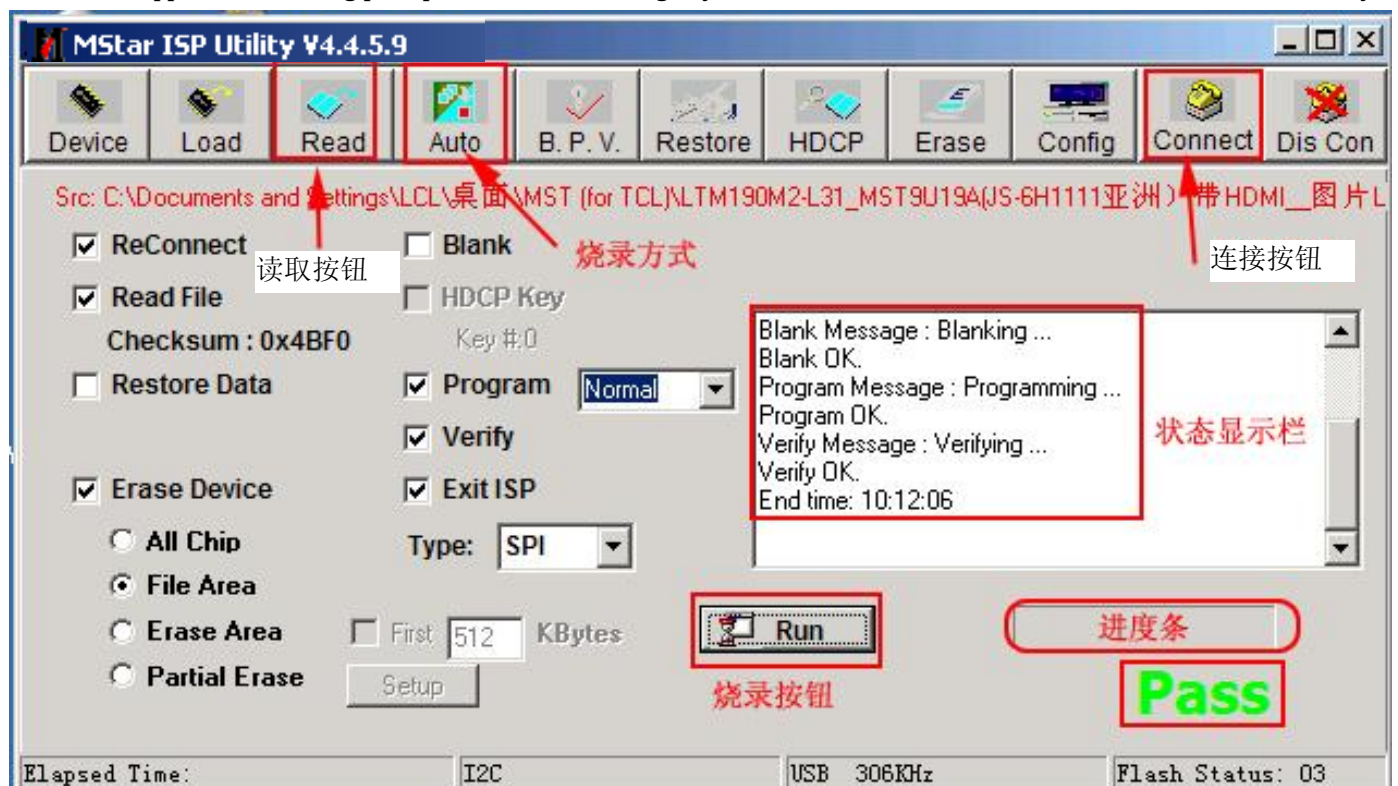
4. Press **Load** button in the main menu, in the popping menu click **Load** button to load TV mainboard program. bin file.



5. Press **Read** button in the main menu, in the popping menu click **Read** button to read and load TV mainboard program. bin file.



6. Set other function setting and loading item as following figure, Please click **Run** to burn the software: In blank space (prompt area for burning) you will see a lot of information related to burning. About six minutes later, the word "Pass" will appear and burning prompt bar no word rolling any more, that means the software has been burnt successfully.

