

LCD Television

Service Manual

Chassis: 9206B

Product: LHD32D36TS & LHD32D50TS & LHD32D50TS(20)
LTDN40D50TS & LTDN40D50TS(20) & LTDN40D50TS(21)
LTDN40D50TS(1)

Ver 1.0

Hisense Electric Co., Ltd.

April , 2015

Content

Content	- 2 -
Service Manual	- 3 -
1. Precautions and notices.....	- 3 -
1.1 Warning.....	- 4 -
1.2 Notes	- 7 -
2. Product Specifications	- 10 -
2.1 Main board layout.....	- 10 -
2.2 The service manual Includes products	- 11 -
2.3 TV Front and Rear	- 11 -
3. Factory/Service OSD Menu and Adjustment.....	- 18 -
3.1 How to enter the Factory OSD Menu	- 18 -
3.2 Factory OSD Menu.....	- 18 -
4. Software updating.....	- 21 -
4.1 USB upgrade.....	- 21 -
4.2 SIS Tool upgrade	- 22 -
5.Trouble shooting	- 27 -
6. Circuit instruction	- 33 -
Power assign and Main board signal process	- 33 -
7. Schematic circuit diagram	- 35 -
8. Explode View.....	- 35 -

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 Hisense Electric Co., Ltd Equipment. The service procedures recommended by Hisense and described in this Service Guide are effective methods of performing service operations. Some of 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. Hisense 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, Hisense has not

undertaken any such broad evaluation. Accordingly, a serviceman that uses a service procedure or tools, which are not recommended by Hisense, 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, Hisense Electric Co., Ltd will be referred to as Hisense.

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 Hisense. Hisense 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 THIS SERVICE GUIDE.

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

cable clamps.

-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.



The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated dangerous voltage within the products enclosure that may be of sufficient magnitude to constitute a risk of electric shock.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the set.

2. Product Specifications

2.1 Main board layout

2.1.1

For example : 512PB83\LTDN40D50TS\ROH([LTDN40D50TS](#))



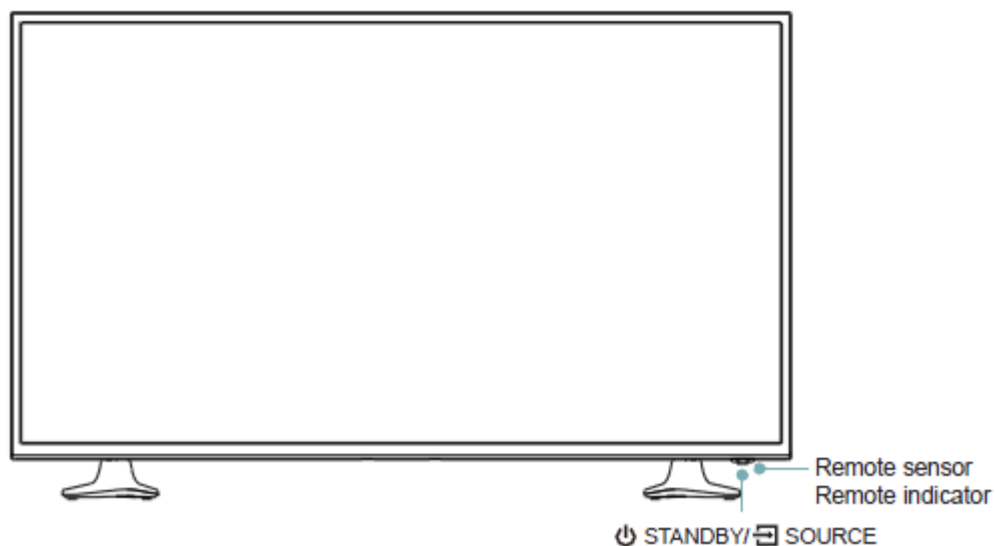
2.2 The service manual Includes products

Product	Main & power board(one board)	Digital system	Panel	LVDS cable
LHD32D36TS	512PB83\LHD32D36TS\ROH	DVB-T2+S2+C	JHD315GH-E87\P1	HX2-2X15KLB450P-2\广东 \ROH
LTDN40D50TS	512PB83\LTDN40D50TS\ROH 182099-0129		JHD396DF-E01	HX2-2X20KLB500P-S-1\500.0\ ROHLV
LHD32D50TS	512PB83\32D50TS\ROH 182927-0129		JHD315DH-E71	HX2-2X15KLB450P-3\GD\ROH

2.3 TV Front and Rear

LTDN40D50TS\LHD32D50TS TV Front

TV Front



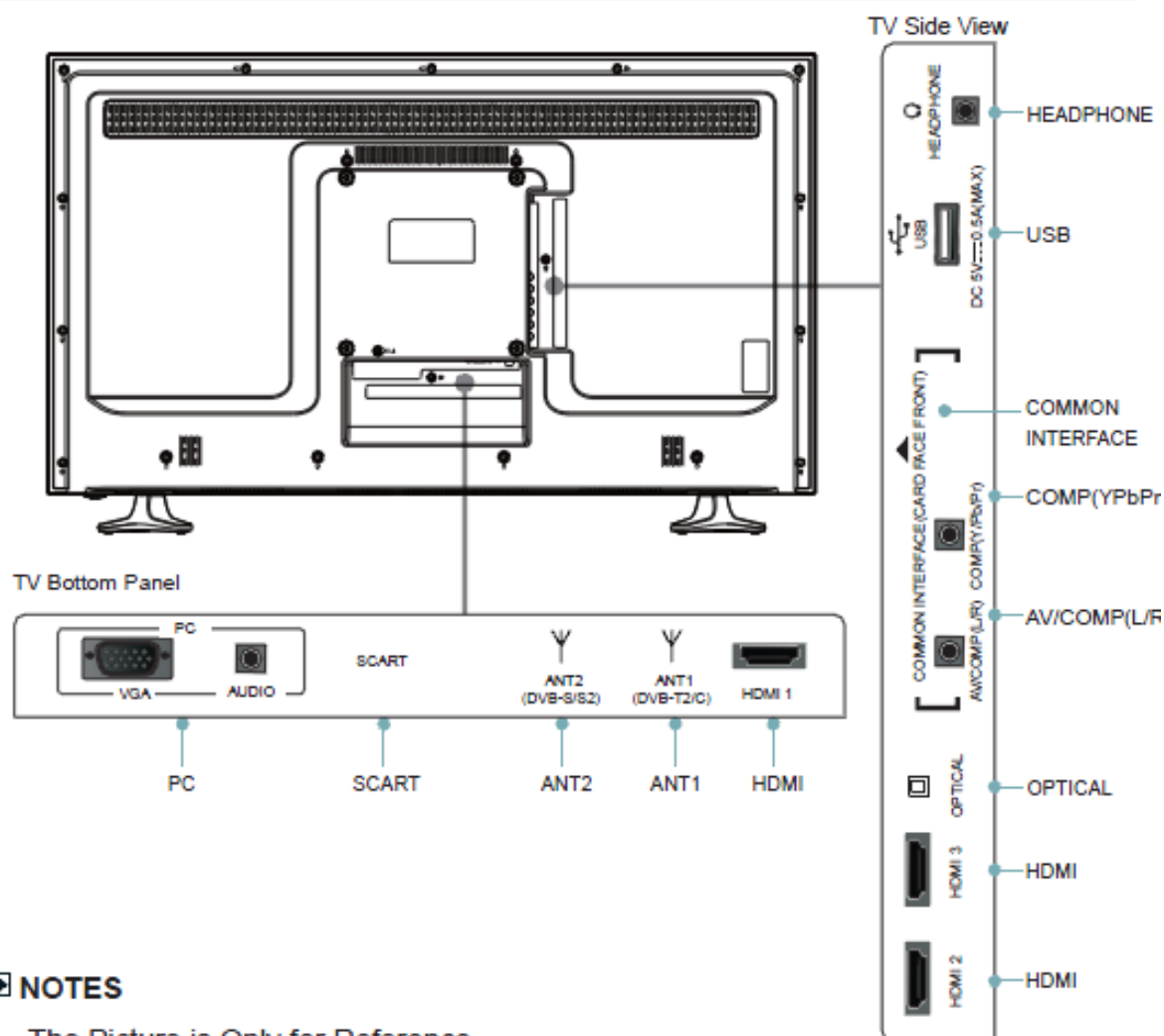
Item	Description
Remote sensor	Receive remote signals from the remote control. Do not put anything near the sensor, as its function may be affected.
Remote Indicator	Red light up in standby mode. Blue light up in power on mode.
⏻ STANDBY/ ⏻ SOURCE	Press for a few seconds to turn on the TV or put the TV in standby mode. / Touch to select among the different signal sources.

NOTES

- The Picture is Only for Reference.
- Powering on the TV requires several seconds to load program. Do not rapidly turn the TV off as it may cause the TV to work abnormally.

LTDN40D50TS\LHD32D50TS TV Back

TV Rear

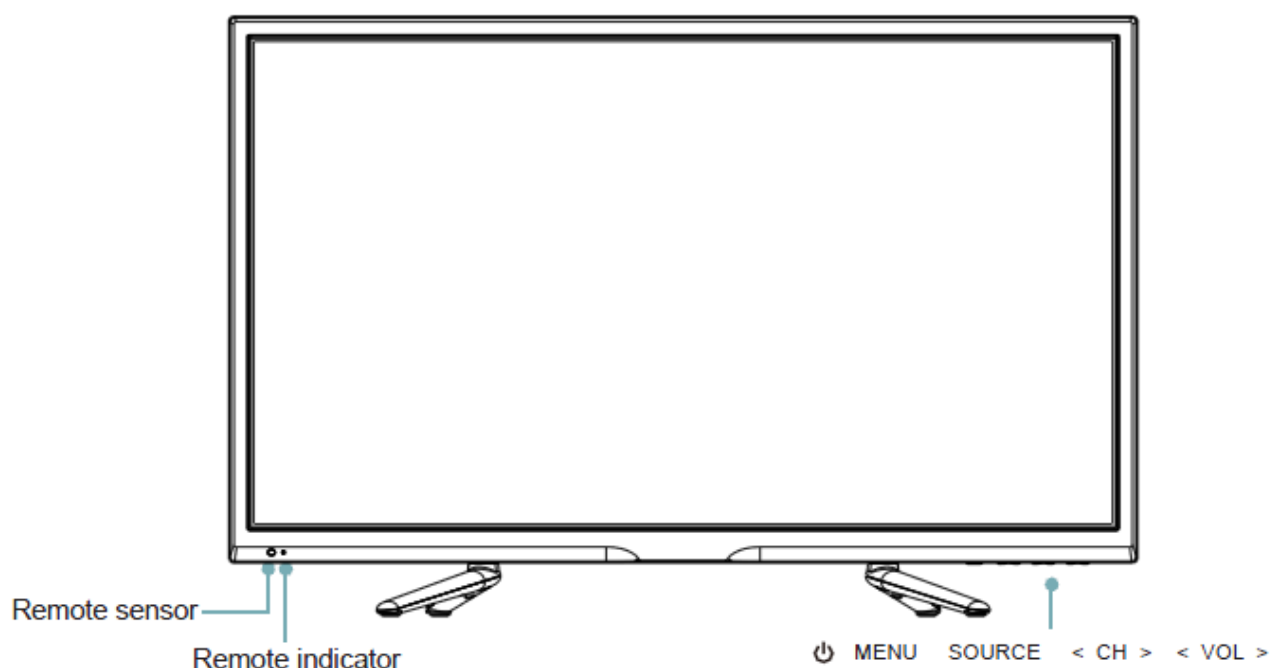



NOTES

- The Picture is Only for Reference.

