



LCD TV TX32

SERVICE MANUAL



Caution

Be sure to read this manual before servicing. To assure safety from fire, electric shock, injury, harmful radiation and materials, various measures are provided in this Hitachi liquid crystal television/monitor.
Be sure to read the cautionary items described in the manual to maintain safety before servicing.

Service Warning

1. The LCD Panel Module is made of glass. When handling broken LCD Panel Module, take special care not to be injured.
2. Replacement work should only start after the LCD Panel Module and the AC/DC Power Supply has become sufficiently cool.
3. Take special care of the LCD display panel and do not damage its surface.
4. Do not touch the LCD Panel Module with your bare hands and protect its surface from stains.
5. It is recommended to use clean soft gloves during servicing in order to protect the LCD display panel and the service personnel himself.

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

Liquid Crystal Display Television/Monitor

To our customers

LCD (Liquid Crystal Display) screens, like plasma and conventional CRT (Cathode Ray Tube) screens, are also susceptible to 'screen burn-in' or 'image retention' which can be found on the screen as visible fixed lines and shades and can't be removed. To avoid such permanent damage to the screen, it is advisable to take the following preventive actions:

- (1) Avoid displaying still (inactive) images for more than two hours.
- (2) Change the screen image aspect ratio from time to time.
- (3) If it is necessary to display still images for a long time, lower the contrast and brightness.
- (4) Turn on the DPMS function (if available) when displaying PC input image.

Thank you for your attention and we hope you enjoy your new TV.

The apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the apparatus. Apparatus with class 1 construction shall be connected to a mains socket outlet with a protective earthing connection.

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Warning



WARNING:

TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT REMOVE COVER(OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER TO QUALIFIED SERVICE PERSONNEL.



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 to persons.



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 appliance.

REGULATORY INFORMATION

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user encouraged to try to correct the interference by one or more of the following measures:

- Relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

CAUTION:

DO not attempt to modify this product in any way without written authorization from supplier. Unauthorized modification could void the user's authority to operate this product.

Safety instructions

WARNING :

TO Reduce The Risk Of Fire Or Electric Shock, Do Not Expose This Apparatus To Rain Or Moisture.

Apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.

2. Keep these instructions.

3. Heed all warnings.

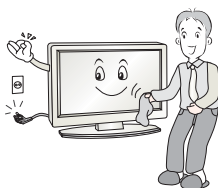
4. Follow all instructions.



5. Do not use this apparatus near water.



6. Clean only with a dry cloth.



7. Do not block any of the ventilation openings. Install in accordance with the manufacturer's instructions.



8. Do not install near any heat source such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.



9. Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades with one wider than other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. When the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.



11. Only use the attachments / accessories specified by the manufacturer.

Safety instructions continued

12. Use only cart, stand, tripod, bracket, or table specified by the manufacturer or sold with the apparatus.



14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way.



13. Unplug this apparatus during lightning storms or when unused for a long time.



Note

- If the TV is cold, there may be a small "flicker" when you turn it on.
- Avoid touching the LCD screen or holding your finger(s) against it.

CAUTION connecting the Power Cord

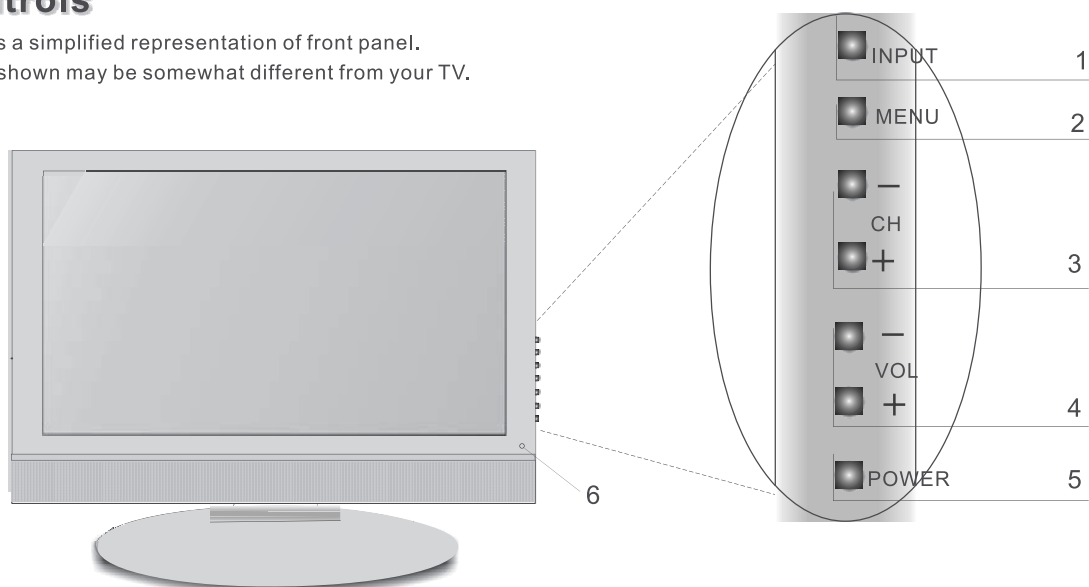
Do not overload wall outlets. Overloaded wall outlets could damage the TV and could result to electric shock or fire. Periodically examine the cord of your appliance; if its appearance indicates damage or deterioration, unplug it. Stop using it until you have it replaced with a cord authorized by your dealer. Protect the power cord from physical or mechanical abuse, such as being twisted, kinked or pinched.

On Disposal

- The fluorescent lamp used in this product contains a small amount of mercury
- Disposal of this product must be carried out in accordance to the regulations of your local authority.

Introduction Controls

- This is a simplified representation of front panel.
- Here shown may be somewhat different from your TV.



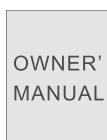
ITEM	BUTTON NAME	FUNCTION DESCRIPTION
1	INPUT	Press to select the input source.
2	MENU	Press to bring up the main menu to the screen.
3	- CHANNEL +	Press to scan through channels. To scan quickly channels, press and hold down either +/-button.
4	- VOLUME +	Press to increase or decrease the sound level.
5	POWER	Switch on the LCD TV when at standby mode or vice versa.
6	POWER INDICATOR REMOTE SENSOR	Show red in standby mode, show green when your TV is switched on. Infrared sensor for the remote control.
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Accessories

Ensure that the following accessories are included with your TV. If any accessory is missing, please contact the dealer from where you purchased the product.



Power Cord



Owner's Manual

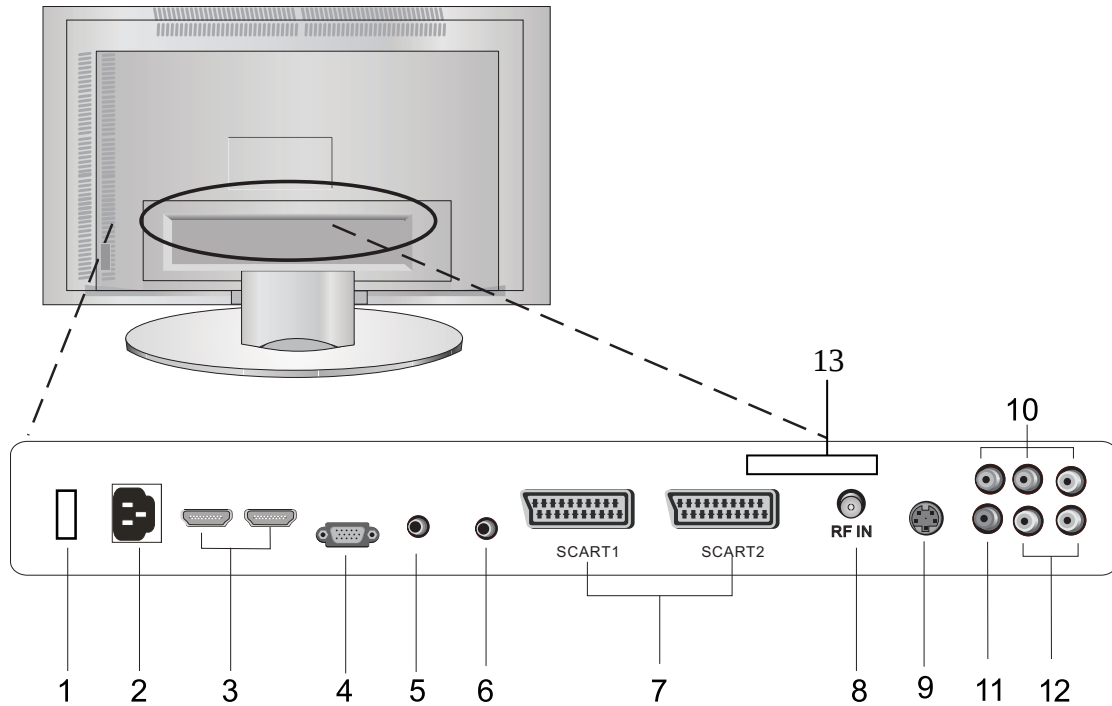


Remote control



AA Batteries

Connection Options

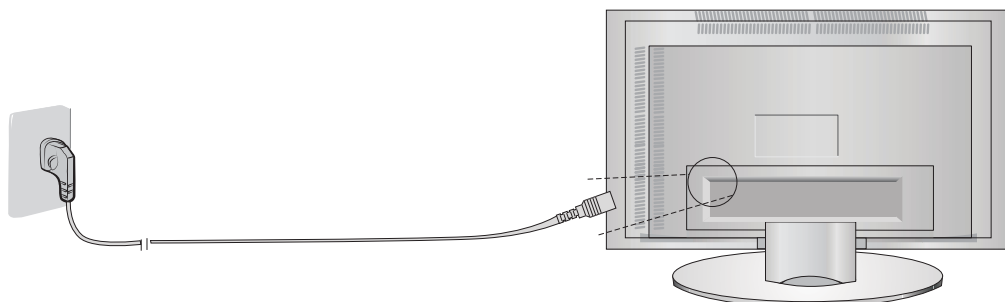


ITEM	JACK NAME	FUNCTION DESCRIPTION
1	MAIN POWER BUTTON	Switch of the power supply
2	AC IN	AC input socket
3	HDMI INPUT	Connect the HDMI output jack of PC and DVD
4	PC-RGB INPUT	Connect the PC-RGB output jack of PC
5	PC AUDIO INPUT	Connect the Audio output jack of PC
6	EAR PHONE	Connect the earphone
7	SCART	Connect the SCART jack of VCR
8	TV SIGNAL IN	Connect the antenna
9	S-VIDEO INPUT	Connect the S-VIDEO output jack of DVD or VCR
10	YPbPr IN	Connect the YPbPr output jack of DVD or VCR
11	CVBS INPUT	Connect the Video output jack of DVD or VCR
12	CVBS/YPbPr/S-VIDEO AUDIO INPUT	Connect the R/L Audio output jack of DVD or VCR for CVBS/YPbPr/S-VIDEO
13	CI SLOT	CI Slot for Common Interface

External Equipment Connections

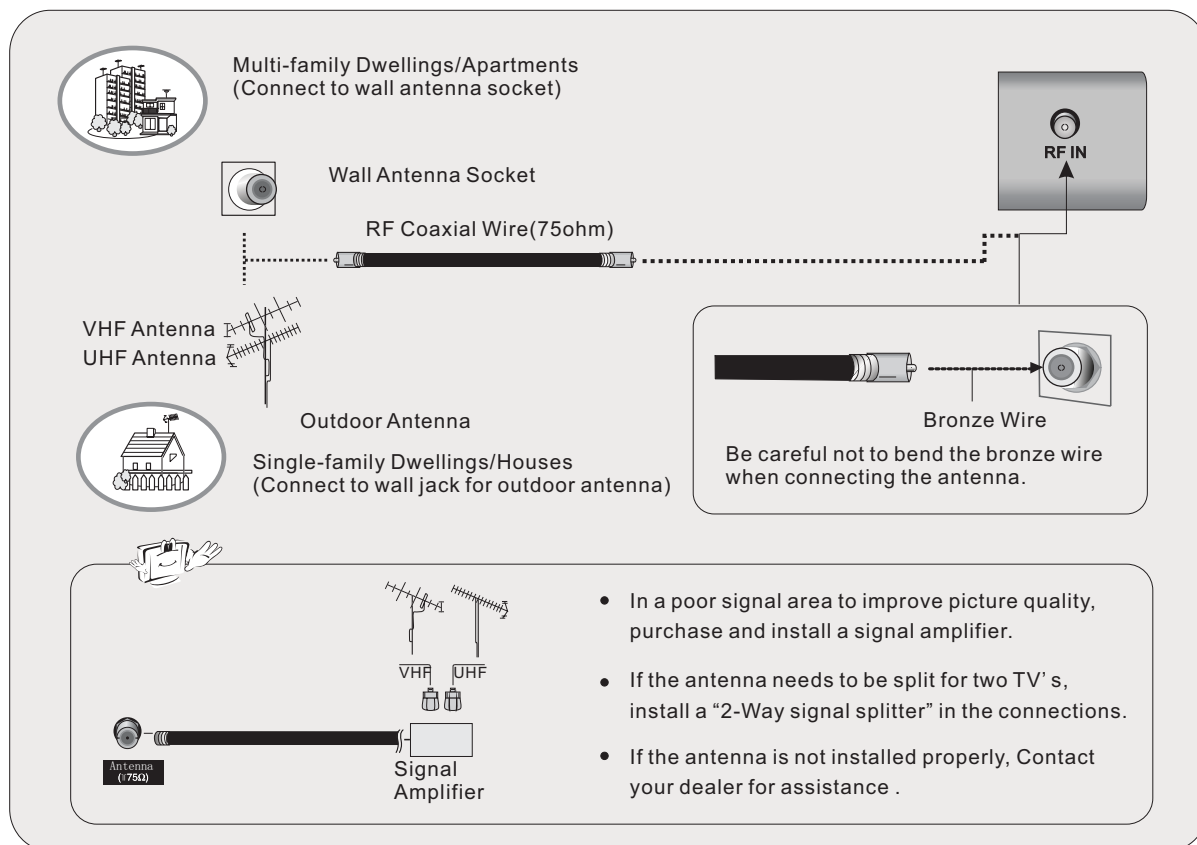
Power Cord Connection

- Connect the power cord correctly as shown.
- Press the POWER switch of your LCD TV to switch on the LCD TV. The power indicator on the front panel lights up in Red