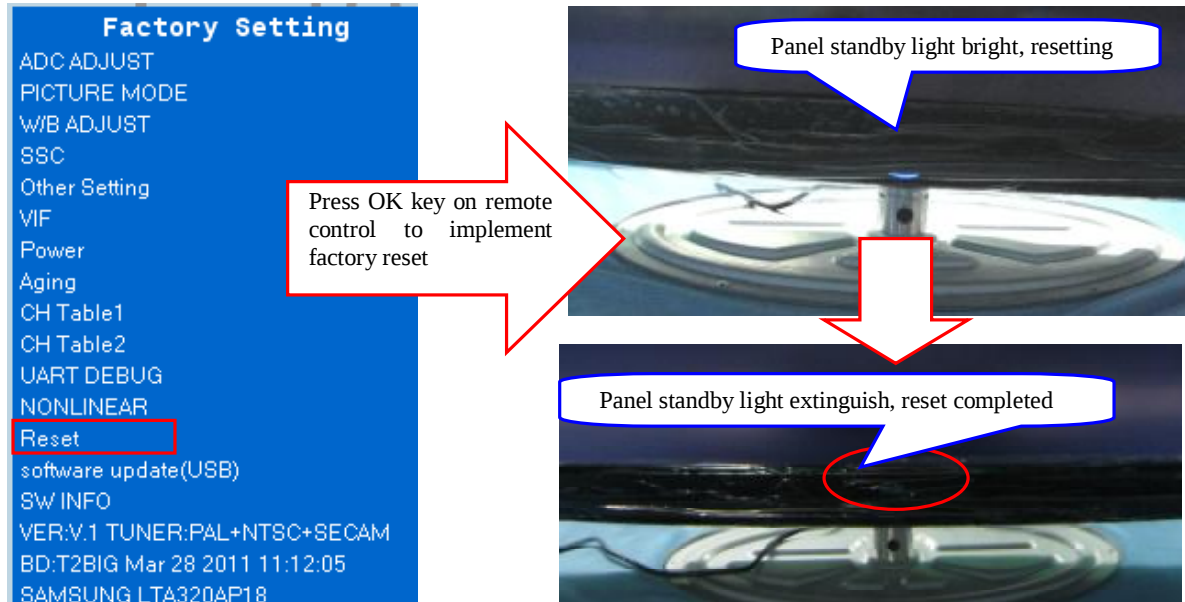


7. Never plug or unplug the connection lines in the burning process. Please turn the power switch to "Off" when installing

ISP board. Pull out the power cord from the machine and then pull out the burning adapter from the machine, when burning completed, change the TV and click **Run** button to burn next machine.

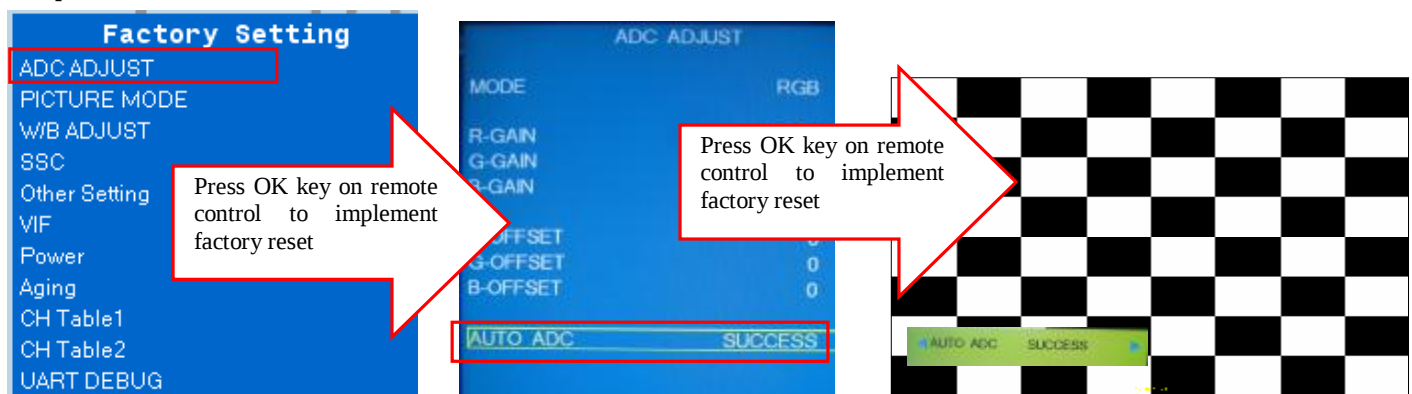
5. When upgrade complete, install the machine back cover, then must be adjusted before leave factory:

(1). Power to the machine, press MENU button on the remote control then press 8202 number keys and then will popping the factory menu automatically, press the remote control up/down cursor keys to move to the "Reset" option press OK key to implement. After about 5 seconds latter the machine implement clear command automatically. After about 5 seconds latter the screen will be black and it flashes blue lantern panel display, it said that the order implement successfully.