LHD32D36TS TV Front:

TV Front

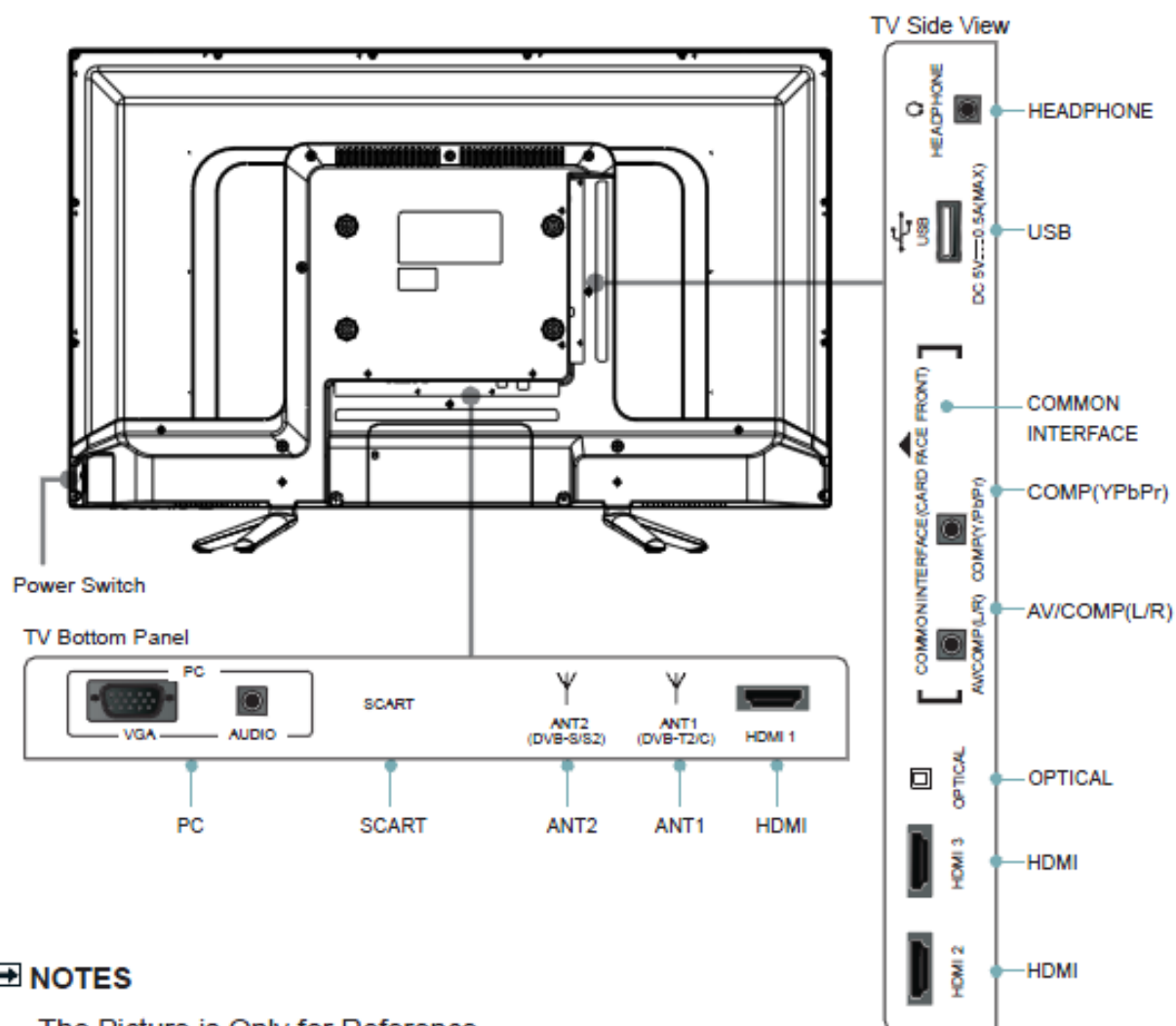


Item	Description
Remote sensor	Receive remote signals from the remote control. Do not put anything near the sensor, as its function may be affected.
Remote Indicator	Red light up in standby mode. Blue light up in power on mode.
MENU	Open the OSD menu.
SOURCE	Select among the different signal sources.
< VOL >	Adjust the volume.
< CH >	Switch between channels.
< CH	Confirm the selections.
Power Button 	Turn on the TV or put the TV in standby mode.

NOTES

- The Picture is Only for Reference.
- Powering on the TV requires several seconds to load program. Do not rapidly turn the TV off as it may cause the TV to work abnormally.

LHD32D36TS TV Rear:



NOTES

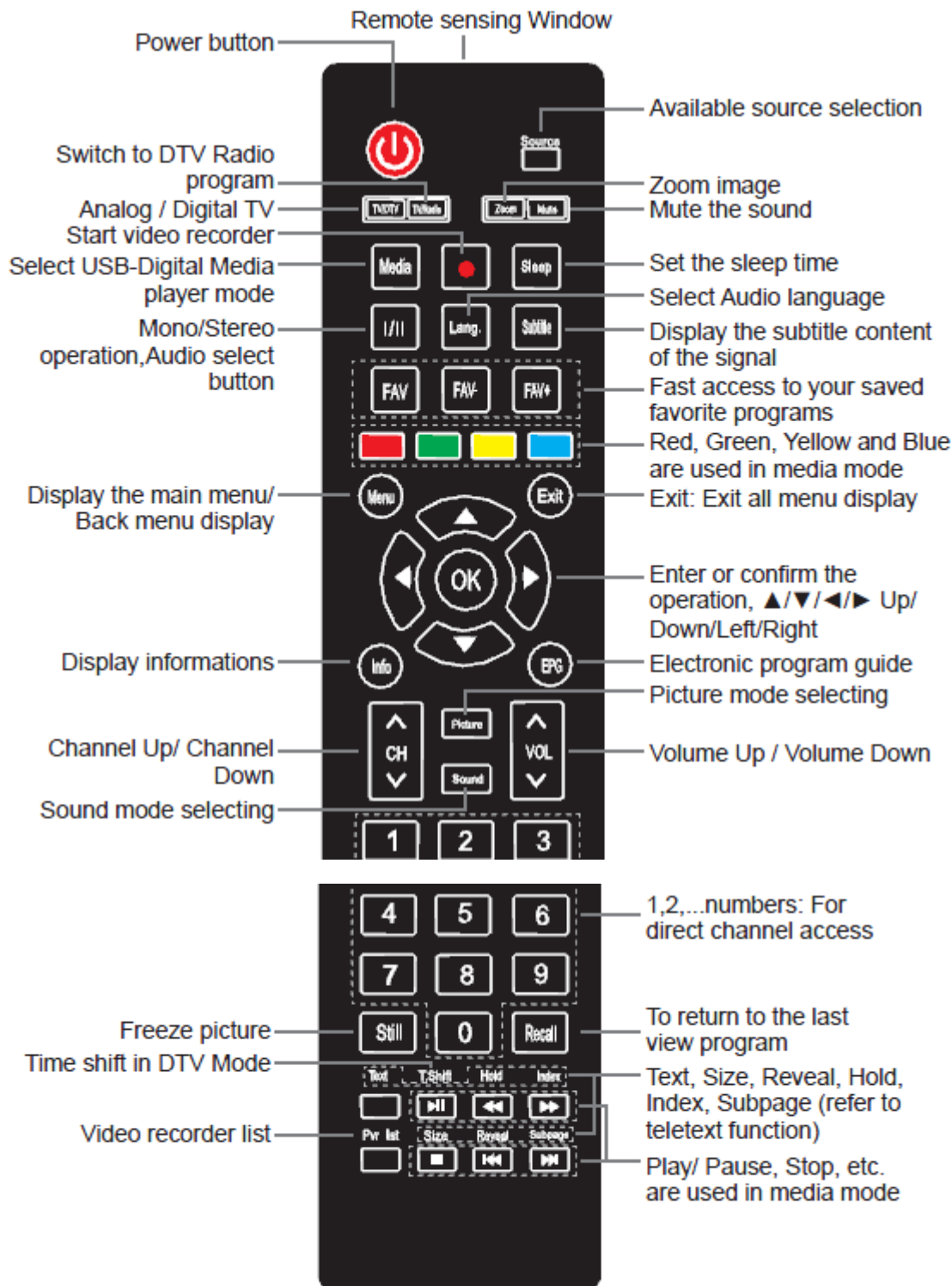
- The Picture is Only for Reference.

2.4 Specification

Model Name	LHD32D50TS	LTDN40D50TS
Size with base (mm)	733 × 477 × 180	902 × 563 × 204
Size without base (mm)	733 × 434 × 89	902 × 523 × 86
Weight with base (kg)	4.9	8.2
Weight without base (kg)	4.8	8
Screen Diagonal Size	32 inches	40 inches
Screen resolution	1366 × 768	1920 × 1080
Sound Output (RMS)	6 W +6 W	7 W +7 W
Power consumption	50W	70W
Power supply	100-240V ~ 50/60Hz	
AV Colour System	PAL NTSC SECAM	
Television System	PAL/SECAM-B/G,D/K DVB-T+C DVB-T2 DVB-S/S2	
Environmental conditions	Temperature: 5°C - 45°C Humidity: 20% - 80% RH Atmospheric pressure: 86 kPa - 106 kPa	
Component mode	480I / 60Hz, 480P / 60Hz, 576I / 50Hz, 576P / 50Hz, 720P / 50Hz, 720P / 60Hz, 1080I / 50Hz, 1080I / 60Hz, 1080P / 50Hz, 1080P / 60Hz	
VGA mode	640 × 480, 800 × 600, 1024 × 768, 1280 × 1024 60Hz	
HDMI mode	480I / 60Hz, 480P / 60Hz, 576I / 50Hz, 576P / 50Hz, 720P / 50Hz, 720P / 60Hz, 1080I / 50Hz, 1080I / 60Hz, 1080P / 50Hz, 1080P / 60Hz 640 × 480, 800 × 600, 1024 × 768 60Hz	

Model Name	LHD32D36TS
Size with base (mm)	738×487×209
Size without base (mm)	738×443×72
Weight with base (kg)	4.9
Weight without base (kg)	4.8
Screen Diagonal Size	32 inches
Screen resolution	1366 × 768
Sound Output (RMS)	6 W +6 W
Power consumption	60W
Power supply	100-240V ~ 50/60Hz
AV Colour System	PAL NTSC SECAM
Television System	PAL/SECAM-B/G,D/K DVB-T+C DVB-T2 DVB-S/S2
Environmental conditions	Temperature: 5°C - 45°C Humidity: 20% - 80% RH Atmospheric pressure: 86 kPa - 106 kPa
Component mode	480i\480p\576i\576p\1080i\1080p
VGA mode	640×480, 800×600, 1024×768, 1280×1024 60Hz
HDMI mode	480i\480p\576i\576p\1080i\1080p

2.4 Remote control




3. Factory/Service OSD Menu and Adjustment

3.1 How to enter the Factory OSD Menu

With user's RC

Power on the TV.

1. Press “Menu” button and call up User OSD Menu.
2. Select “ Sound” -> press “OK” button on RC to ensure then move  button to “Balance” item.
3. Press number key 1->9->6 ->9 in sequence when “Balance” item is focused.
Note: If necessary, re-do number keys.
4. Factory OSD appears.

Note: DC power off that can exit factory OSD menu.