Antenna Connection

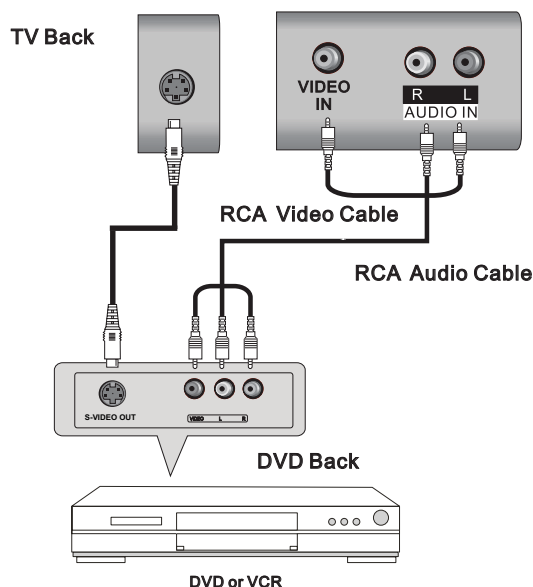
- **Antenna or Cable Service without a Cable Box Connections**
- For optimum picture quality, adjust antenna direction if needed.



NOTE: Before connecting any external equipment, turn off all main power for safety.

AV/S-VIDEO INPUT Connection

NOTE: All cables shown are not included with the TV.



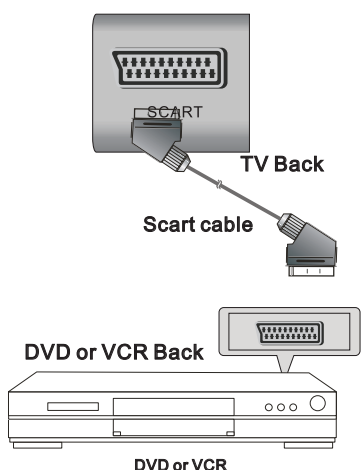
- Connect the VIDEO and AUDIO output jack of the DVD or VCR to the AV IN jacks on the set using the RCA cable.
- Match the jacks colors: Video=yellow, Audio left=white, and Audio right=red.
- Select the AV input source with using the TV/AV button on the remote control.
- Connect the S-VIDEO and AUDIO output jack of the DVD or VCR to the S-VIDEO IN and AUDIO IN jacks on the set.
- Select the S-VIDEO input source with using the TV/AV button on the remote control.



Do not connect both VIDEO and S-VIDEO at the same time.

Scart Connection

NOTE: All cables shown are not included with the TV.



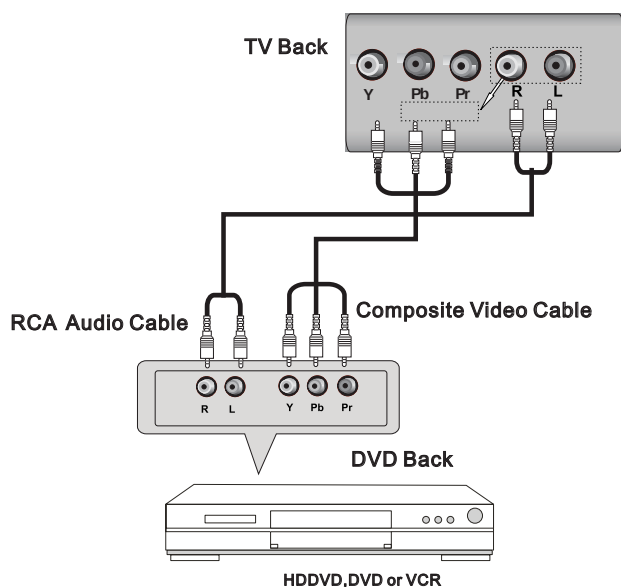
1. Connect the scart connector on the external video device to the scart connector 1 or 2 on the LCD TV using a scart cable.
- SCART 1 connector supports full scart functions (CVBS, RGB input / output, TV out).
- SCART 2 connector supports Y /C input and TV output.
2. Press AV / TV button on the remote control to select SCART 1 or SCART 2 which corresponds with your connection.

Input / Output specification

Connector	Input			Output		
	Y / C	RGB	AUDIO(L/R)	CVBS	TV	AUDIO(L/R)
SCART	✓	✓	✓	✓	✓	✓

Y/Pb/Pr INPUT Connection

NOTE: All cables shown are not included with the TV.

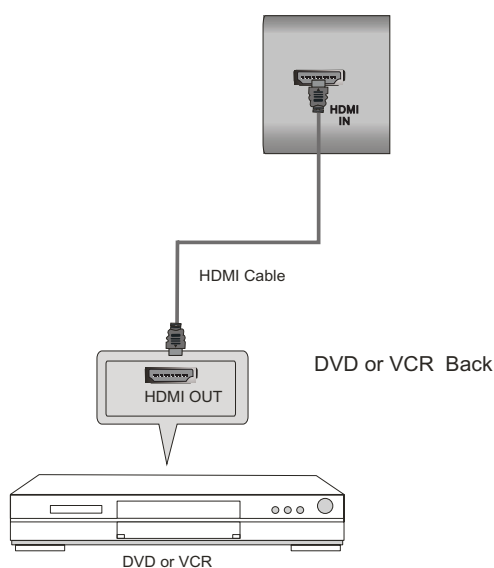


- Connect the VIDEO and AUDIO output jack of the DVD or VCR to the AV IN jacks on the set using the RCA cable.
- Match the jacks colors: Video=yellow, Audio left=white, and Audio right=red.
- Select the AV input source with using the TV/AV button on the remote control.

HDMI Connection

- HDMI (High Definition Multimedia Interface) is the first all digital consumer electronics A/V interface that supports uncompressed standard. One jack supports both video and audio information.

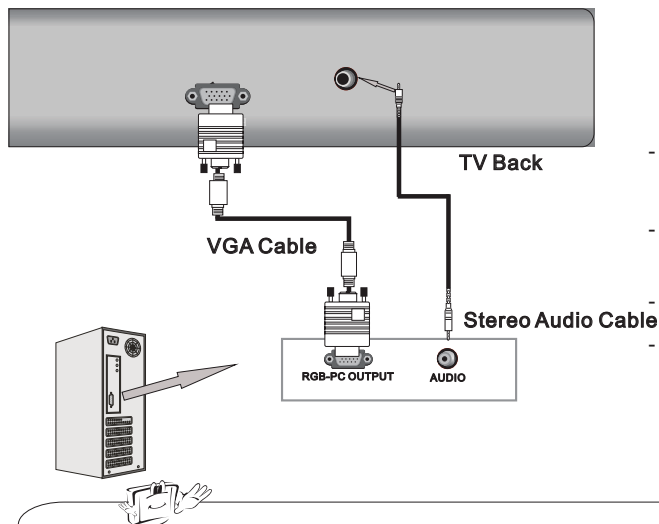
NOTE: All cables shown are not included with the TV.



- Connect HDMI output of the DVD to the HDMI input jack On the set.
- Select the HDMI input source with TV/AV button.

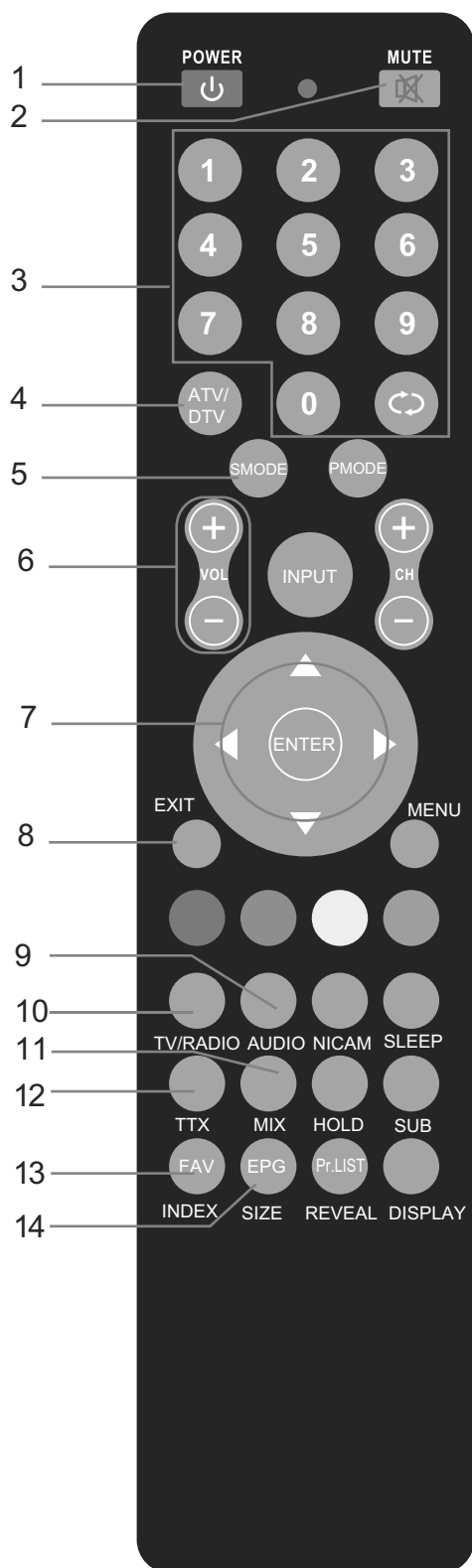
PC Connection

- This TV provides Plug and Play capability, meaning that the PC adjusts automatically to the TV's setting. The TV sends configuration information (EDID) to the PC using the Video Electronics Standard Association (VESA) Display Data Channel (DDC) protocol.

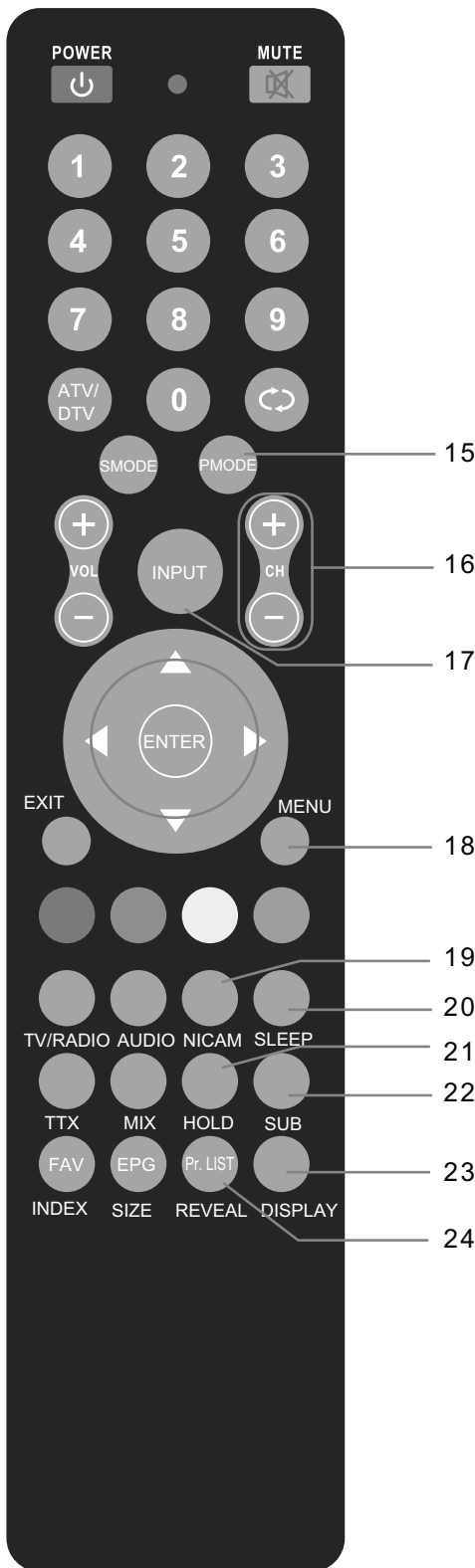


- Connect the RGB output of the PC to the VGA in jack on the set.
- Connect the PC AUDIO output of the PC to the PC AUDIO in jack on the set.
- Turn on the PC and set.
- Select the VGA input source with using TV/AV button on the remote control.

1. To get the best picture quality, adjust the PC graphics card to 1024 x 768@60Hz.
2. If using a sound card, adjust the PC sound as required.
3. Check the image on your TV, there may be noise because of the resolution, vertical pattern, contrast or brightness in PC mode. If noise is present, change the PC mode to another resolution, change the refresh rate to another rate or adjust the brightness and contrast on the menu until the picture is clear. If the refresh rate of the PC graphic card can not be changed, change the PC graphic card or consult the manufacturer of the PC.