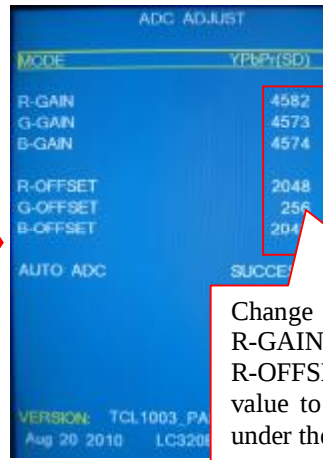
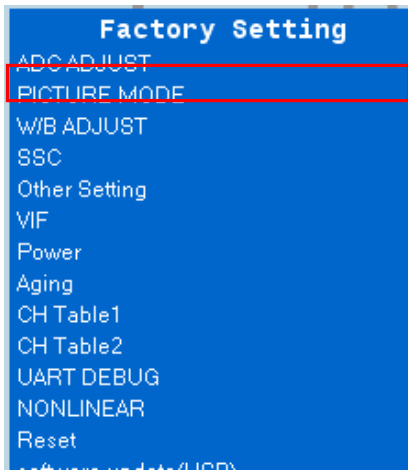


(2). Insert signal cable to the machine, switch to the PC message source.

(3). Run the KTC-LCD test software, switch to the mosaic picture and best resolution. Press MENU key to popup the main menu, and then press 8202 number keys to enter the factory menu, press the shift down key to ADC ADJUST option to press OK key to enter the next level menu. In the MODE option press left/right cursor keys to select RGB, and then press shift down key to move the cursor to the Auto ADC option, press OK key to enter the next level menu, press the left/right button to implement ADC action (The screen will flash and Auto ADC function menu prompt SUCCESS means that debug success, prompt FAIL said that debug failed, try again), press the MENU button to exit factory menu when debugging completed.

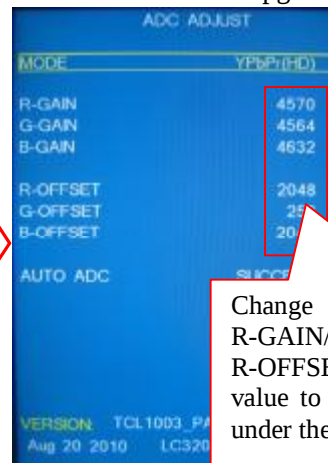
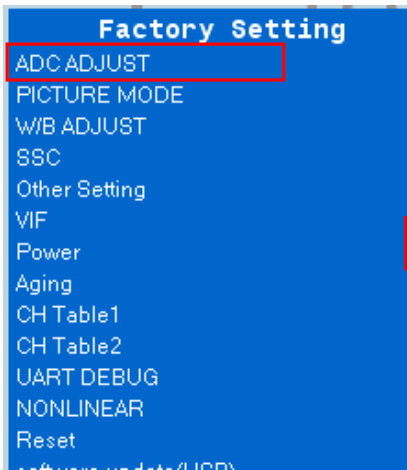


(4). Under the YPbPr message source, press the MENU button after popping the main menu, then press 8202 number keys to enter the factory menu, select ADC ADJUST item, press the OK key to enter the next level menu, move the cursor to the MODE item, press the left/right Moving key mover cursor to select YPbPr(SD)item, change the R-GAIN/G-GAIN/B-GAIN value and R-OFFSET/G-OFFSET/B-OFFSET value of the machine after the upgrade to the value before the upgrade.