3.2 Factory OSD Menu

The Factory OSD Menu comprises Factory Menu and Design menu.

3.2.1、 Factory Menu

Take LTDN40D50EU for example

White Balance
Input Source
Function
Channel Lint
Test Pattern
Protected clear
Unprotected Clear
Design Menu

White Balance:

Colour Temp
R Gain
G Gain
B Gain
R Offset
G Offset
B Offset

Function:

TO Fac	M/U
Power mode last memory	
Software update	start
Uart bebug	on/off

	Item	Default	Options	Notes
1	MODE	M	M, U	M-Can enter factory mode with factory RC or user RC. U-Can enter factory mode only with user' s RC.

Note: MODE “M” is only used for factory production.

Init:

Qingdao
Huangdao
Russia
.....

3.2.2、 Design Menu

White balance
Picture Curve
Volumn Curve
Sound Mode

Note:

The above “Factory/Service OSD Menus” are reference only, please refer to the actual unit to determine the appearances.

4. Software updating

4.1 USB upgrade

USB upgrade includes two methods. One is USB directly upgrade the other is USB menu upgrade.

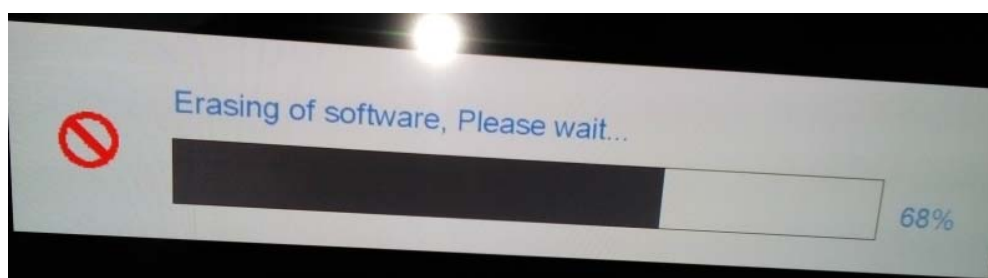
* USB directly upgrade

- 1、LHD32D50EU upgrading file rename——SIS506_52.bin
LTDN40D50EU upgrading file rename——SIS506_67.bin
- 2、Unlock the compress upgrading file and copy the **SIS506_XX.bin** file to the USB disk root directory which not contain other *.bin files.
- 3、AC Power off the TV ,insert the USB disk to the Main board USB port then AC power it on .
Now the TV can update automatically.
- 4、You can estimate the upgrading state according to the indicator light color changing.
During upgrading, red indicator and green indicator alternate flicker slowly ,once/second.
If Upgrading successfully, red indicator and green indicator alternate flicker fast ,four times/second
If Upgrading failure, red indicator and green indicator alternate flicker, but flicker time is different. red indicator: 1.75 second/once; green indicator: 250ms/once

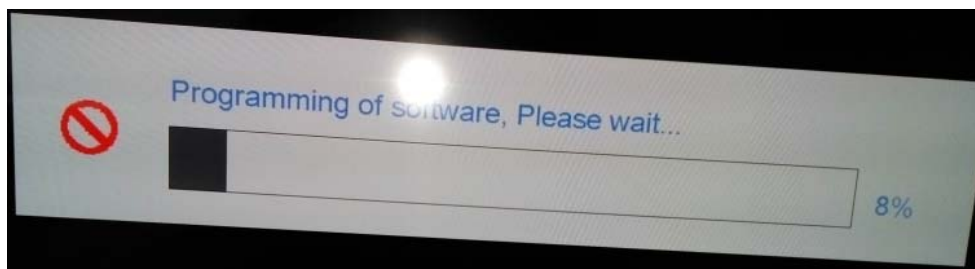
* USB menu upgrade

- 1、Insert USB disk that only have one upgrading file SIS506_XX.bin in root disk.
- 2、Enter the Factory OSD Menu see 3.1
- 3、Choose Factory menu->Function>software update >start
When appear “[upgrade program detects whether an upgrade](#)” select “YES” to ensure.

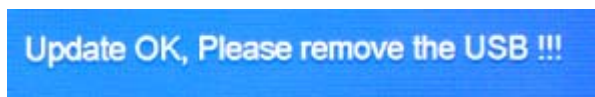
Next:



When 100%, next appear:



When 100%, next appear:



It indicates that USB Upgrades successfully. Plug the USB disk , then TV can automatically restart.

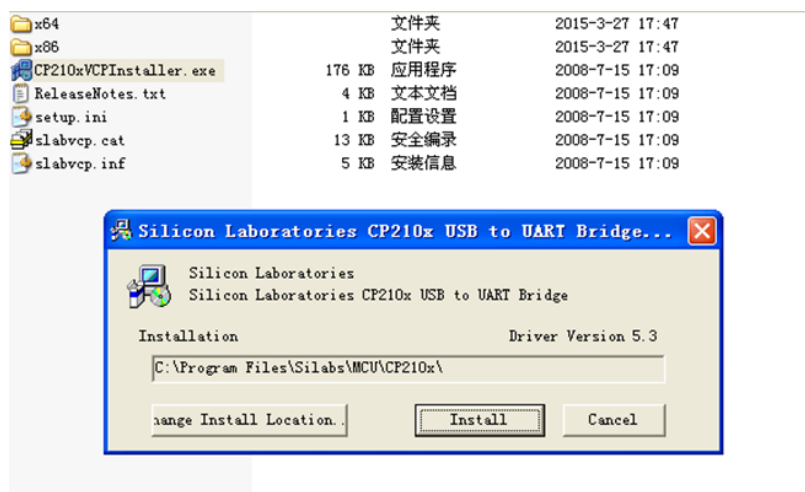
Note:

During upgrading, DO NOT power off the TV and other abnormally operations .otherwise boot can be destroyed .since boot is destroyed , USB upgrading method is availability no longer. Must adopt SIS Tool upgrading.

4.2 SIS Tool upgrade

1、 Install Uart driver software for SIS bebug board: **CP210x_VCP_Windows**

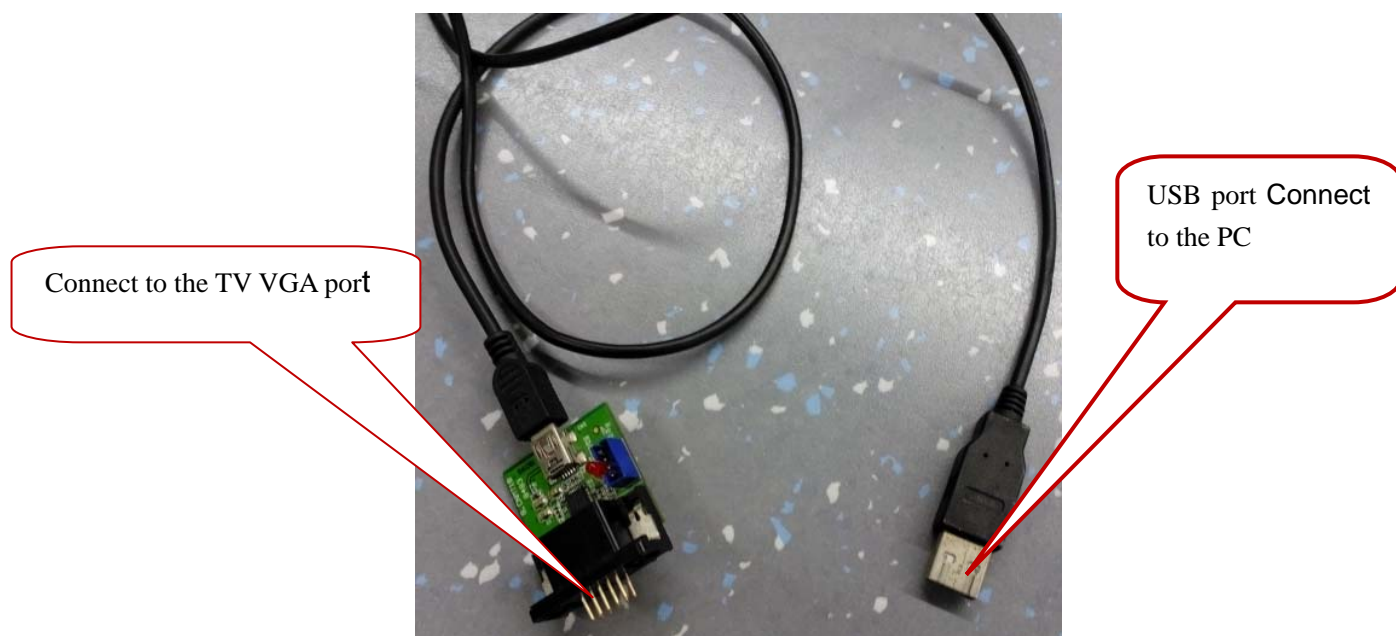
Run CP210xVCPInstaller.exe.



2、 Hardware connecting

You can update the software through a special tool (as following)

Connect the SIS debug board to TV use VGA port the other USB port to the PC.



3、 SIS Tool upgrade with Uart2spi updating Tool

Connect the SIS debug board.



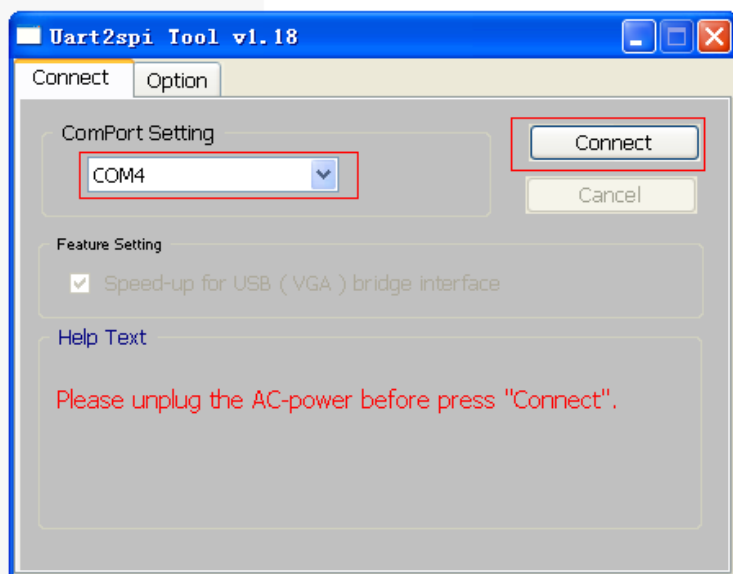
uart2spi_V118.rar

AC power off the TV, unlock compress

Run  **U2S_1.18.exe**, as following.