1. Power: Toggles the unit between power mode and on.
2. MUTE : Press to eliminate or restore the TV sound.
3. 0,1~9 / : Channel number/teletext mode pages select (When enter the teletext mode only).
4. ATV/DTV:Press to select ATV/DTV.
5. SMODE: To change the Audio reverb. (Standard, Music,Movie,Sports,User)
6. VOL+/- : Increase /Decrease volume.
7. : After you enter the Menu, press the cursor button to select your required functions press ENTER to confirm.
8. EXIT: Exit the main menu.
9. AUDIO:To set the audio language in the program
10. TV/RADIO: Press to TV/Radio to select TVor Radio made in sequence.
11. MIX: Text and picture will be mixed.
12. TTX: Press to enter the teletext mode in TV mode.
13. INDEX/FAV:
 - INDEX: Request the index page in teletext mode.
 - FAV: Press to switch to your favorite channels
14. SIZE/EPG
 - SIZE: Change the display size in teletext mode.
 - EPG: Electronic program guide.



15. PMODE: To change the video picture mode.(
Standard,Dynamic,Mild,User)

16. CH+/-: Increase /Decrease TV channel.

17. INPUT: Press to display the source menu.

18. MENU: Display Main OSD Menu.

19. NICAM: Change sound mode.According to the input
signal,automatic.

20. SLEEP: Press to activate sleep timer.

21. HOLD: Press hold on or off for current page display .

22. SUB: Press to select the subtitle on or off.

23. DISPLAY: Display program infomation.

24.Pr.LIST/REVEAL:

REVEAL: Reveals hidden information such as
the answer to a quiz in teletext mode.

Pr.LIST: Display channel list

COLOR BUTTONS

There are used as per the indications or functions display-
ed on TV screen in case of Text displays.

Product Model	TX 32
Screen Size	32" diagonal
Aspect Ratio	16:9
Receive Channel	48.25MHz~863.25MHz
External Size	795(W)x235(D)x580(H) mm (with Stand)
Net Weight	11.6 kg (with Stand)
Display Resolution	1920(H) x 1080(V) pixels
Color	16.7 M colors
View Angle	178°(H)/178°(V)
Brightness (Peak Value)	Typical 420 cd/m ² (Panel Only)
Contrast (Dark Room)	Typical 3600:1 (Panel Only)
TV System	PAL, SECAM
Sound System	BG, I, DK, L, L'
Power Supply	AC 100~240V, 50/60 Hz
Power Consumption	≤165W
Stand-by	<3W

*NOTE:**The specification shown above may be changed without notice for quality improvement.*

A. VGA Mode

Resolution	Horizontal Frequency (KHz)	Vertical Frequency (Hz)
640 x 480	31.50	60
800 x 600	37.90	60
1024 x 768	48.40	60
1280 x 768	48.36	60
1360 x 768	47.70	60

B. YPbPr Mode

Resolution	Horizontal Frequency (KHz)	Vertical Frequency (Hz)
480i(640x480)	15.734	60.00
480p(720x480)	31.47	60.00
576i(720x576)	15.625	50.00
576p(720x576)	31.25	50.00
720p(1280x720)	45.00	60.00
1080i(1920x1080)	28.13	50.00
1080i(1920x1080)	33.75	60.00
1080p(1920x1080)	56.20	50.00
1080p(1920x1080)	67.50	60.00

C. HDMI Mode

Resolution	Horizontal Frequency (KHz)	Vertical Frequency (Hz)
480i(640x480)	15.734	60.00
480p(720x480)	31.47	60.00
576i(720x576)	15.625	50.00
576p(720x576)	31.25	50.00
720p(1280x720)	45.00	60.00
1080i(1920x1080)	28.13	50.00
1080i(1920x1080)	33.75	60.00
1080p(1920x1080)	56.25	50.00
1080p(1920x1080)	67.50	60.00

Notes:

- Modes, which are not listed in the above table, may not be supported. For an optimal picture it is recommended to choose a mode listed in the table.
- There are 4 types of incoming display modes compatible with Windows as shown in the table above.
- Sometimes, the image may be disrupted due to the frequency standard from the VGA card. However, this is not an error. You may improve this situation by activating the automatic adjustment or by manually changing the phase and the clock settings in the menu.
- To extend the service life of the product, we recommend that you use your computer's power management function.

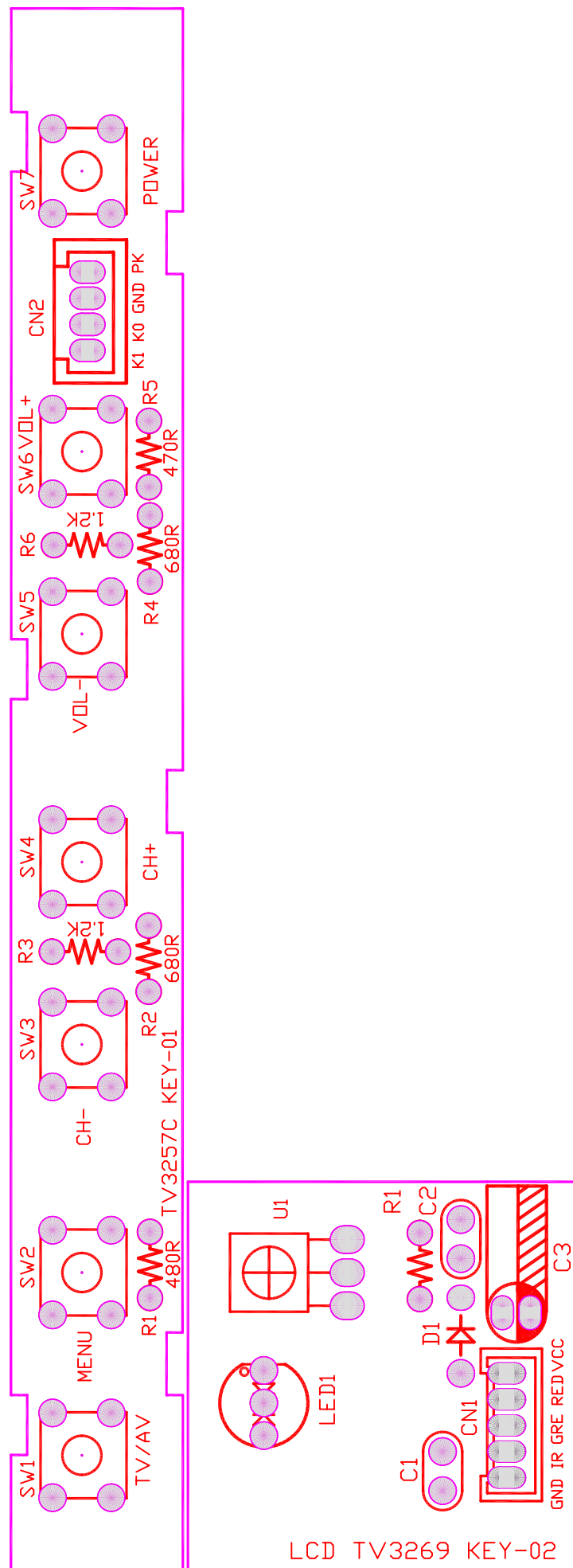
FEATURES

In the following table you will find the detailed features .

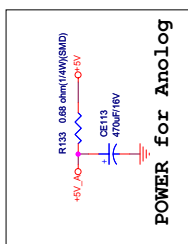
Video Input	ATV	Video System	PAL, SECAM
		Sound system	BG,.,DK,I,L/L'
		Max. Storage Channel	200 CH
	DVB-T	Tuner receiving range	VHF (174MHz – 230MHz) UHF (474MHz -862MHz)
		Input impedance	75 Ω
		Channel bandwidth	7MHz/8MHz
		Modulation	COFDM 2K/8K QPSK, 16QAM, 64QAM
		Video System	MPEG-2 MP@ML
		Sound System	MPEG-1 layer 1,2
		Basic Functions	EPG, Subtitle, Teletext (EURO),
	PC-RGB	Format	Up to1360x768@60Hz
	CVBS	1.0 V P-P+/-%	
	S-Video	S-Y:0.714 Vp-p+/-5%	S-C:0.286Vp-p+/-5%
	YPBPR/YCBCR	480i,480p,576i,576p,720p,1080i,1080p	
	HDMI	480i,480p,576i,576p,720p,1080i,1080p	
SCART	SCART1:Full SCART;SCART2:TV;Y/C SCART		
Audio Input	S-Video/CVBS/YUV	Left and right audio input terminal	
	PC-RGB	PC:audio input terminal	
Power	Requirement	24v,12v,5v	
	To Panel	12V	
	Management	Low power consumption mode; standby<1w	
OSD	English, French, italy		
Key Functions	Input/ Exit, Menu, VoL+/-,CH+/-,Standby-(Control by remote control)		
Audio Output	2x10W(8Ω) THD+N<10% (Power supply 12v)		
Panel	Up to 1920x1080		
Noise	Yes		
PIP/POP	No		
NICAM/A2	Yes		
TELETEXT	1000Pages		
Terminals	Input	TV Input	1 IEC75Ω
		PC-RGB Input	1 D-SUB 15Pin terminal(blue)
		S-Video Input	1 S-Video terminal(black)
		CVBS Input	1 RCA terminal(yellow)
		YPBPR Input	3 RCA terminals(green, blue, red)
		HDMI Input	2 HDMI terminals
		SCART	2 SCART terminals
		CVBS/YpbPr/S-Video Audio Input	2 RCA terminals(white, red)
		CI Input	1 SLOT
	PC-RGB Audio Input	1 PC audio terminal	
	output	Earphone output	1earphone terminal(black)

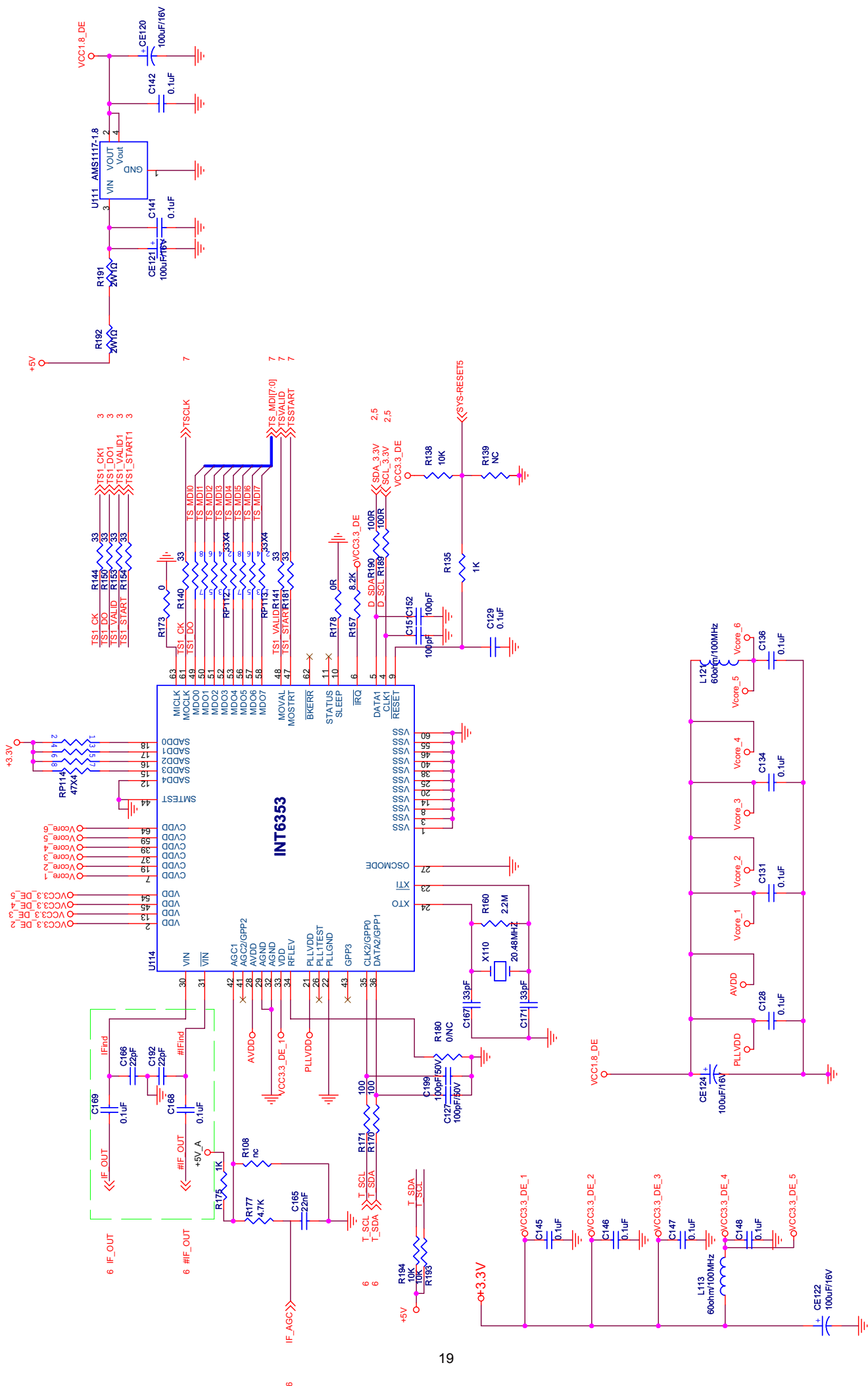
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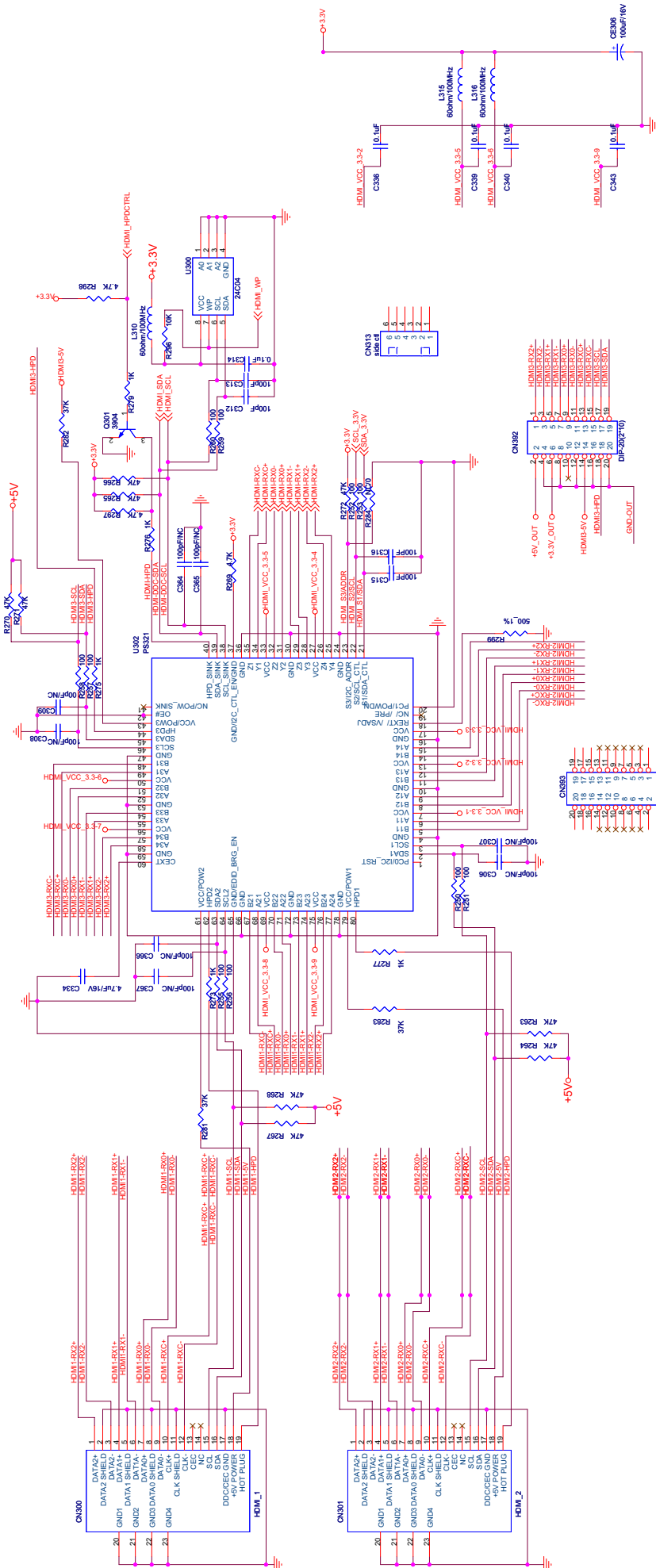
Function Keys/IR PCB