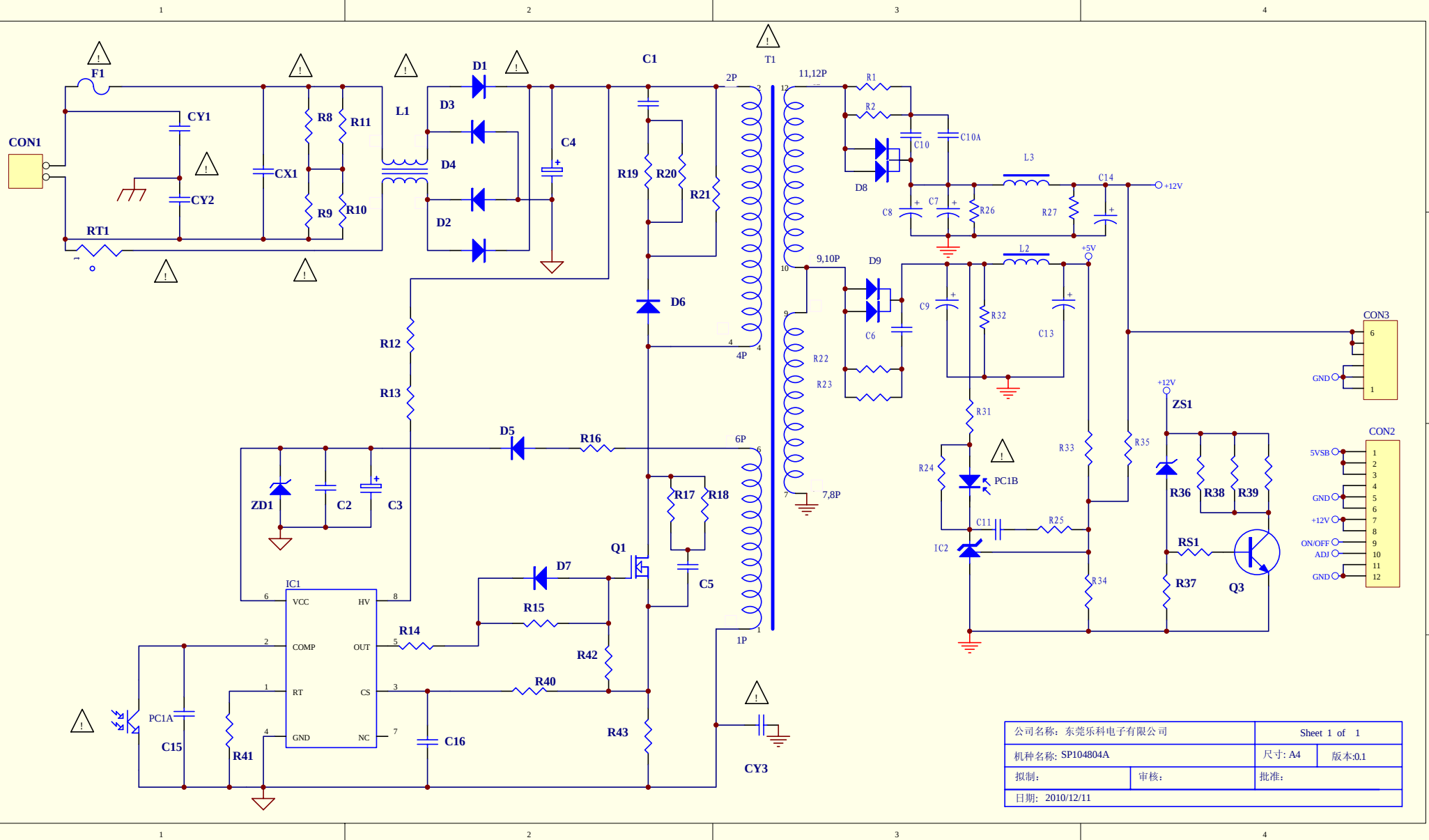
Change the R-GAIN/G-GAIN/B-GAIN value and R-OFFSET/G-OFFSET/B-OFFSET value to the value before the upgrade under the YPbPr(SD/HD) mode

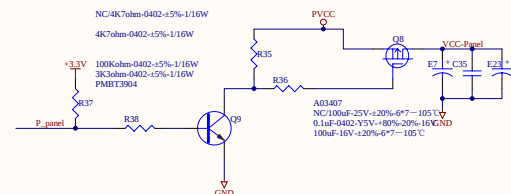
(5). In the ADC ADJUST item, press OK key to enter the next level menu, move the cursor to the MODE item, press the left/right keys to move cursor select the YPbPr(HD) item, change the R-GAIN/G-GAIN/B-GAIN value and R-OFFSET/G-OFFSET/B-OFFSET value of the machine after the upgrade to the value before the upgrade.