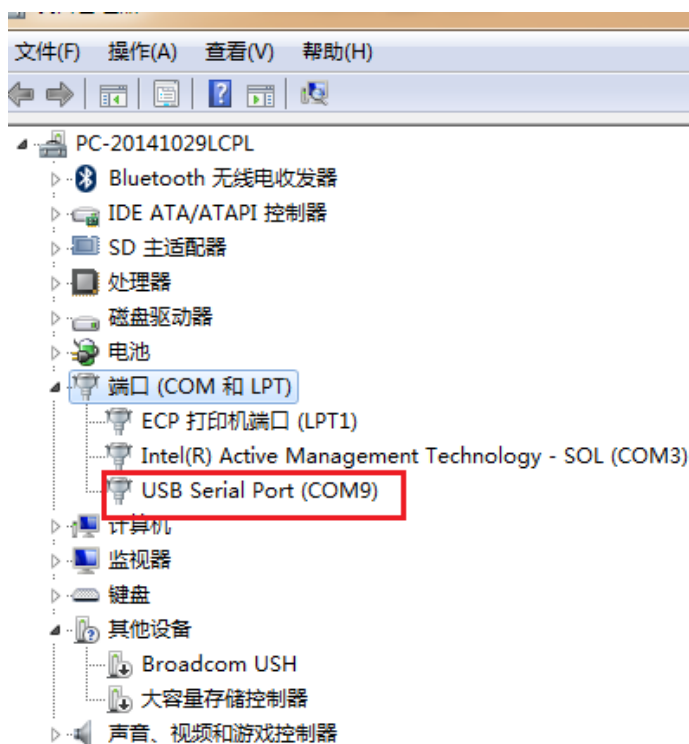
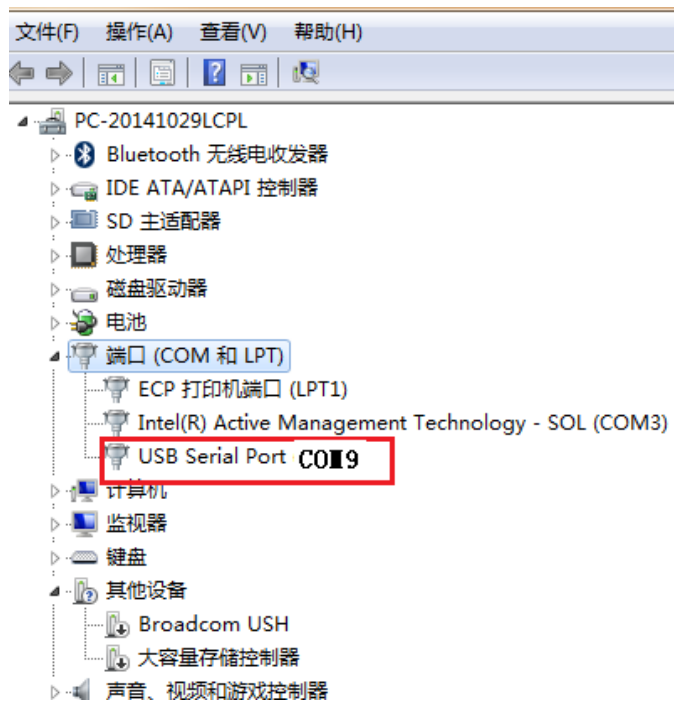
config	文件夹	2014-7-12 9:17
Temp	文件夹	2014-7-12 9:17
Config.cfg	1 KB CFG 文件	2014-7-12 9:17
release_note.txt	1 KB 文本文档	2014-7-12 9:17
specListINFO.cfg	3 KB CFG 文件	2014-7-12 9:17
U2S.opt	43 KB OPT 文件	2014-7-12 9:17
U2S_1.18.exe	2,649 KB 应用程序	2014-7-12 9:17

Choose “Comport setting”



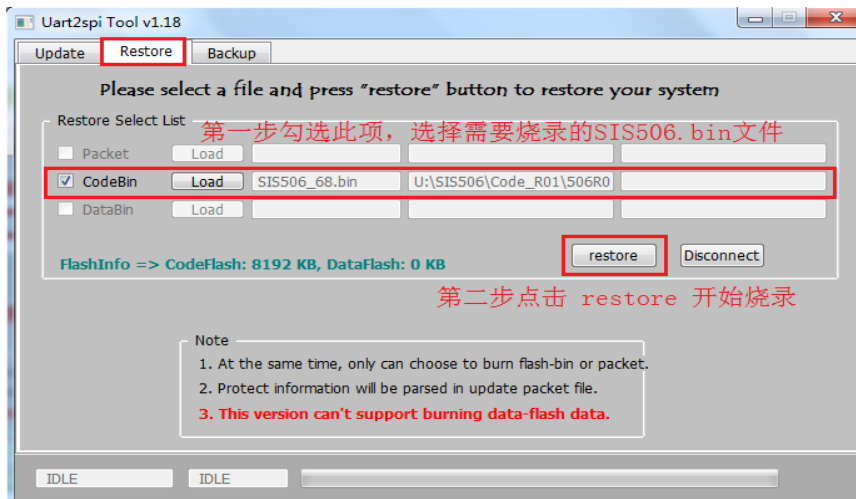
“Comport setting “item need choose corresponding com port.
How to look up corresponding com port? Now show.as following



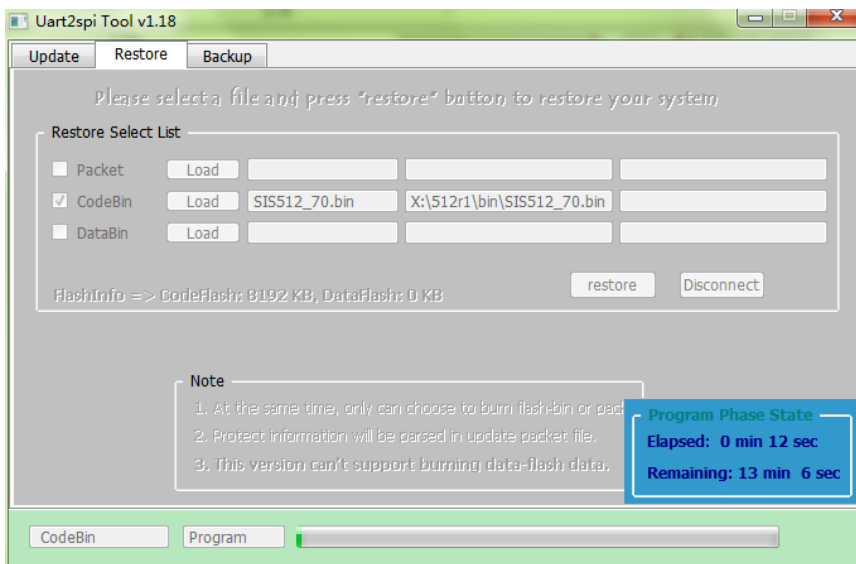


Click “Connect” button

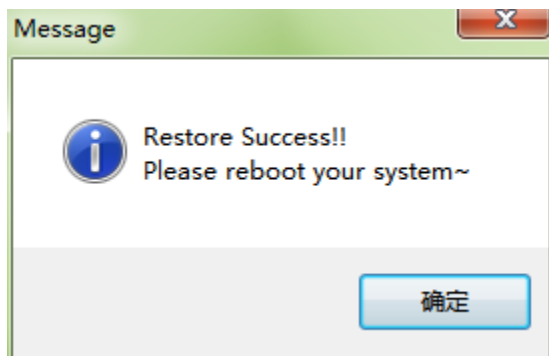
AC power on the TV, interface as following. click “Restore” item、load the *.bin file then click “restore” button



Updating..... ,about 13 minutes. As following.

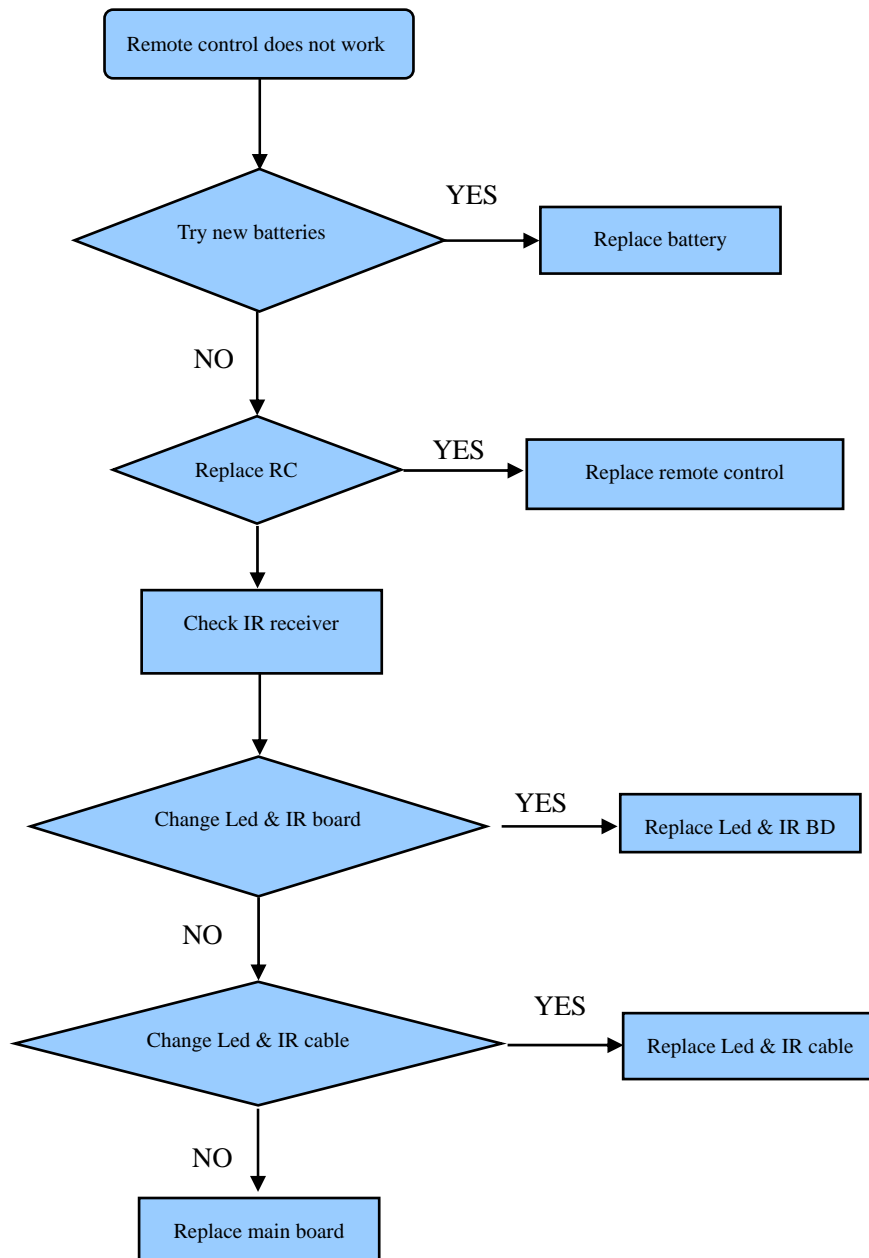


after “Restore successful” appears as following.it indicates the main software upgrading is successful. then AC power off and power on the TV.