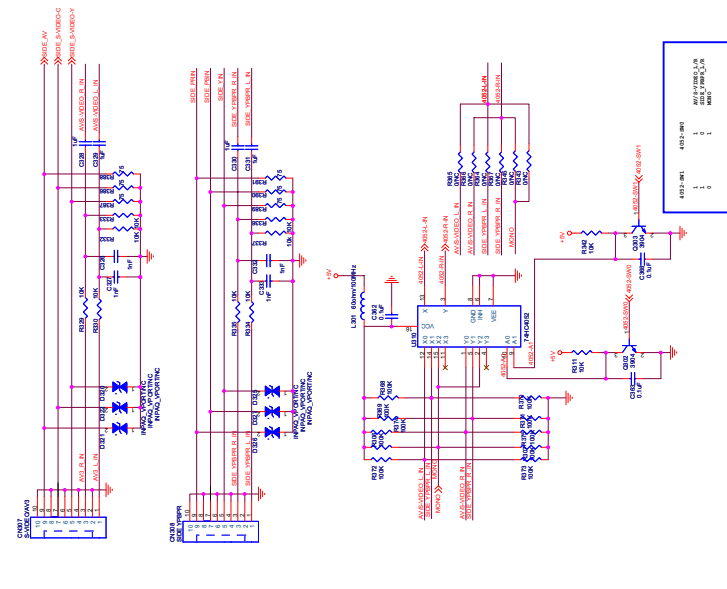
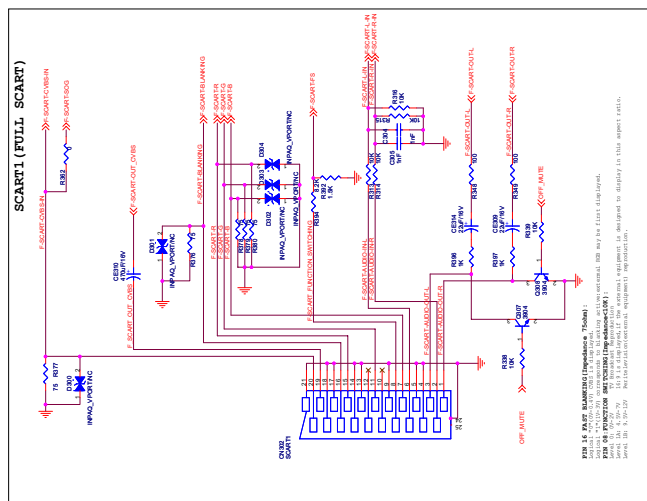
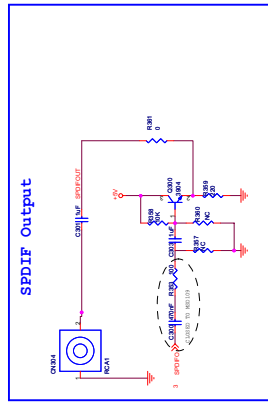
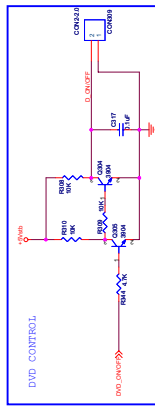
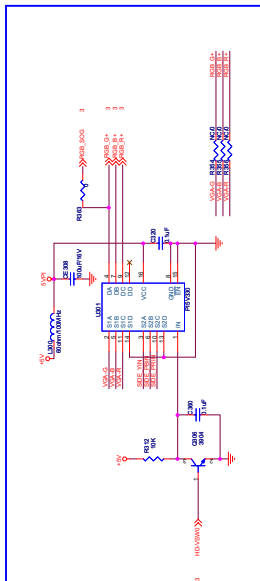
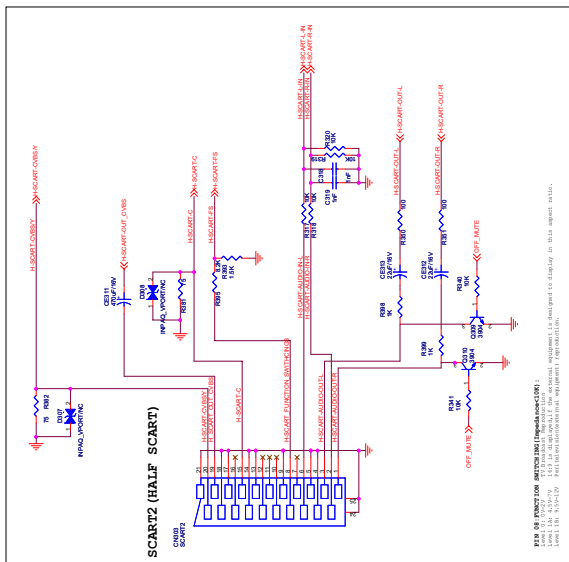
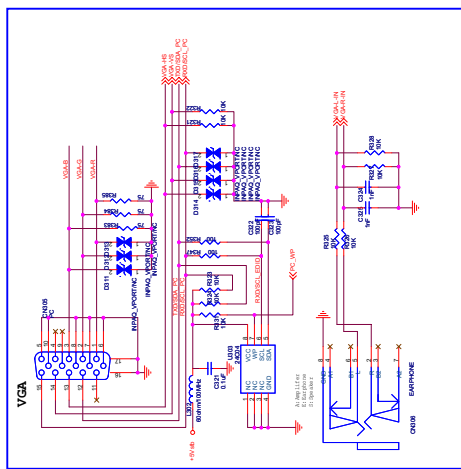


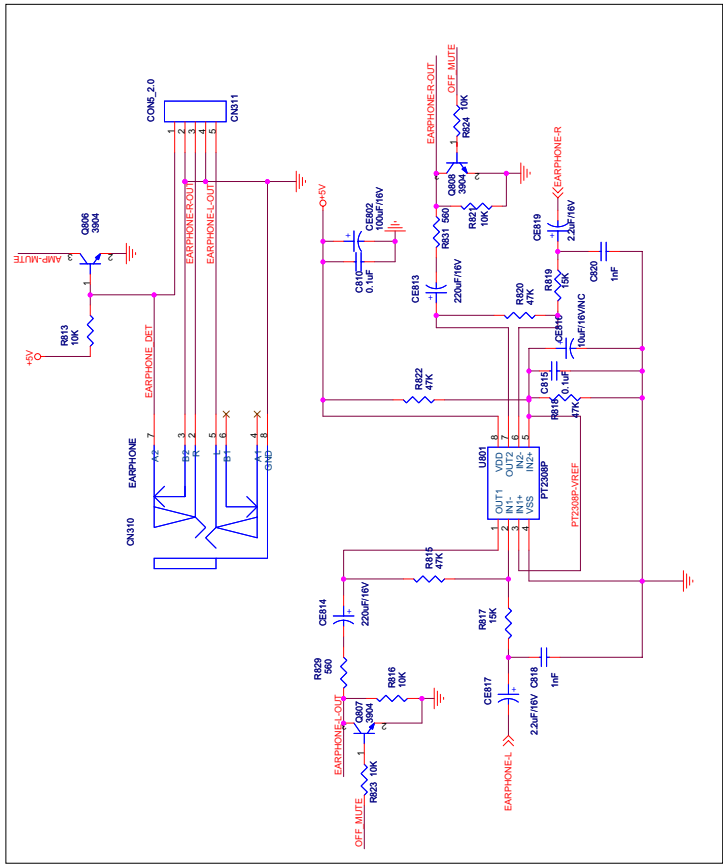
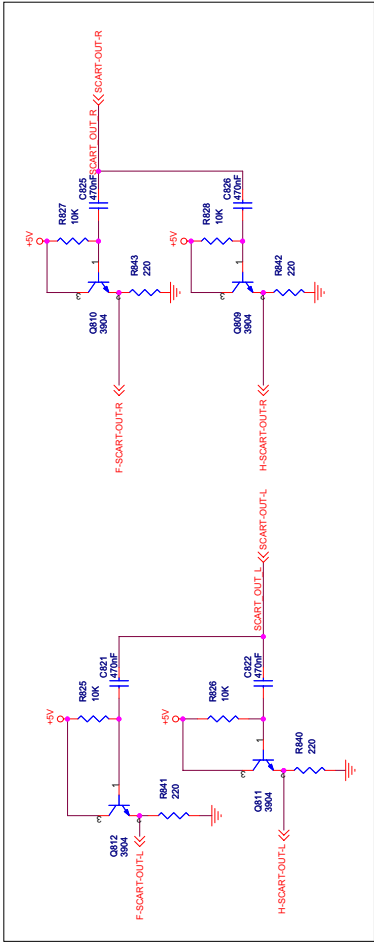
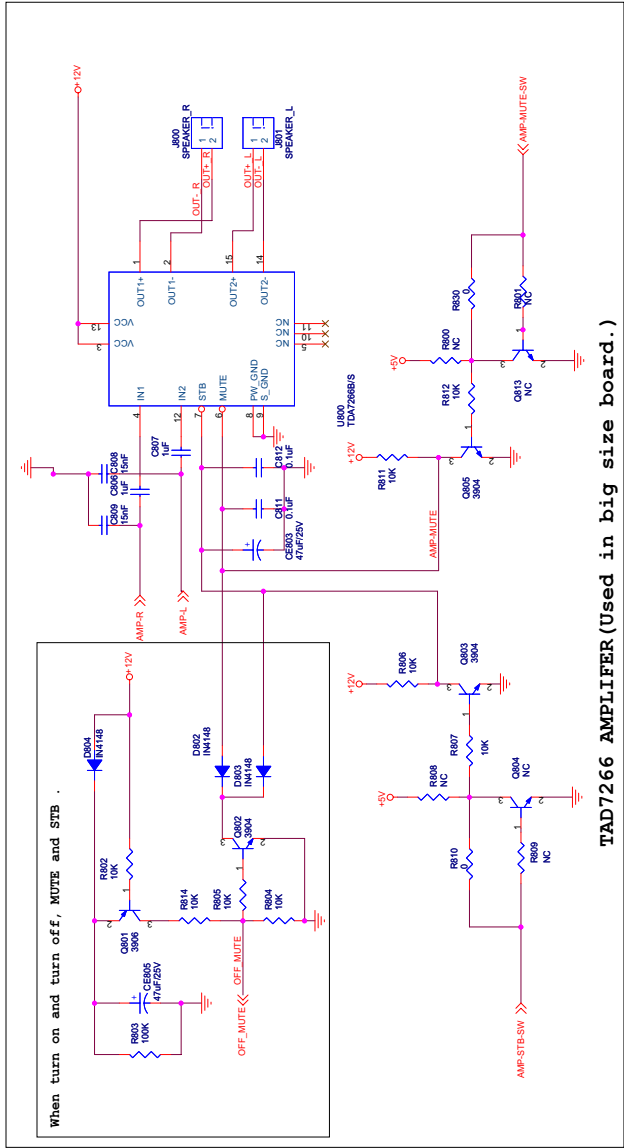