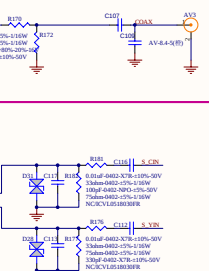
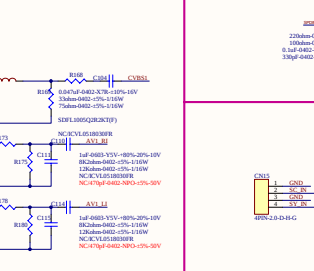
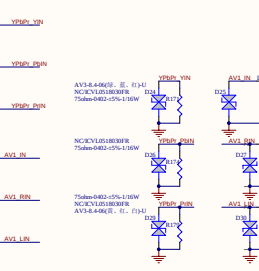
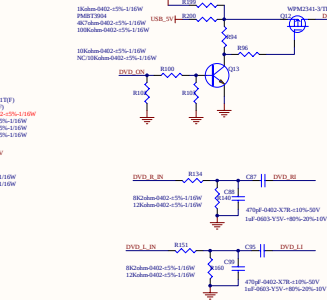
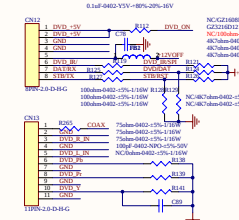
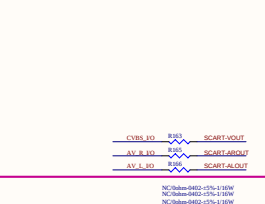
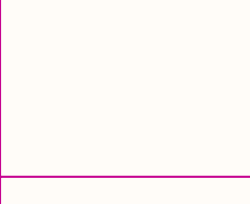
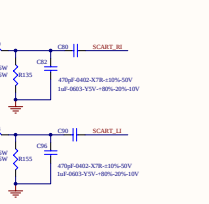
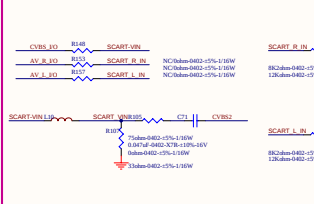
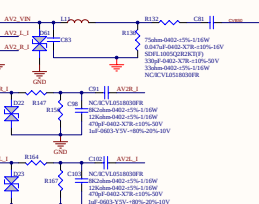
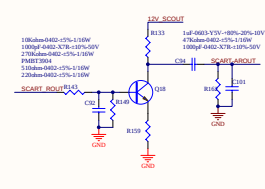
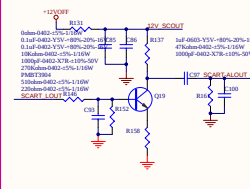
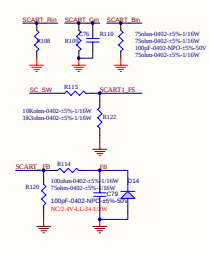
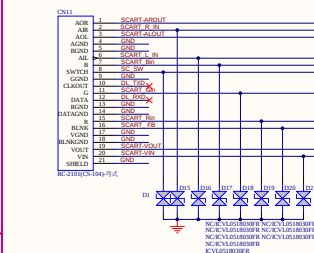
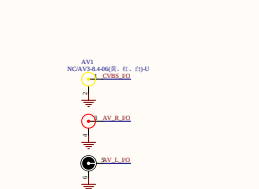
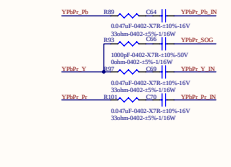
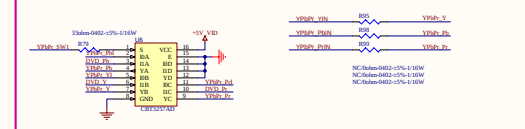
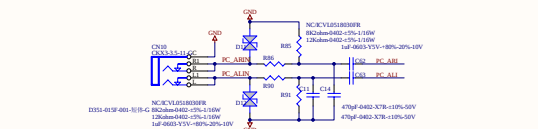
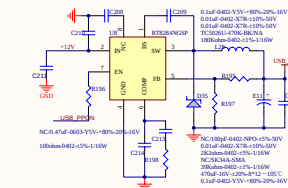
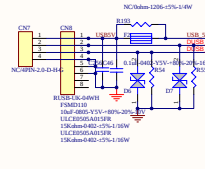
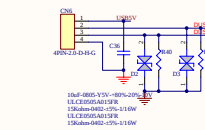
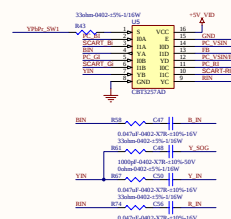
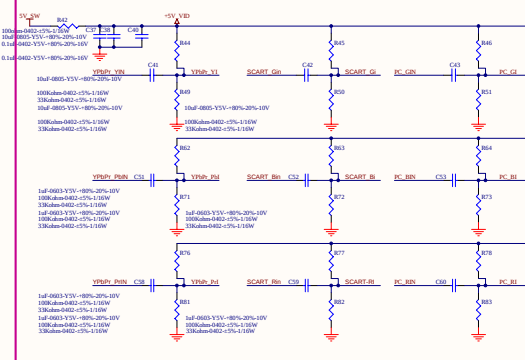
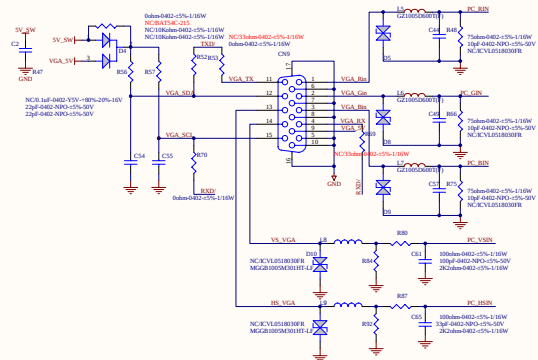