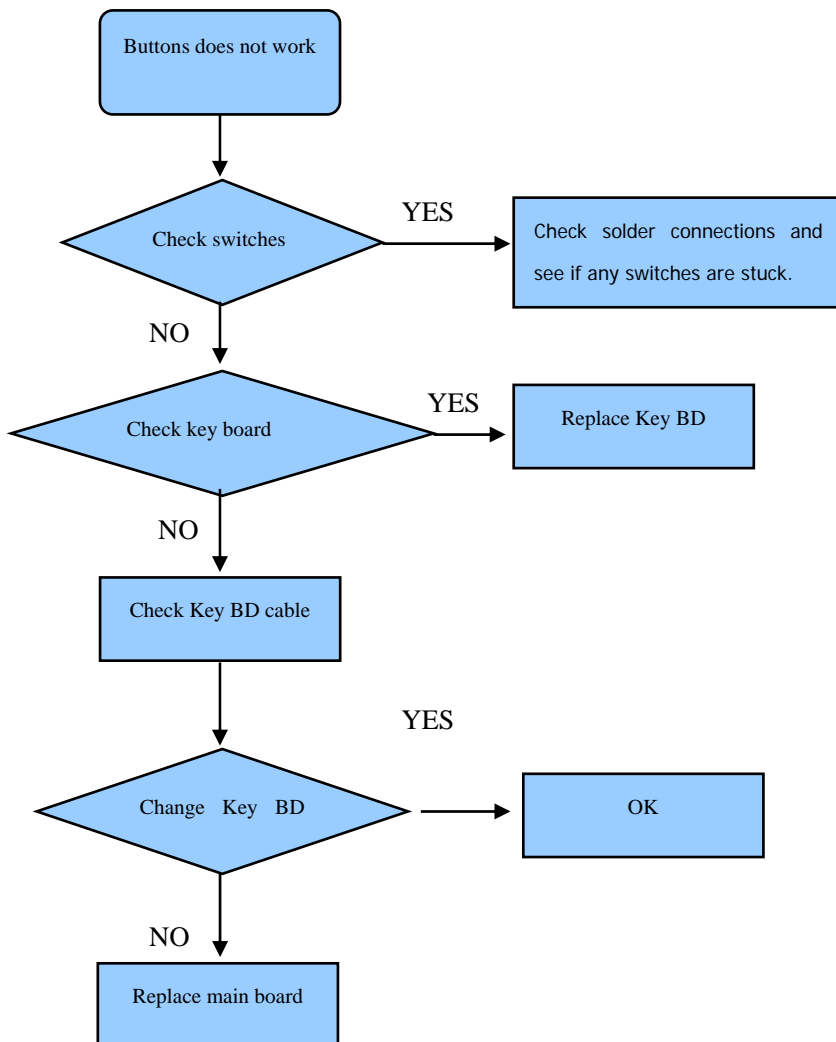


5. Trouble shooting

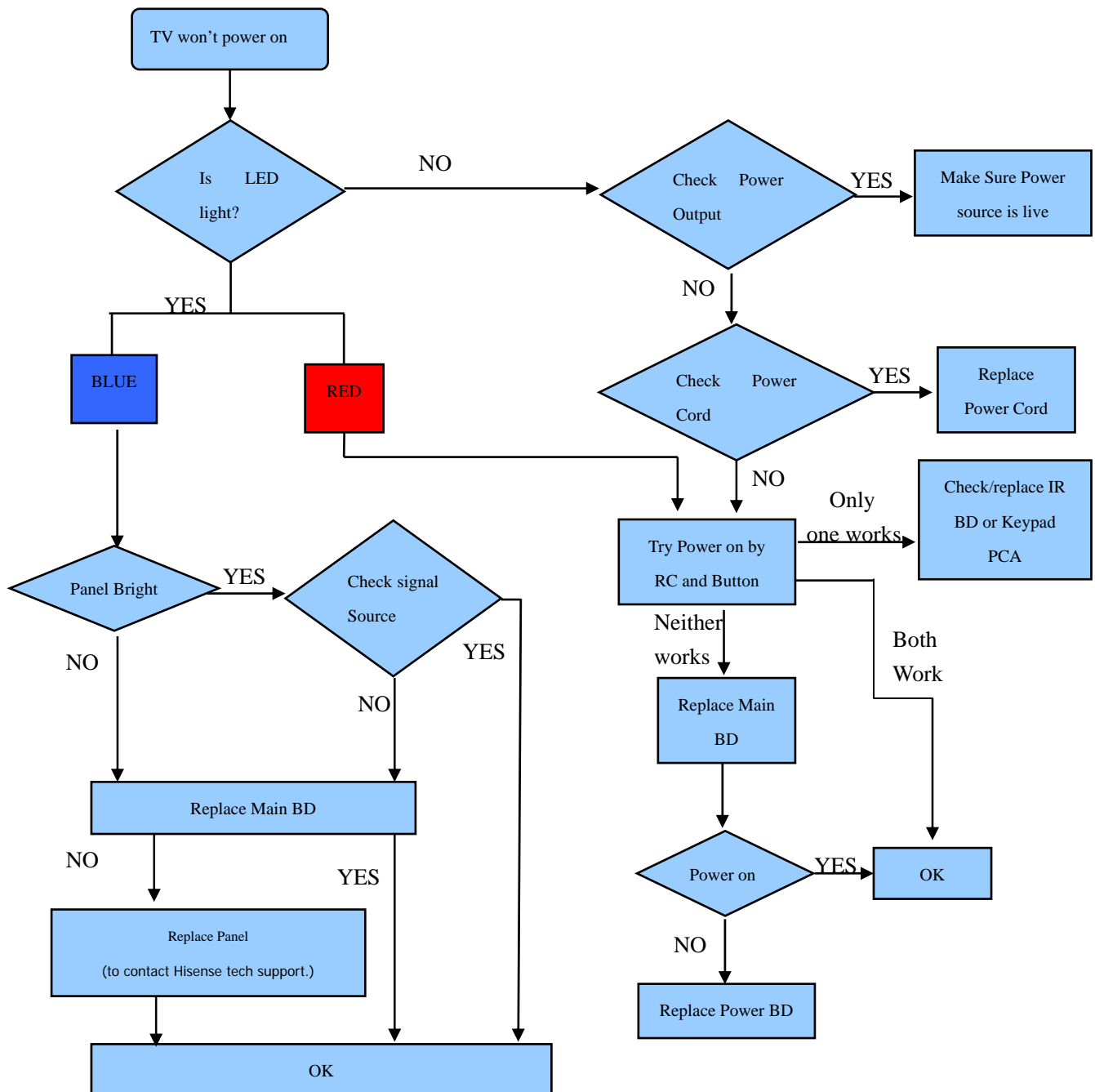
5.1 Troubleshooting for Remote Control



5.2 Troubleshooting for Function Key



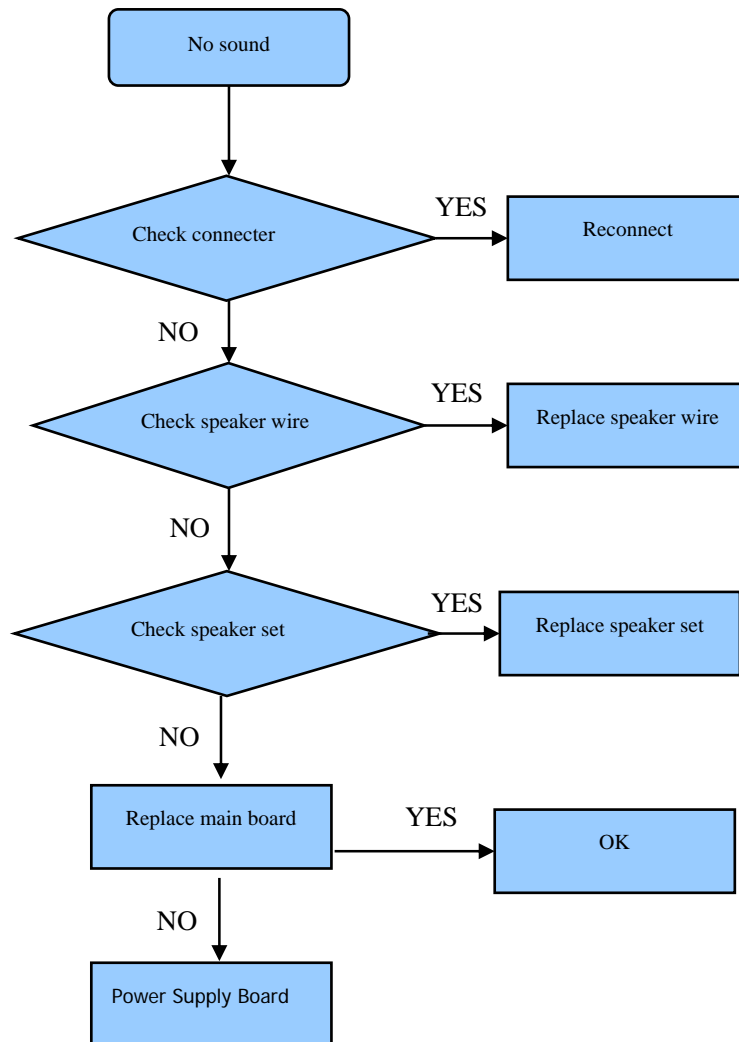
5.3 TV won't Power On



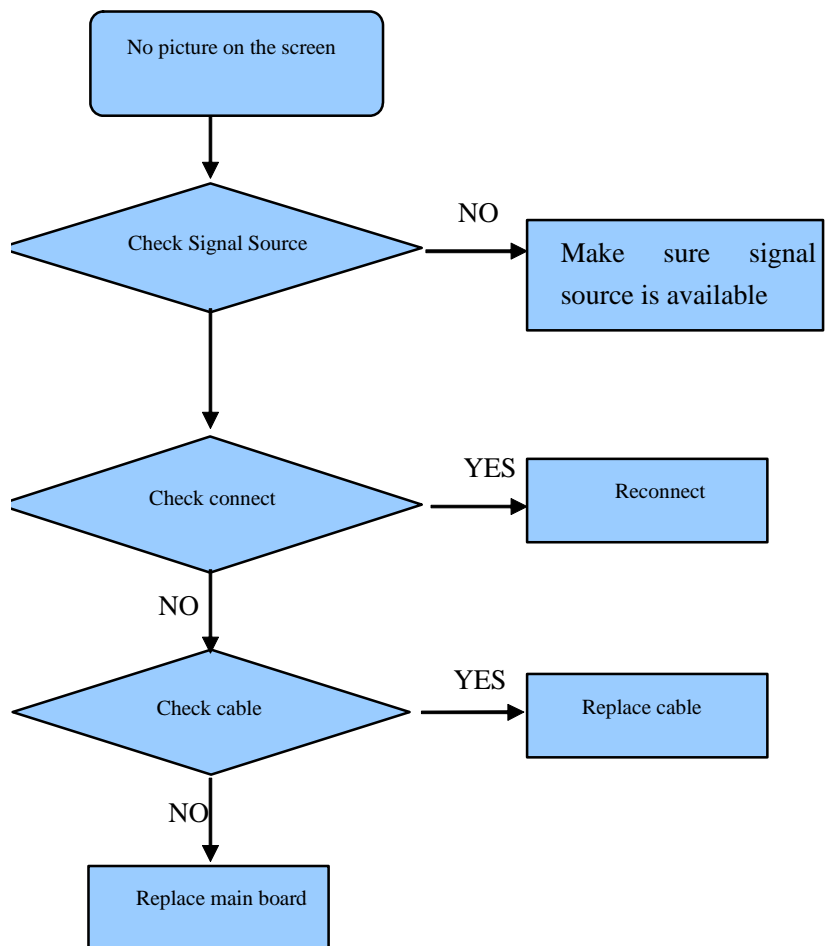
Notes:

Above TV configure is that TV in work state, indication Led is blue and in standby state the indication led is red.