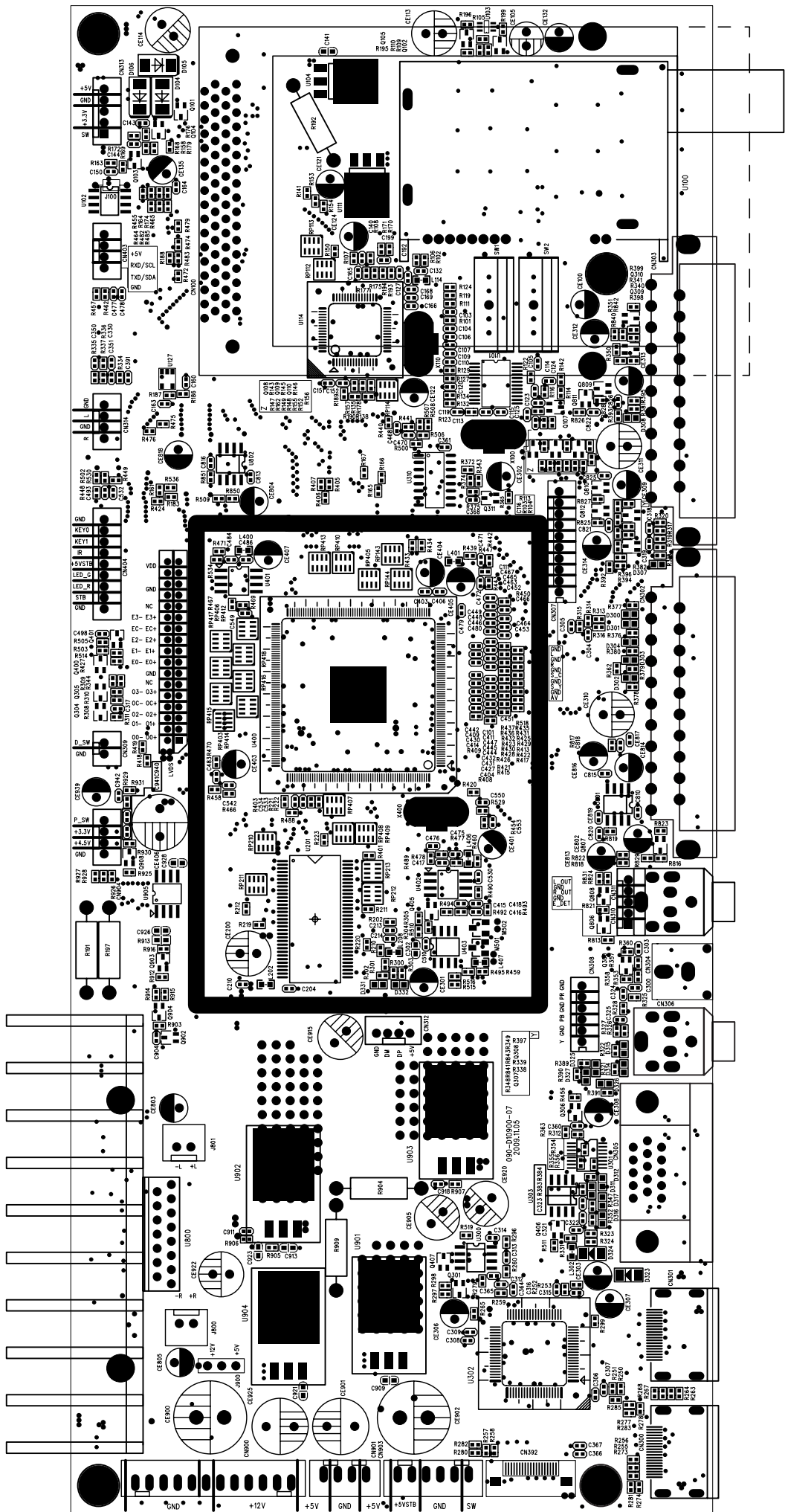
DDR-SDRAM DATA[15:0]