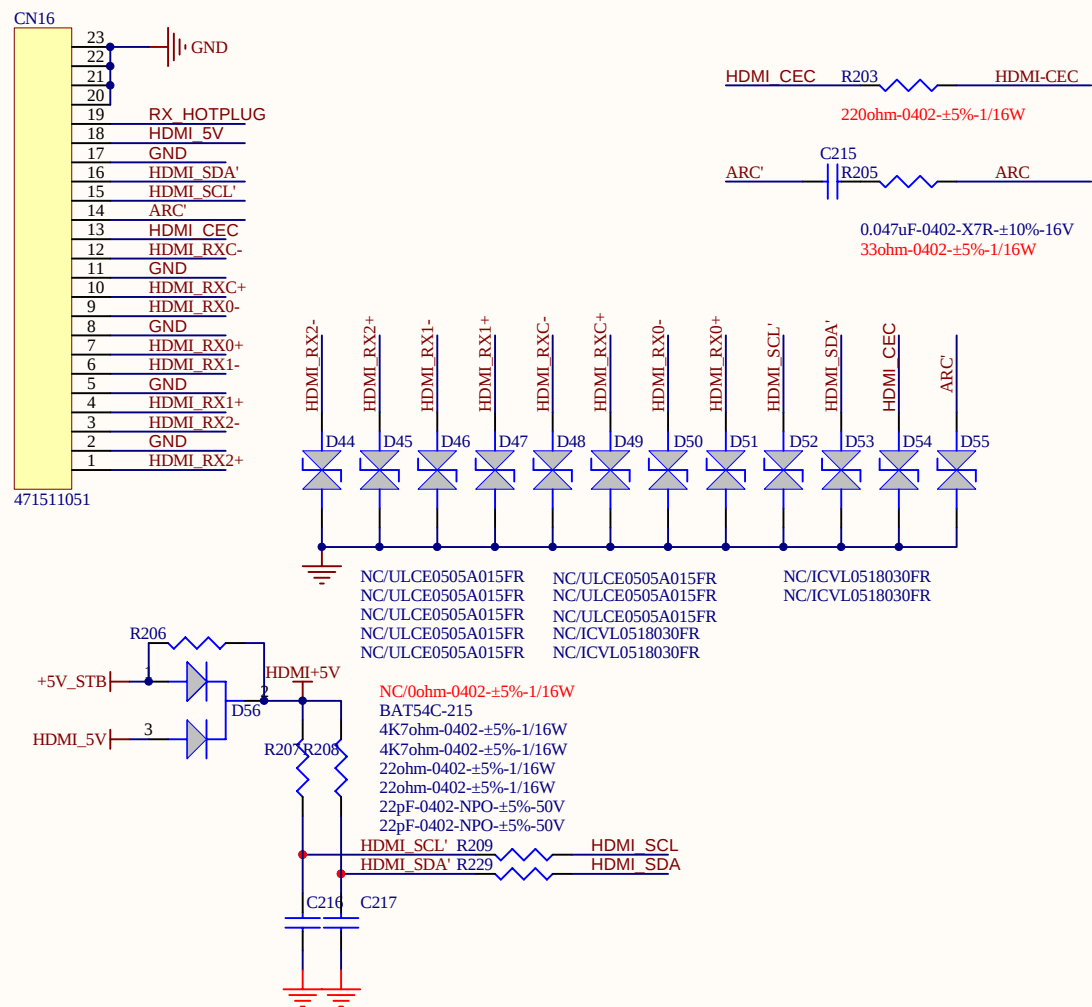
Change the R-GAIN/G-GAIN/B-GAIN value and R-OFFSET/G-OFFSET/B-OFFSET value to the value before the upgrade under the YPbPr(SD/HD) mode