5.4 Troubleshooting for Audio

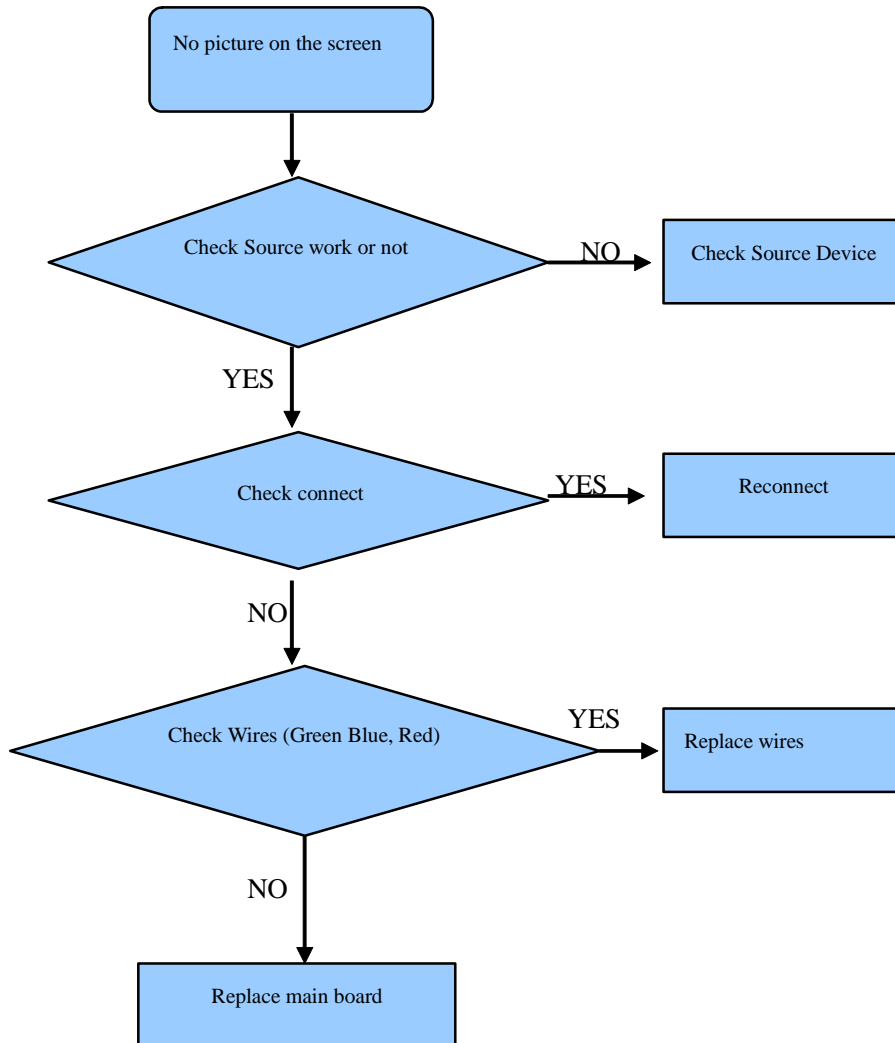


5.5 Troubleshooting for TV/VGA/HDMI input

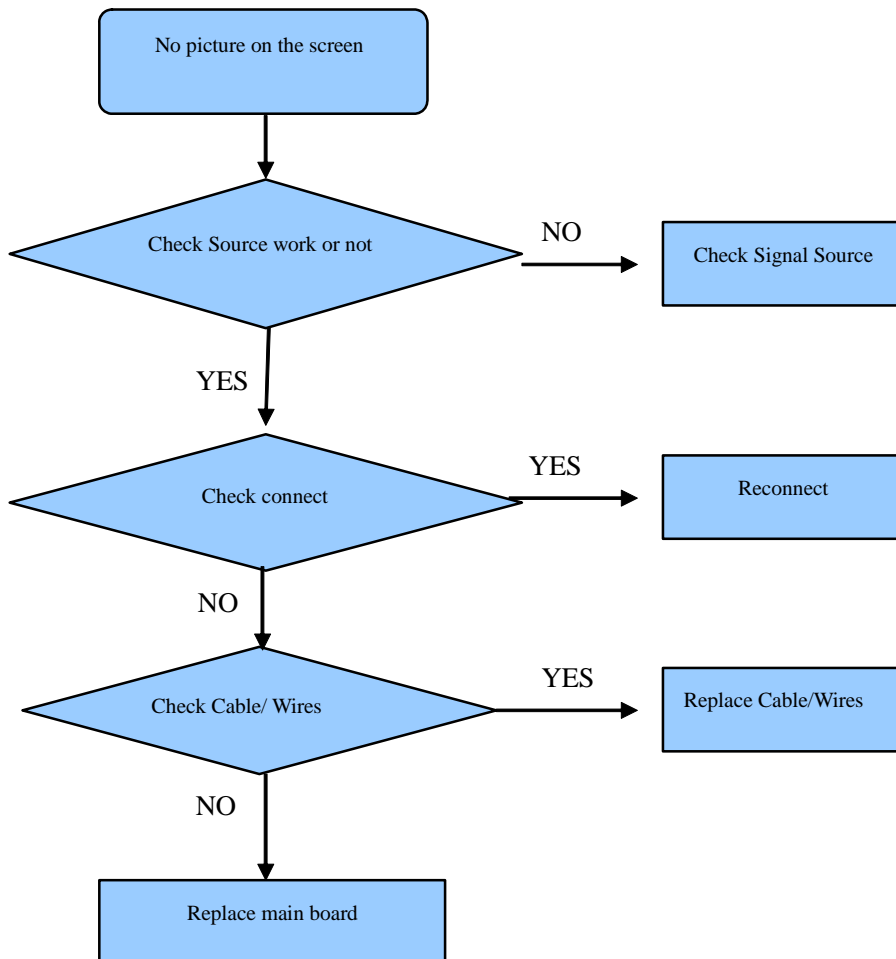


5.6 Troubleshooting for YPbPr input

Note: (The K220 mould TV has not YPbPr input)



5.7 Troubleshooting for Video input

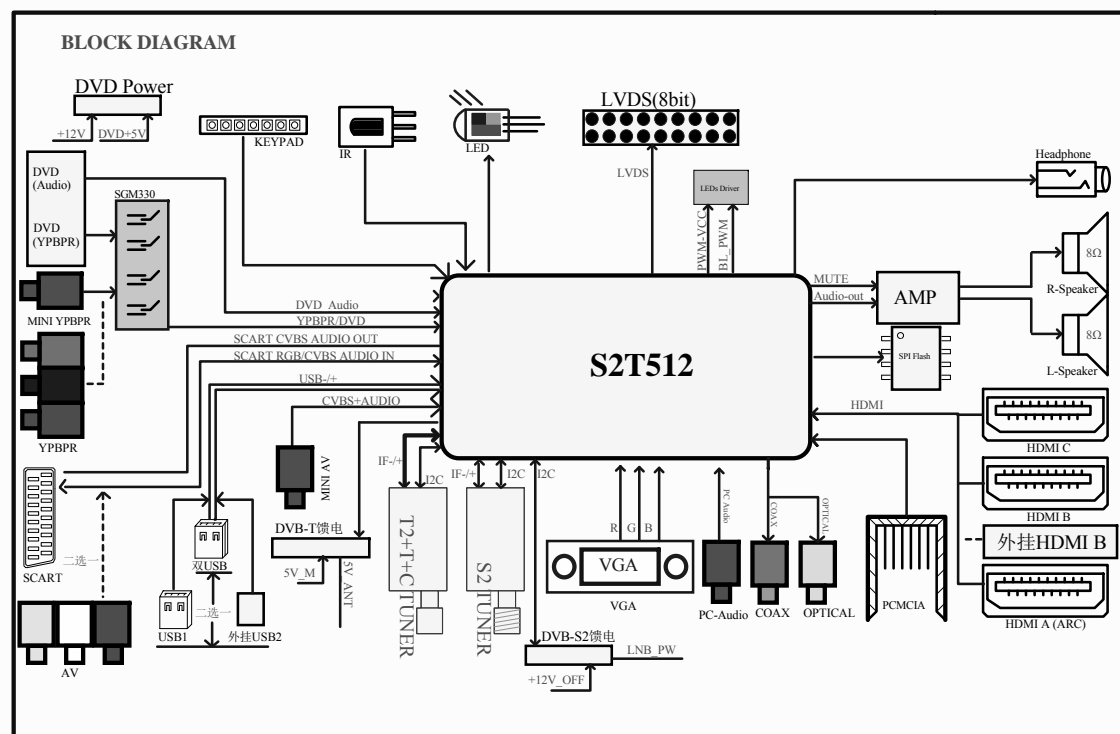
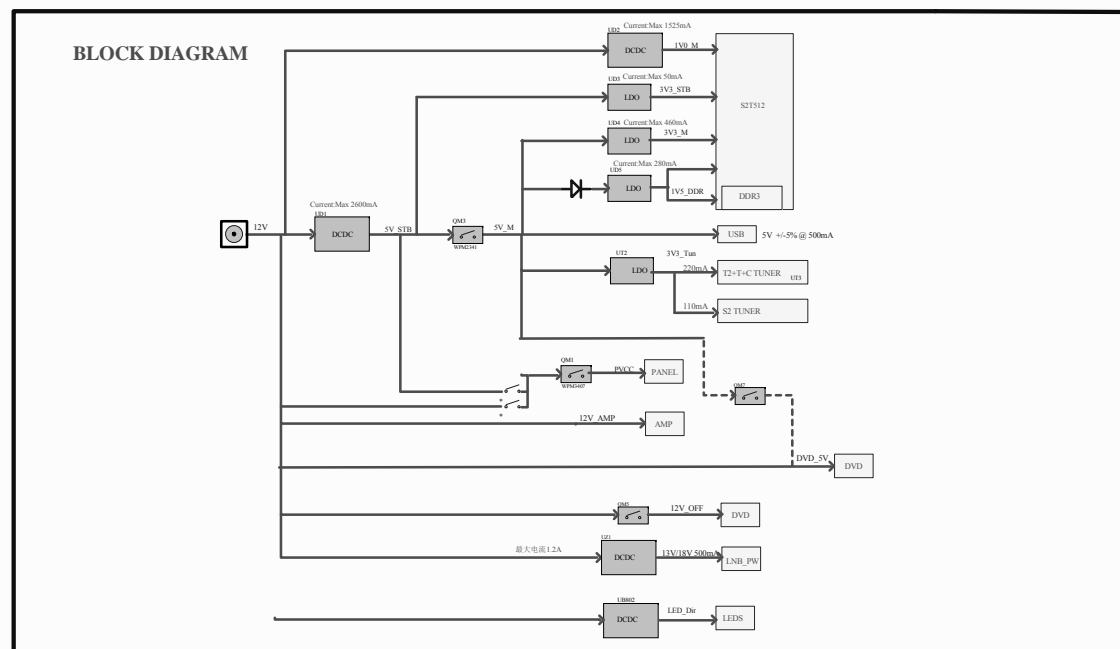