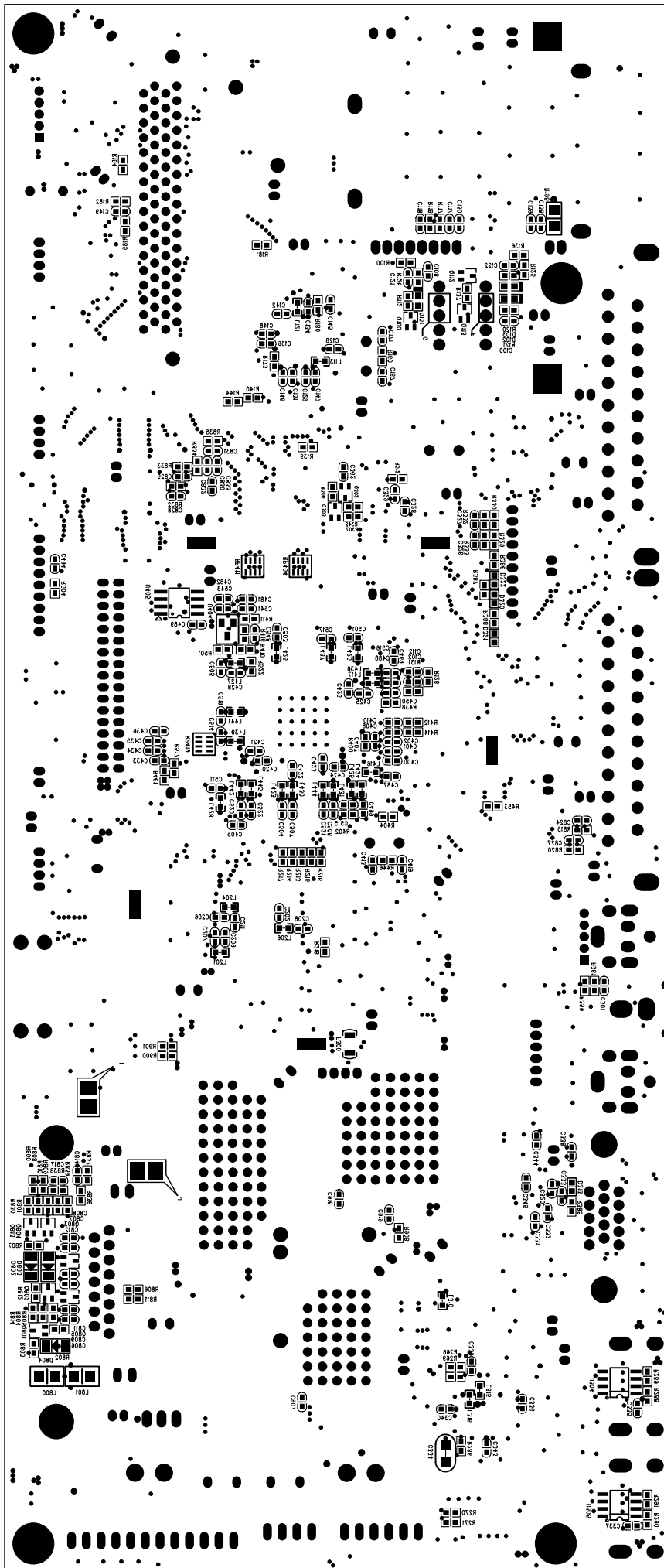


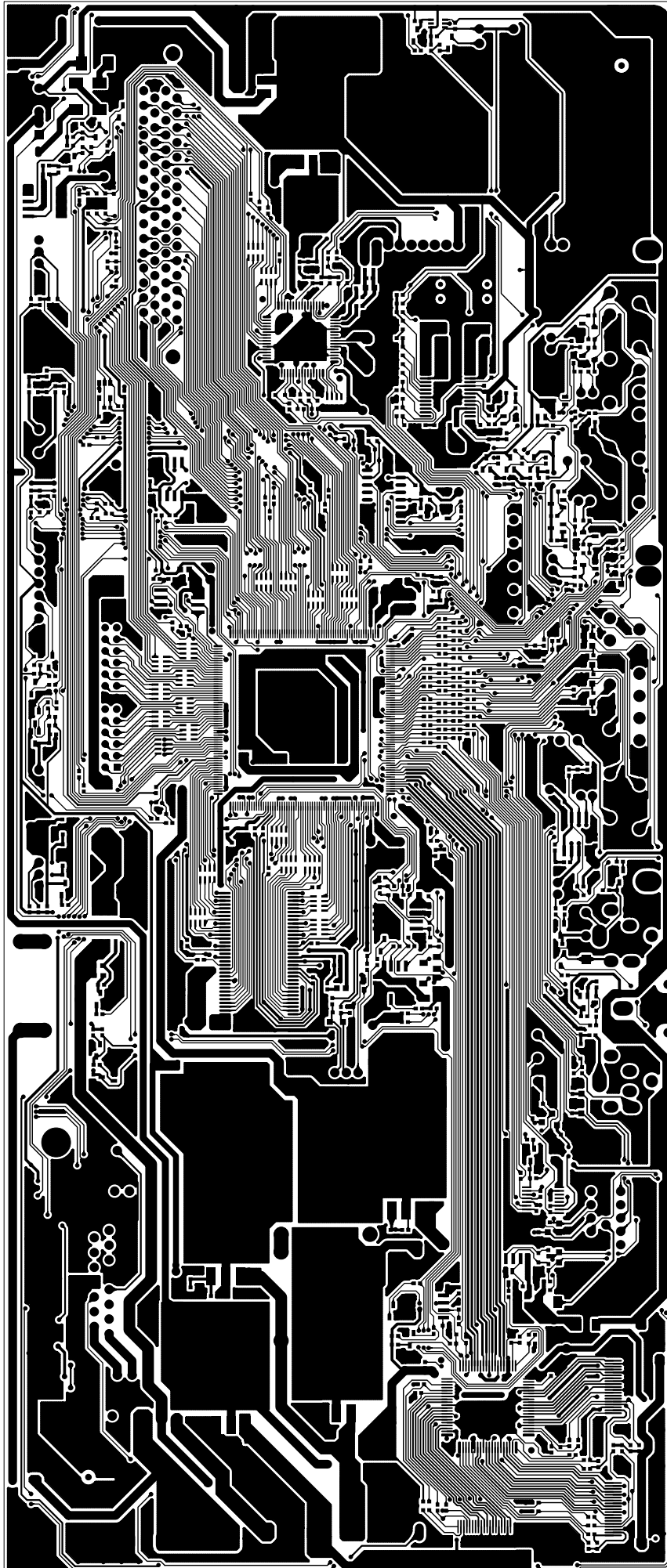


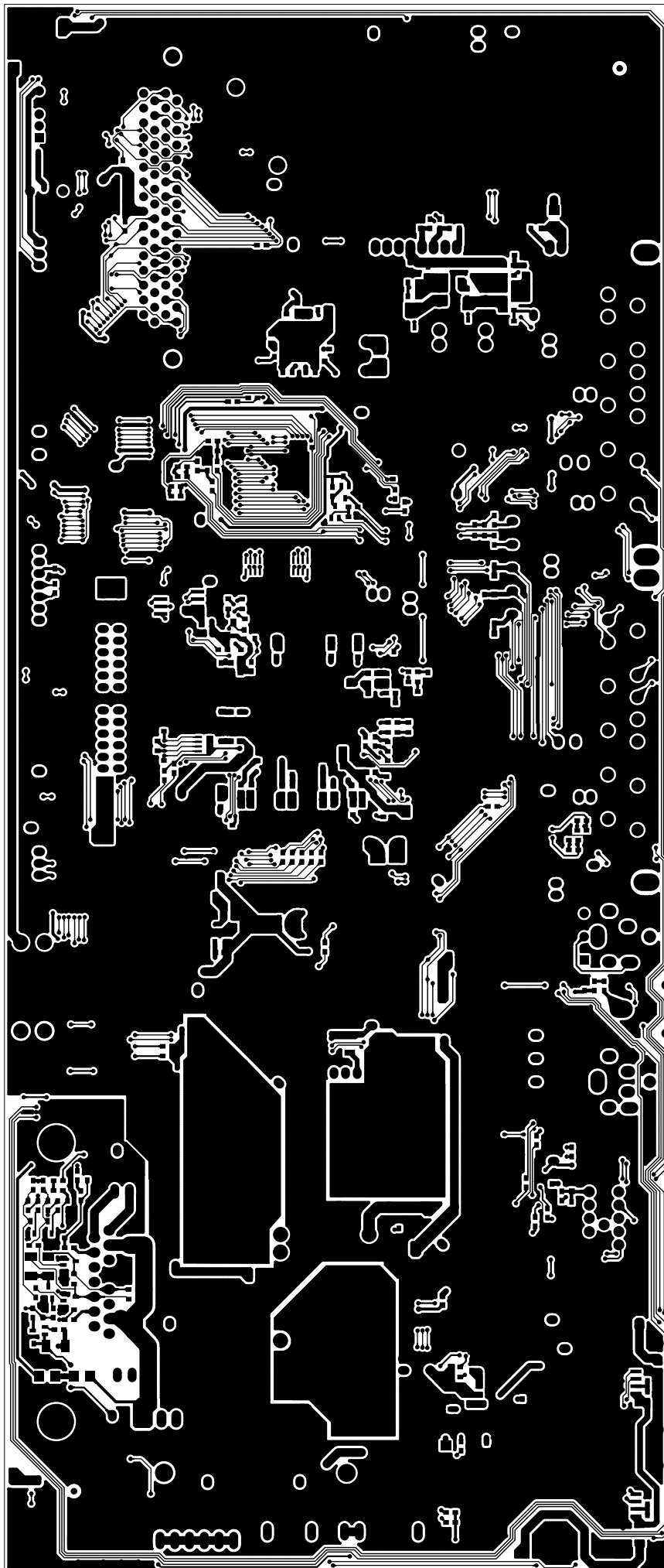


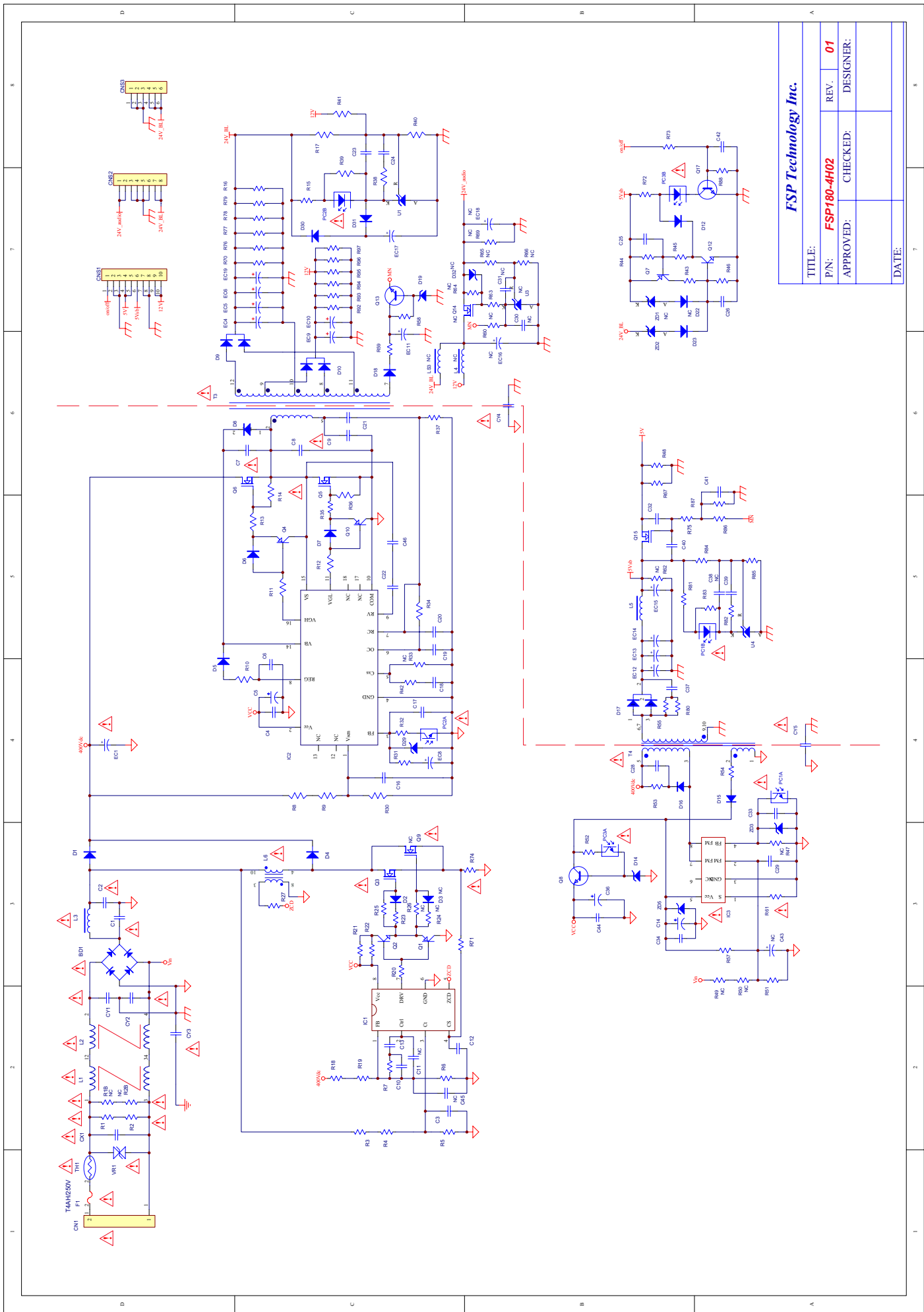




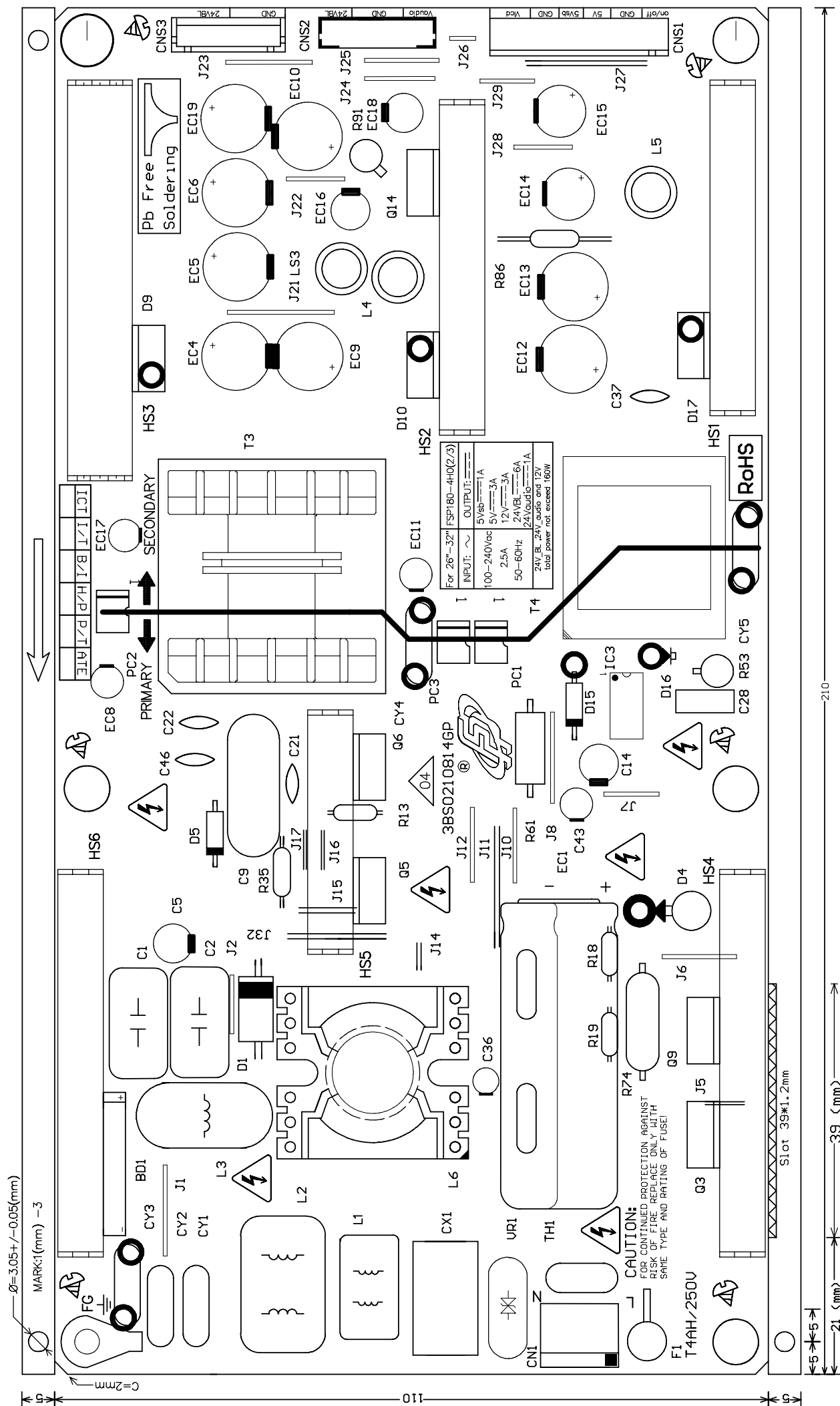


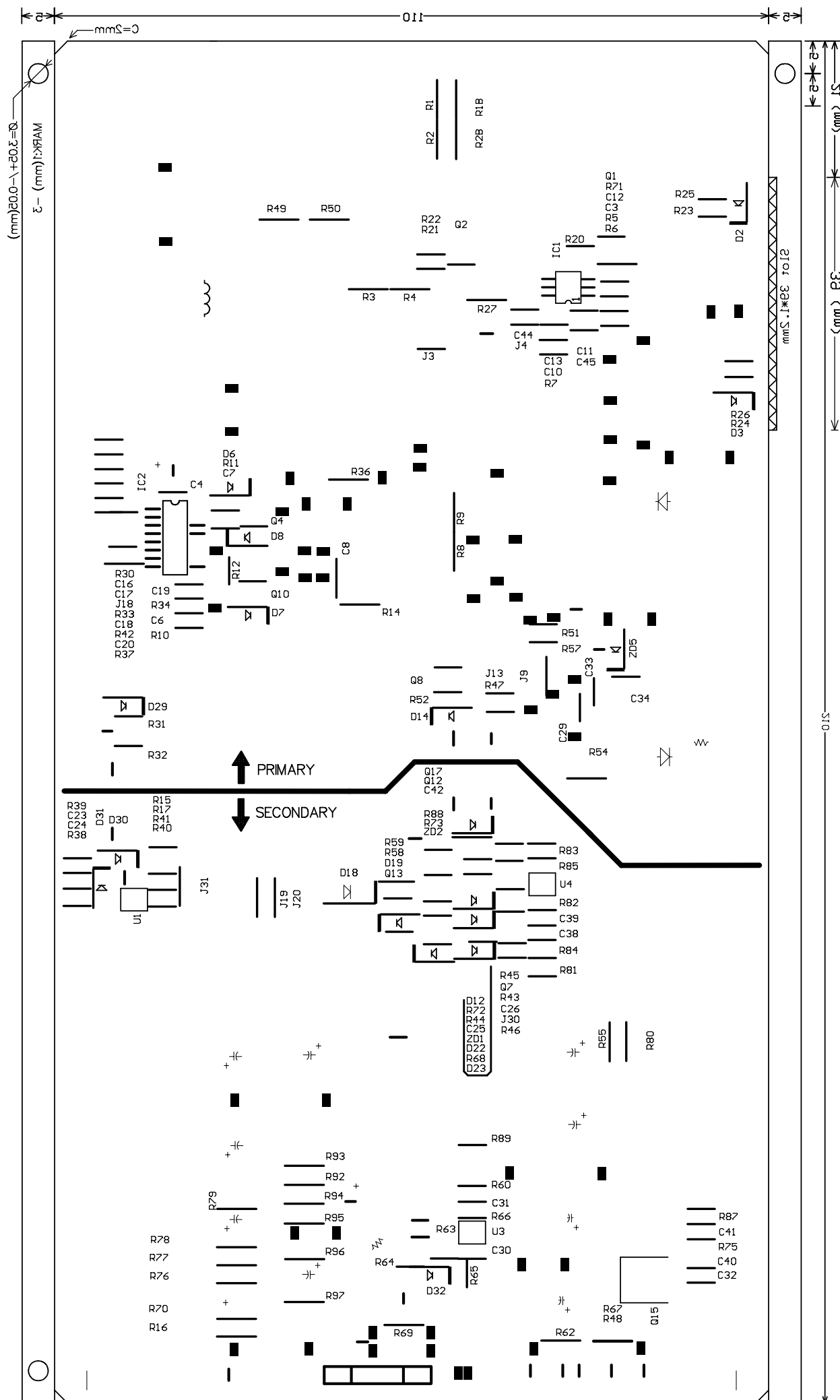


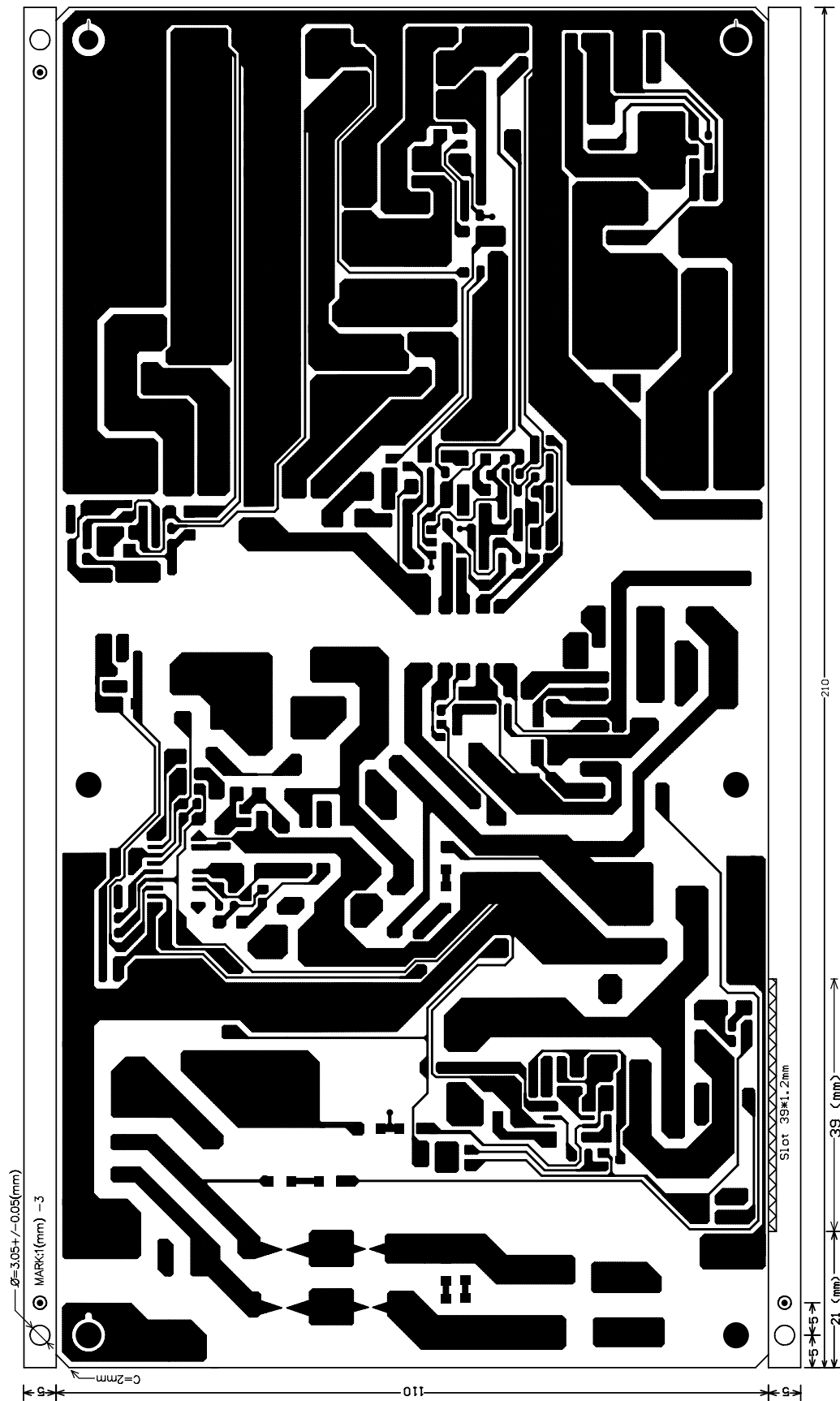


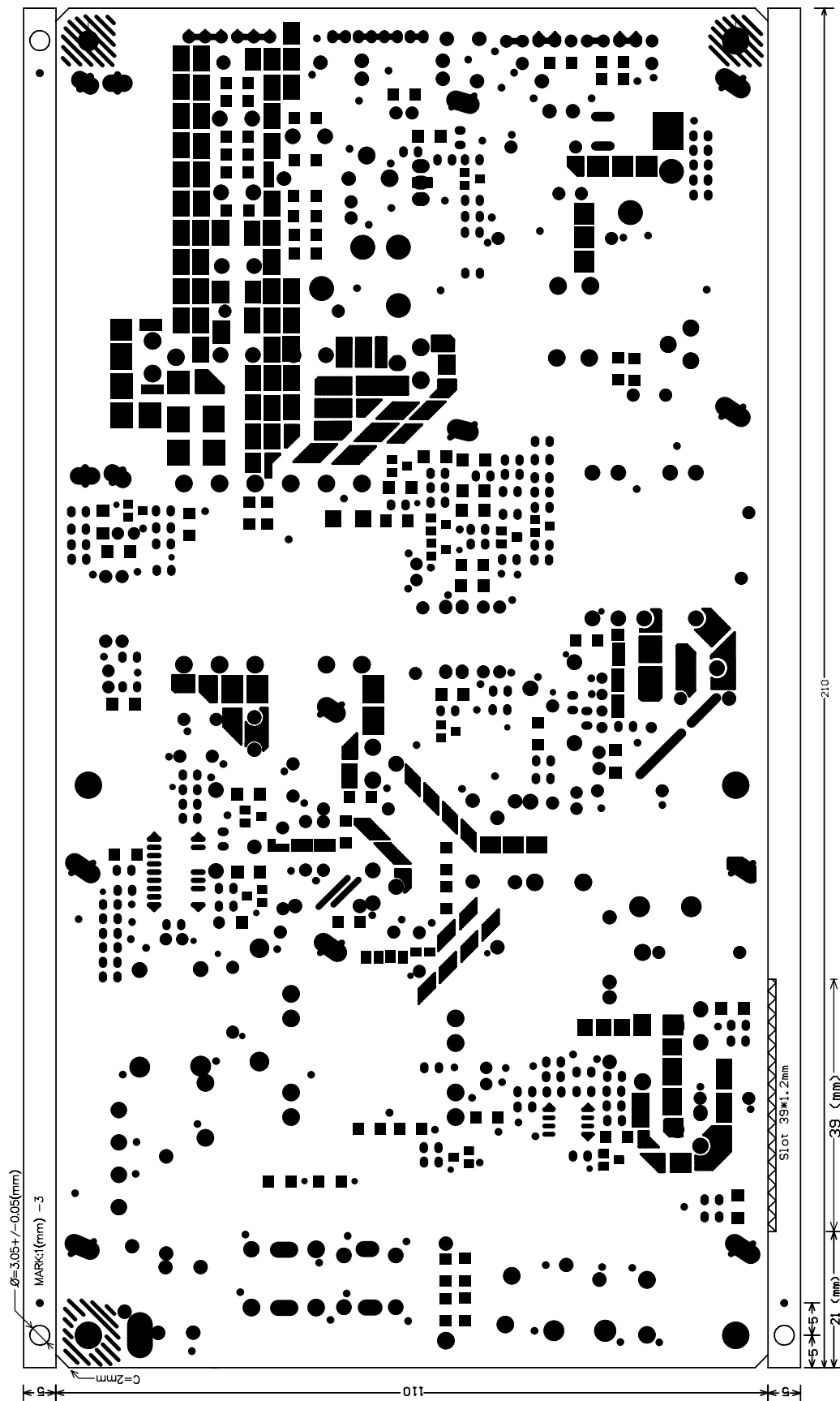