(6). Complete the ADC ADJUST debugging, press MENU key succession to exit the factory built-in menu to save the adjusted data, and then restore the original packaging.

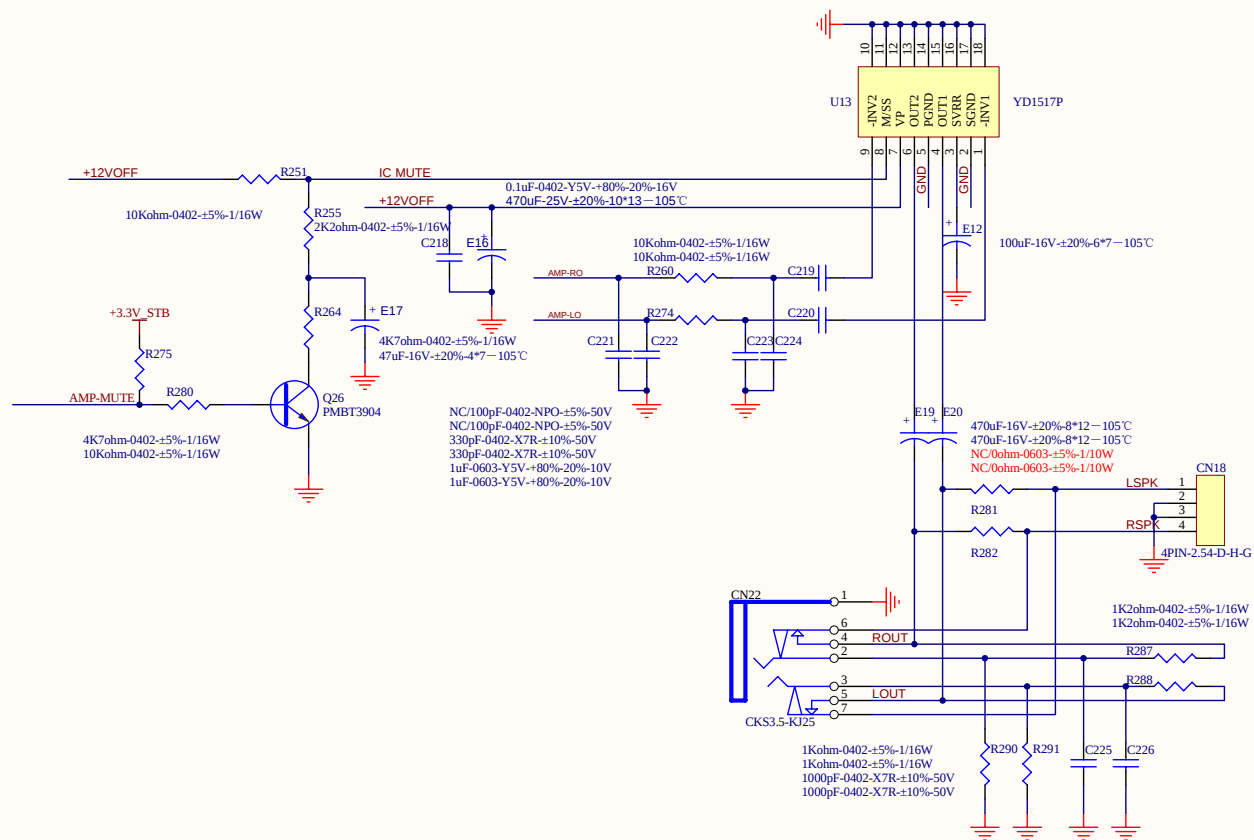




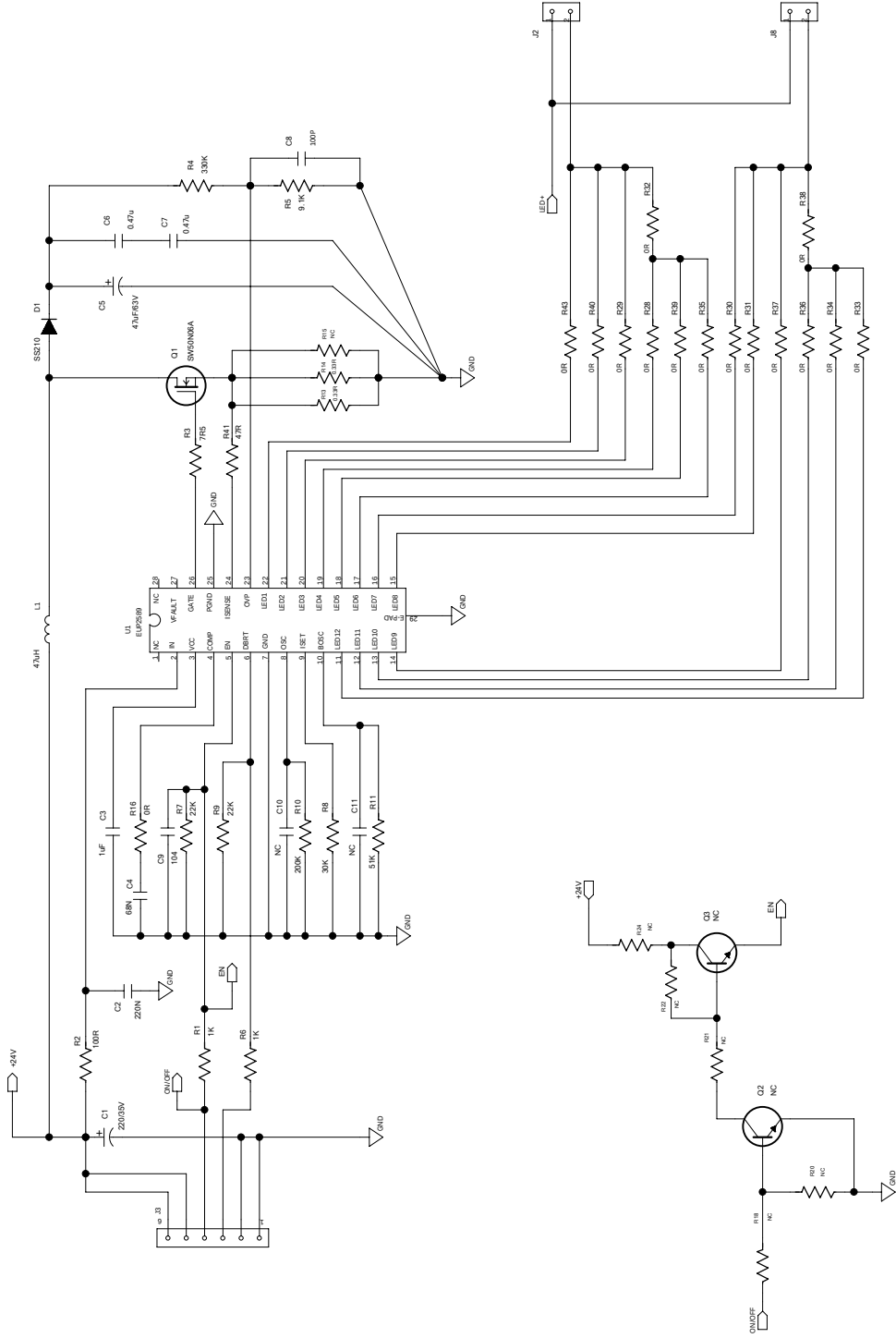








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	DESCRIPTION	REV	APPROVED
0			
1			
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3			



COMPANY:		茂鑫源电子（深圳）有限公司	
TITLE			
MNK-LE2601A-V01			
DRAWN:	DATE:	2011-03-16	
CHECKED:	DATE:		
APPROVAL:	DATE:		
SHEET:		1 OF 1	
REV:		1	