6. Circuit instruction

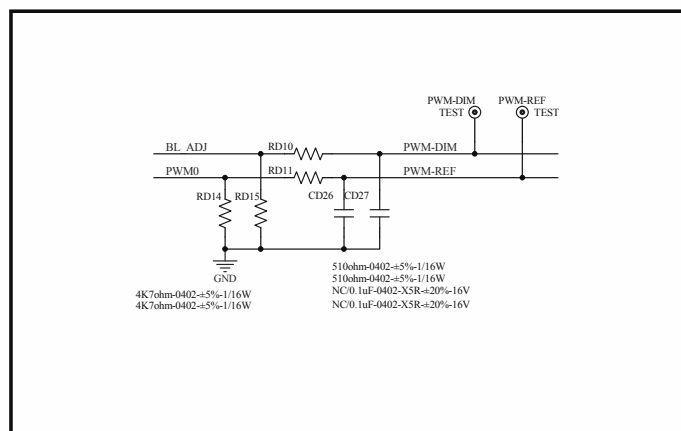
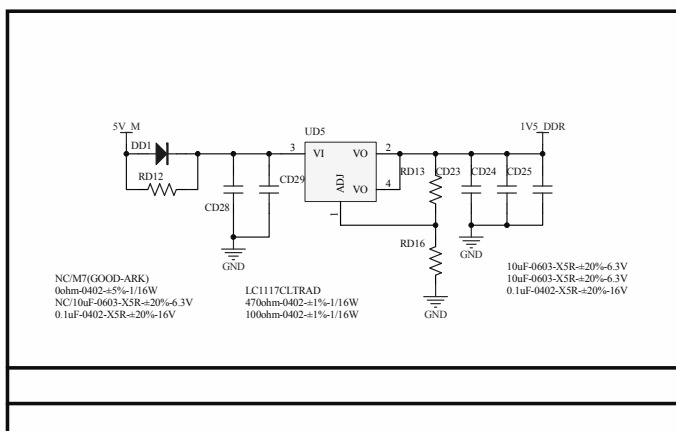
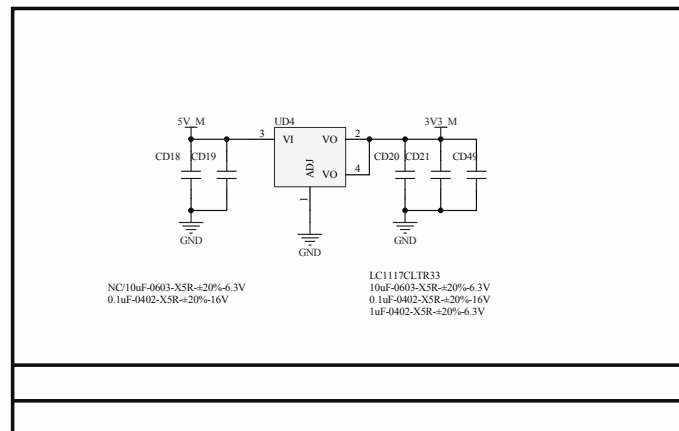
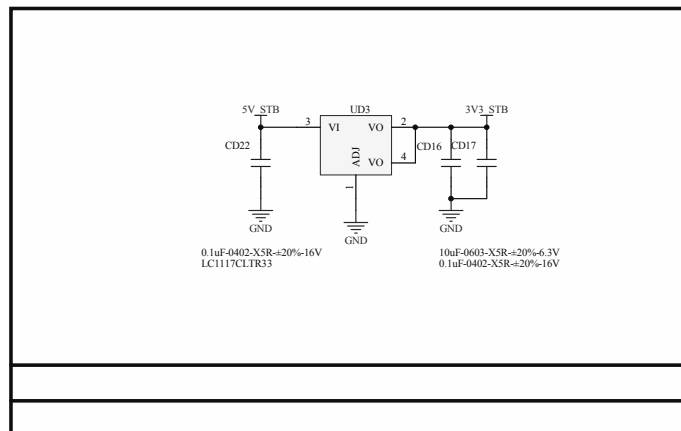
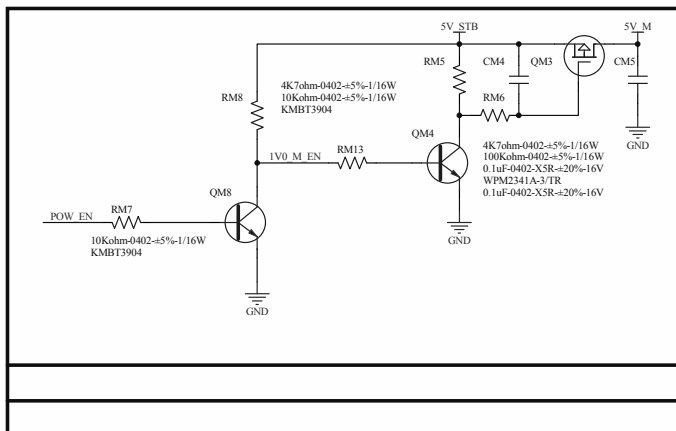
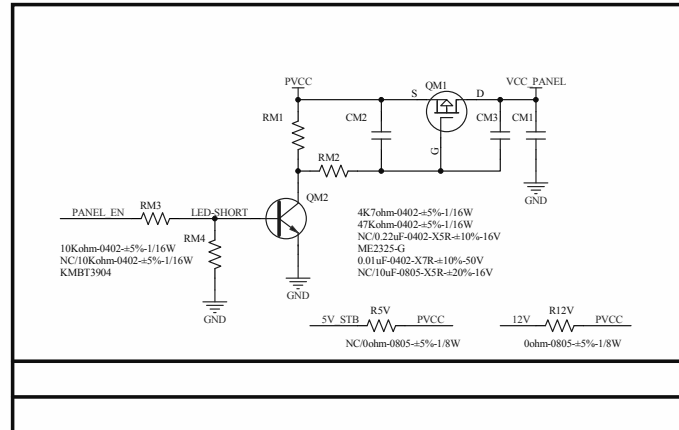
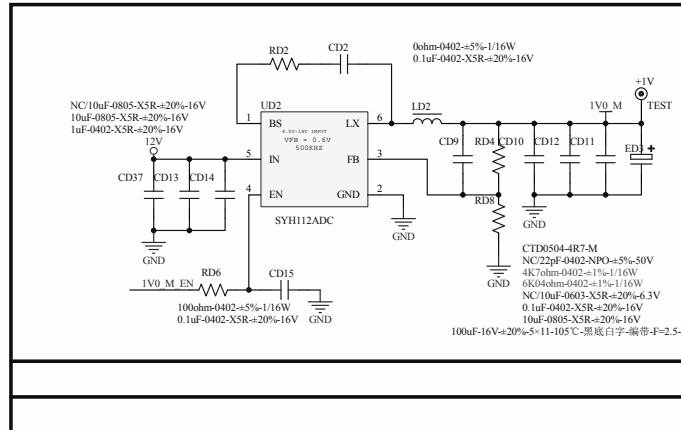
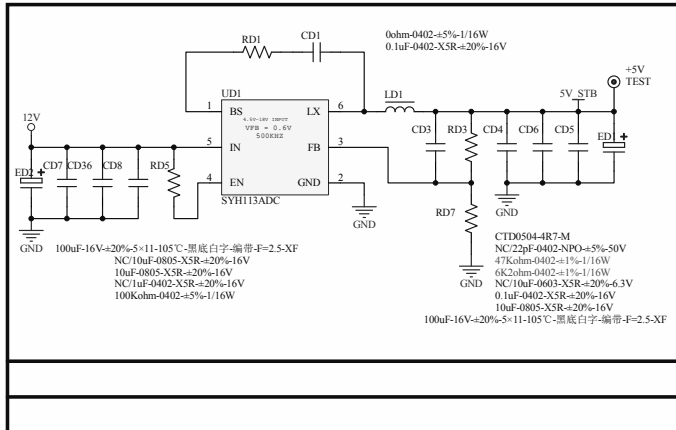
Power assign and Main board signal process

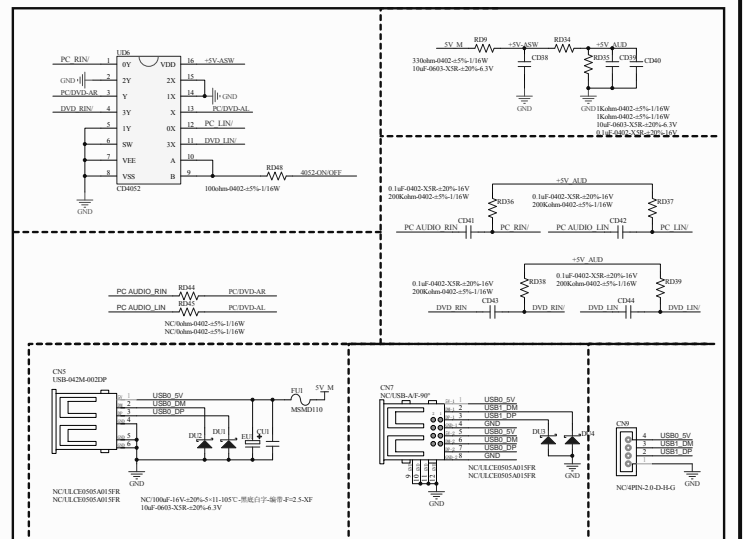
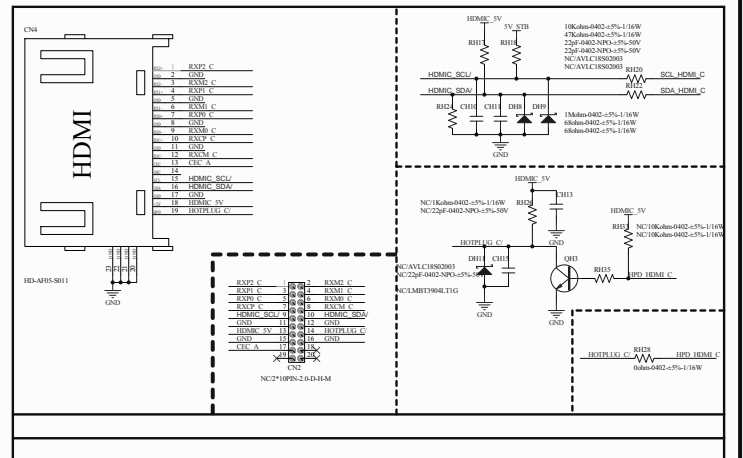
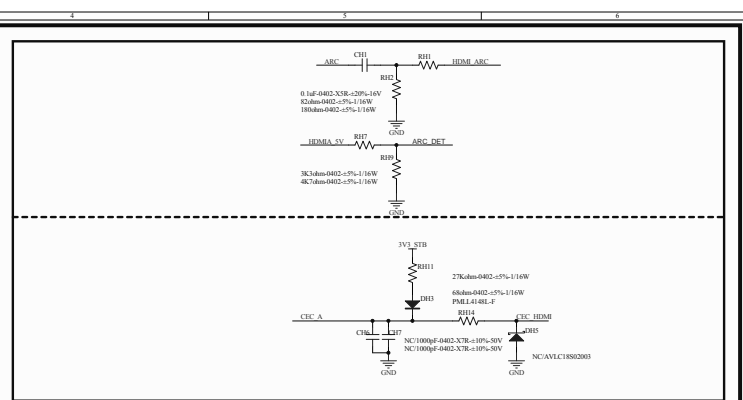
7. Schematic circuit diagram