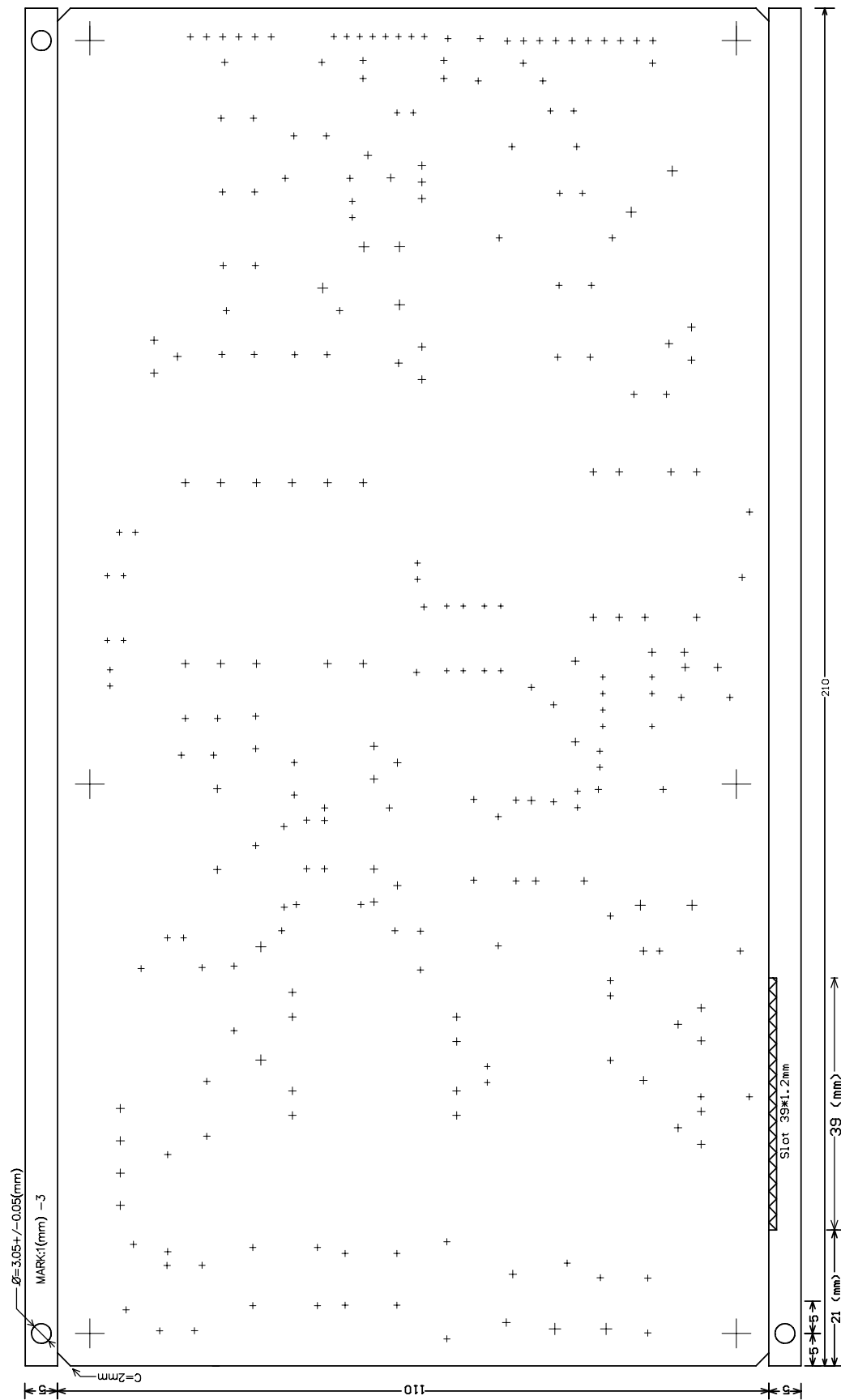
FSP Technology Inc.			
TITLE:	P/N: FSP180-4H02	REV: 01	DESIGNER:
APPROVED:	CHECKED:		
DATE:			

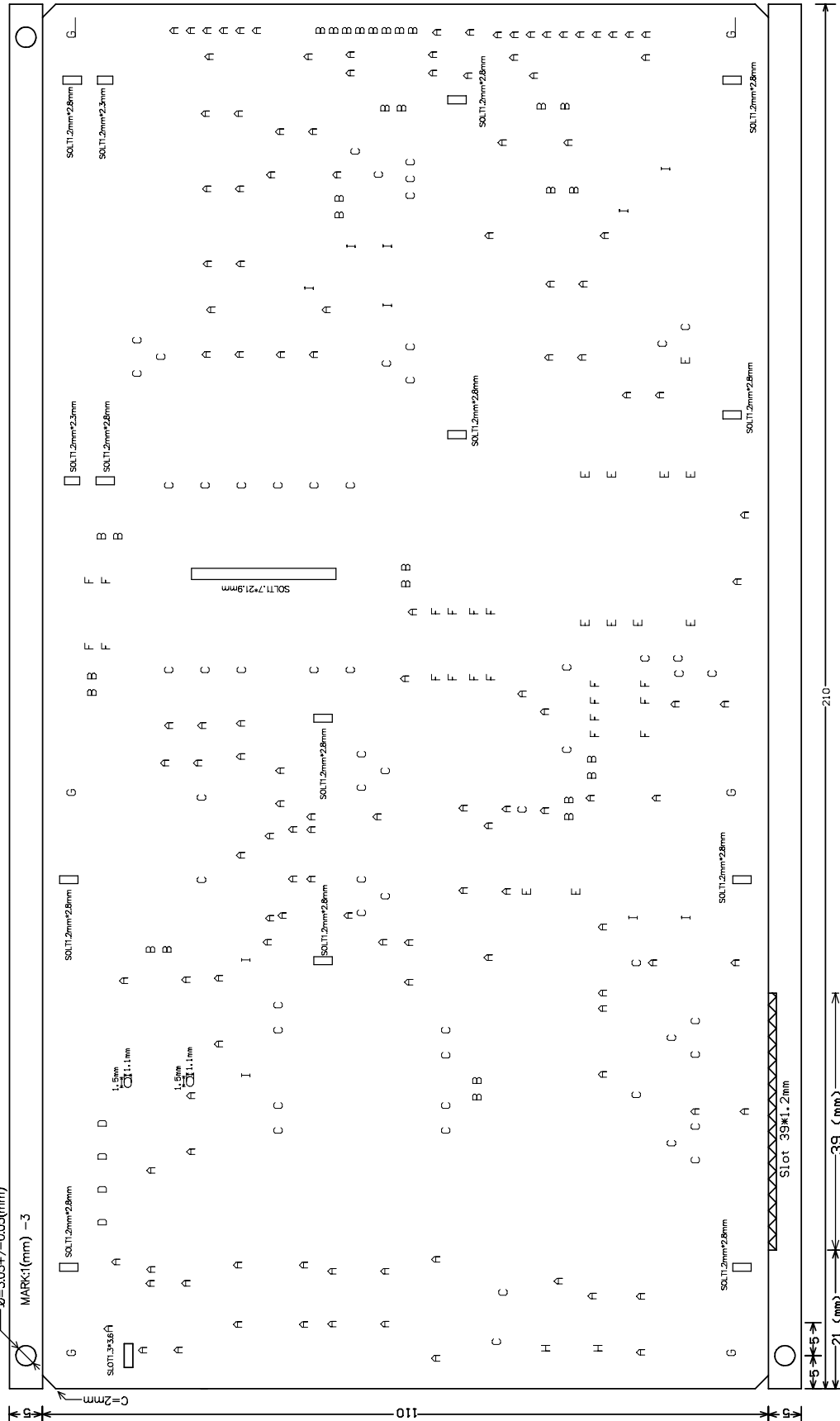










MARK:1(mm) -3

Electrical Specification

History

REV.	Description	Date	Drawn	Mechanical	Electrical	Approved
<u>01</u>	SPEC. ISSUE	Nov.28.'08	XiongC	HuYF	ZhouY	Tonyhsieh