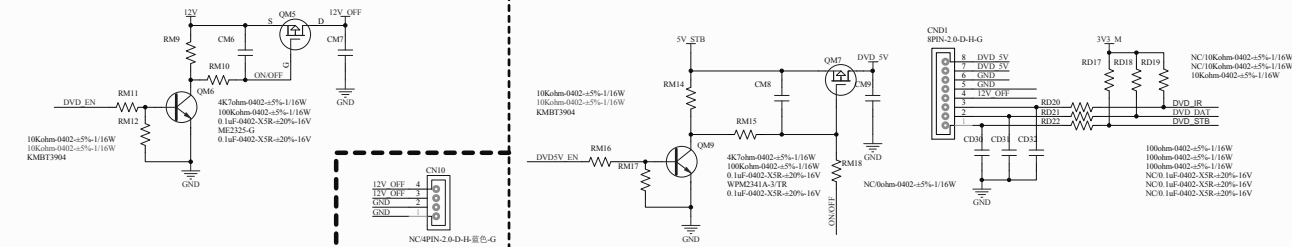
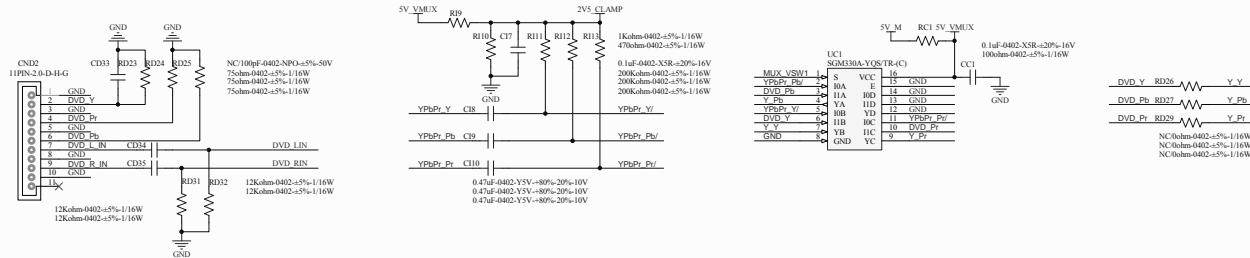
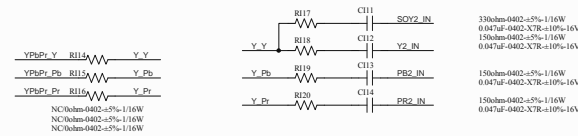
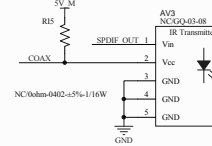
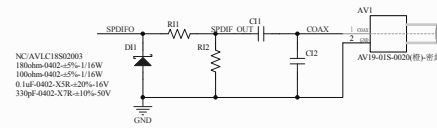
8. Explode View



Title		
Size A4	Number	Revision
Date: 2014/8/4	Sheet of	
File: D:\WORK\01_SchDoe	Drawn By:	

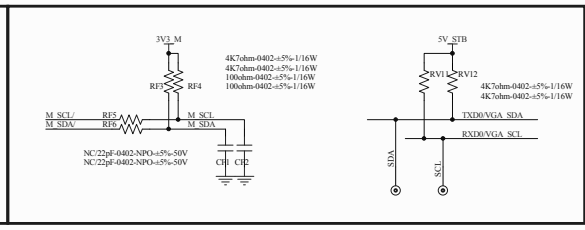


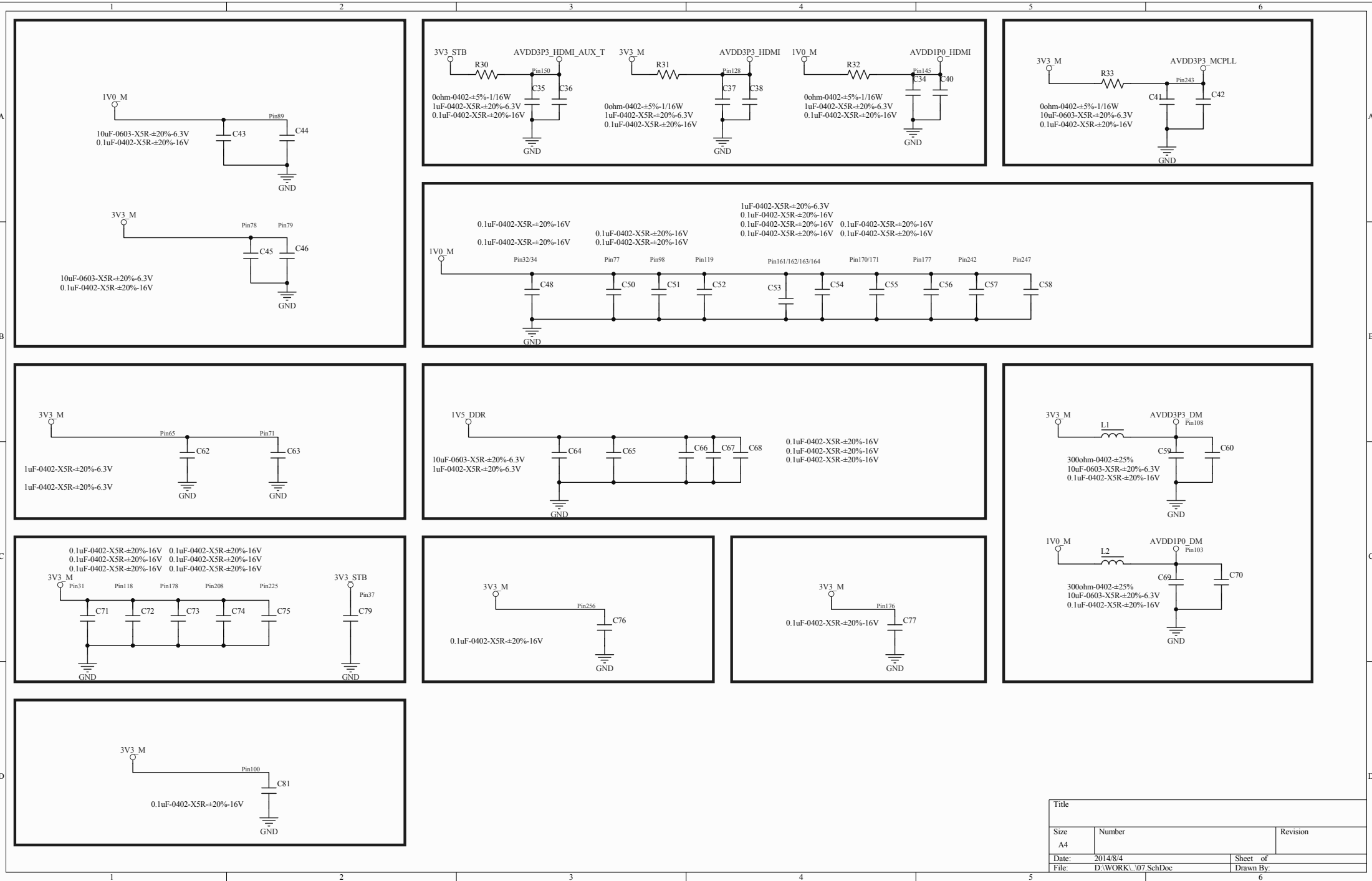


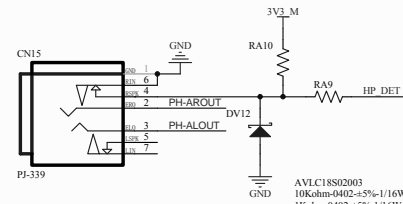
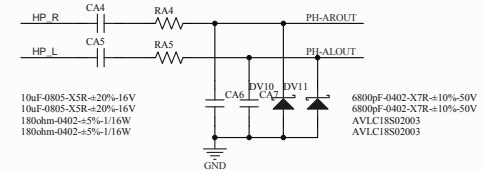
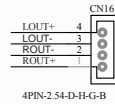
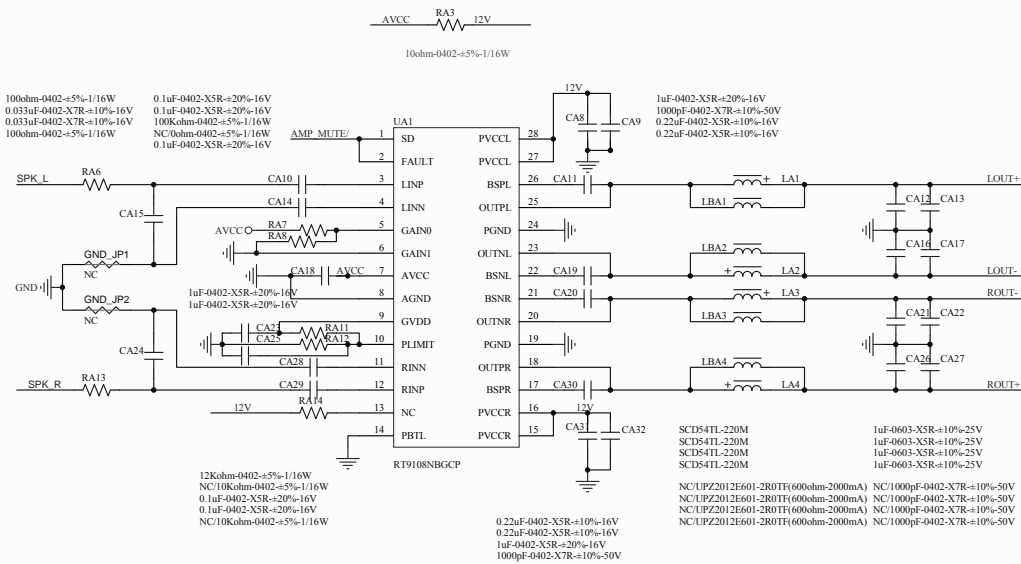
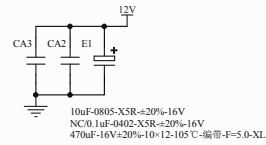
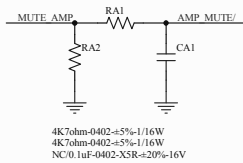




Title		
Size A4	Number	Revision
Date: 2014/8/4	Sheet of	
File: D:\WORK\05 SchDoc	Drawn By	

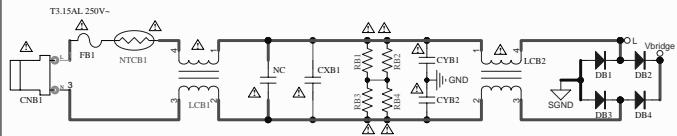




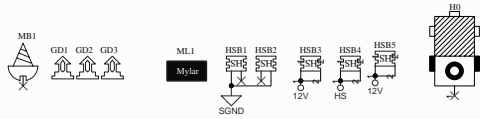


Title		
Size	Number	Revision
A4		
Date:	2014/8/4	Sheet of
File:	D:\WORK\08.SchDoc	Drawn By:

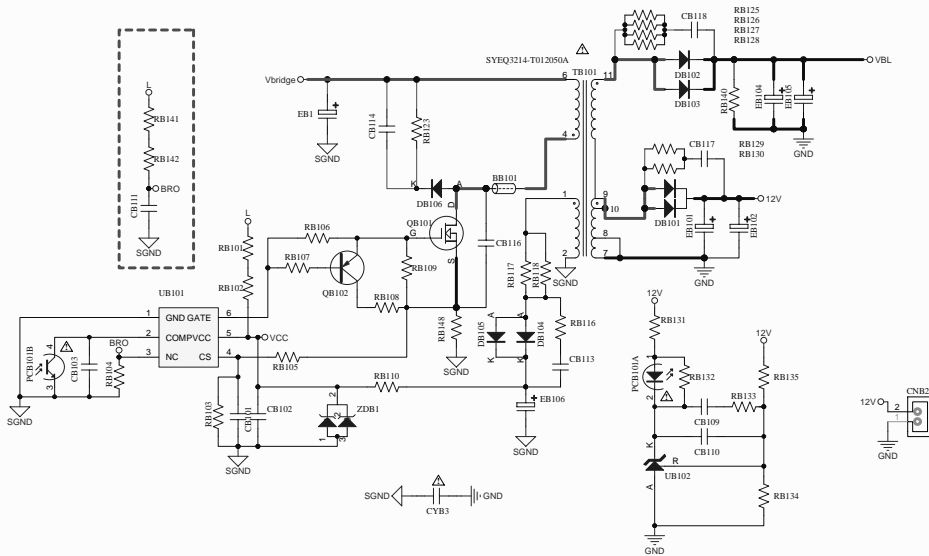
EMI电路



辅助材料



反激电路



恒流电路