Electrical Specification

Electrical Requirements

1. Input Characteristics:

ITEM	CONDITION	SPECIFICATION
1.1 Normal Rated Input Voltage		100Vac to 240Vac
1.2 Input Voltage Range		90Vac to 264Vac
1.3 Input Frequency Range		47Hz to 63Hz
1.4 Input Current Harmonic		EN61000-3-2 / GB17625.1 D
1.5 Input Current	100Vac / maximum load	≤3A
1.6 Inrush Current	100Vac / maximum load / 25°C 240Vac / maximum load / 25°C	50Amax 100Amax
1.7 Standby mode Load Power Consumption (Power Saving)	Input ac Voltage at 230V and the power of output is less than 0.4W (5Vsb/0.08A) , When ON/OFF is low or open.	≤1.0W
1.8 Efficiency	100Vac / maximum load 240Vac / maximum load	≥ 83% ≥ 85%
1.9 Remote ON/OFF control	Low or open (<0.5V) High (>2.5V)	Standby mode On mode

Electrical Specification

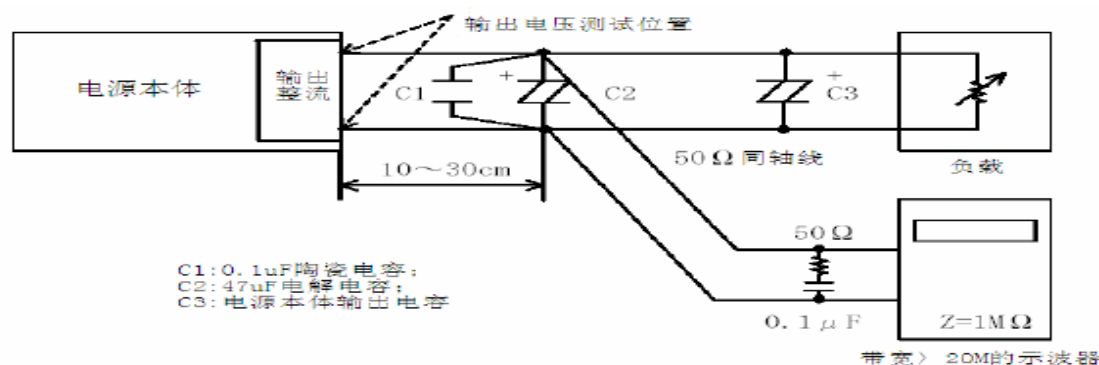
2. Output Characteristics:

ITEM				CONDITION			
2.1 Output Rated :(Standby mode) ON/OFF: Low or open(<0.5V)				Output current			
NO	Output	Output Voltage	Ripple & noise	Min.	Max.	Peak	
1	+5Vsb	4.75V – 5.25V	100mV	0.08A	1A	/	
2.2 Output Rated :(On mode) ON/OFF: High(>2.5V)				Output current			
NO	Output	Output Voltage	Ripple & noise	Min.	Max.	Peak	Total Continuous Power
1	+5Vsb	4.75V – 5.25V	100mV	0.08A	1A	/	24W Maximum 156W Maximum 180W Maximum
2	+5V	4.75V – 5.25V	100mV	0.1A	4A	/	
3	+12V	11.4V – 12.6V	150mV	0.1A	3A	/	
4	+24V_audio	22V – 26V	250mV	0.1A	1A	/	
5	+24V_BL	22.8V – 25.2V	250mV	0.1A	6A	7A	

Note:

- 1) Maximum continuous total DC output power will not exceed 180 watts.
- 2) +24V_BL and +24V_audio and +12V maximum continuous power will not exceed 156 watts.
- 3) The peak current or power should be test at other of dc output at rated load, And the peak current pulse width 100ms
- 4) Output Voltage Ripple and Noise Measurements shall be made with an oscilloscope with 20MHz bandwidth.
- 5) Outputs shall be bypassed at the connector with a 0.1uF ceramic capacitor and a 47uF electrolytic Capacitor to simulate system loading.

6) Output Voltage Ripple and Noise test condition: 100Vac,240Vac/full load,25°C.



电源输出电压、纹波噪声测试方法

2.6 Dynamic Load Change	0-50%-100%Load,50Hz-10KHz, S/R≥0.2A/usec	± 5%
	0-100%Load,50Hz-10KHz, S/R≥0.2A/usec	± 10%
2.7 Rise Time:	At full load, DC output voltage rise from 10% to 90% .	5Vsb ≤ 20mS
		5V ≤ 20mS
		12V ≤ 20mS
		24V_audio ≤ 50mS
		24V_BL ≤ 50mS
2.8 Start-up Time	Applied the AC input voltage is 230Vac and output load is maximum load, output voltage shall remain regulation.	≤ 2000mS
2.9 Overshoot	Turn on (all of dc output current from min. to max.) Turn off (all of dc output current from min. to max.)	5%

MODEL NO. **FSP180-4H02**

SHEET 3 OF 6

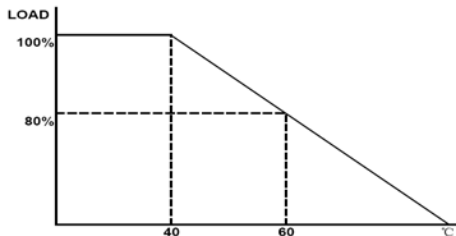
Electrical Specification

3. Protection Characteristics:

ITEM	CONDITION	SPECIFICATION
3.1 Short Circuit Protection (SCP):	The PSU will enter into shut down that means no output while short circuit happened at output terminal.	Auto-recovery or latch off
3.2 Over-Voltage Protection (OVP):	The PSU will enter into shut down while the abnormal thermal rise occurs. It will enter into normal condition if the fault condition is removed.	No broken, no smoke.
3.3 Over Circuit Protection(OCP):	When an internal fault occurs, or an external fault is applied to the PSU, such that an overload is applied to the output, the PSU shall shut down. It will enter into normal condition if the fault condition is removed.	Auto-recovery or latch off

Electrical Specification

4. Environmental Characteristics:

ITEM	CONDITION	SPECIFICATION
4.1 Electric Fast Transients: Refer to EN61000-4-4	Impulse: $\pm 1\text{KV}$ applied to AC line , pulse Duration 50nS period 5 min	Normal operation shall be Continued.
4.2 Lightning Surge: Refer to EN61000-4-5	$\pm 2\text{KV}$ applied between L and FG, N and FG , L,N and FG ,pulse rise time 1.2us and duty time 50uS $\pm 1\text{KV}$ applied between Land N , pulse rise time 1.2us and duty time 50uS	No smoking and fire. No components damaged.
4.3 Electron Static Discharge: (Refer to EN61000-4-2 Energy Storage Capacitor 150pF;Discharge Resistor 330ohm)	Air Discharge: $\pm 8\text{KV}$ min. Contact Discharge: $\pm 6\text{KV}$ min. (Note : combine with customer's system)	Test with system.
4.4 Cooling	Natural air cooling	Normal operation shall be Continued.
4.5 EMI: EMI Conducted Emission EMI Radiated Emission	Test with system	CLASS B
4.6 Safety conforming:	EN60065 GB8898 & GB4943	
4.7 Leakage Current:	230Vac / 50Hz	$\leq 0.75\text{mA}$
4.8 Insulation Resistance:	Between Primary to Secondary circuit; Between Primary to Ground;	$\geq 50\text{M}\Omega$ @25°C $\geq 50\text{M}\Omega$ @25°C
4.9 Dielectric Strength: (Hi-Pot)	3000Vac, 10mA, 1 minute sec between Primary to Secondary circuit; 1500Vac, 10mA, 1 minute sec between Primary to Ground	
4.10 Operation Temperature:	0 to 40°C no derating . Above 40°C, derate at 1% per degree form 41 to 60°C. 	At 100% load: 0 to 40°C. Derate linearly form 41 to 60°C to 80% power at 60°C.
4.11 Storage Temperature		-20 to +70°C
4.12 Humidity	Operating Storage	10% - 80% 10% - 90%

MODEL NO. **FSP180-4H02**SHEET 5 OF 6

Electrical Specification

5.Mechanical Characteristics:

ITEM	CONDITION	SPECIFICATION
5.1 Dimension (Length x Width x Height)		210x110x28.5 mm
5.2 Input AC connector (CN1)	CN1	A3963WV2-3P-D 2PIN

5.3 Output DC connector

CNS1 (A2501WV2-10P or EQU)

- pin 1: ON/OFF
- pin 2: GND
- pin 3: GND
- pin 4: +5.2V
- pin 5: +5.2V
- pin 6: +5.2Vsb
- pin 7: GND
- pin 8: GND
- pin 9: 12V
- pin 10: 12V

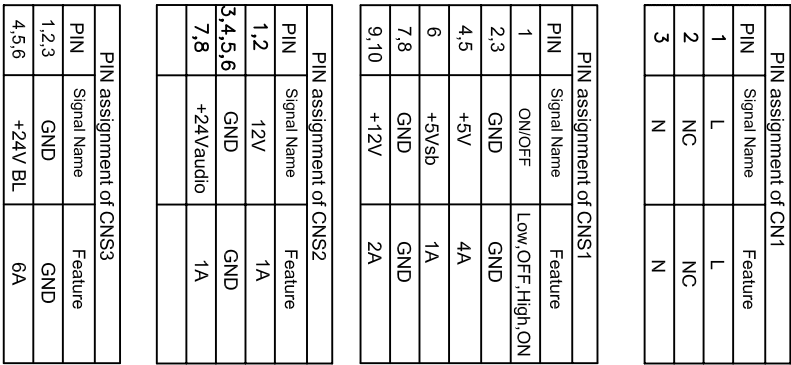
CNS3 (A2501WV2-6P or EQU)

- pin 1: GND
- pin 2: GND
- pin 3: GND
- pin 4: 24V_BL
- pin 5: 24V_BL
- pin 6: 24V_BL

CNS2 (A2001WV2-8P or EQU)

- pin 1: 12V
- pin 2: 12V
- pin 3: GND
- pin 4: GND
- pin 5: GND
- pin 6: GND
- pin 7: 24V_audio
- pin 8: 24V_audio

REV.	DATE	ECO NO.	REVISION	SIGNED	CHECKED
	● ●				
	● ●				



公称尺寸	15以下	15—25	25以上
未注公差	±0.1	±0.15	±0.2

Mechanical Drawing (外觀/機構圖) 表單編號: 7000P-0111

1. GENERAL DESCRIPTION

8M06-06B is a multi-purpose LCD/PDP TV control board; it supports LCD panels between 26" -- 56" and PDP panels with single/dual LVDS interface. It supports resolution up to 1920x1080.

8M06-06B supports DVB-T, dual HDMI, dual SCART, CVBS, PC, YPbPr, S-Video, Analog TV. It includes an audio amplifier which can support 2X10W (8Ω) output.

8M06-06B supports HDMI1.3A. Spatial Noise reduction, FULL HD panels.

8M06-06B provides extended functions such as DVD, Card reader.

2. FEATURES

CHIPSET	MSD109		
MARKET AREA	PAN EUROPE, UK		
OSD LANGUAGE	English, French, German, Italian, Spanish, Portuguese (Option)		
PANEL	Panel Type	LCD/PDP	
	Interface	Dual/Single LVDS interface	
	Resolution	Up to 1920x1080	
TV INPUT	ATV	Tuner receiving range	44MHz - 863MHz
		Input impedance	75Ω
		Video System	PAL, SECAM, NTSC
		Sound System	BG, DK, I, M
			NICAM/A2
		Max.Storage Channels	199CH
		Colour Killer level	≅ 30dBuV
		Teletext error sensitivity	≅ 50dBuV
		NICAM sensitivity	≅ 45dBuV
	DVB-T	Tuner receiving range	VHF (174MHz - 230MHz)
			UHF (474MHz - 862MHz)
		Input impedance	75Ω
		Channel bandwidth	7MHz/8MHz
		Modulation	COFDM 2K/8K QPSK, 16QAM, 64QAM
		Video System	MPEG-2 MP@ML
		Sound System	MPEG-1 layer 1,2
		Basic Functions	EPG, Subtitle, Teletext (EURO), MHEG-5(UK)
		Common Interface	Support
VIDEO INPUT	PC-RGB	Format	Up to 1920x1080@60Hz
	CVBS	Video System	PAL/NTSC/SECAM
		Video level	1.0 Vp-p ±5%
	S-VIDEO	S-Y:0.7 Vp-p: ±5% S-C:0.3 Vp-p: ±5%	
	YPbPr/YCbCr	480i, 480p, 576i, 576p, 720p, 1080i, 1080p	
	HDMI		
AUDIO INPUT	SCART	SCART1: CVBS & RGB SCART2: CVBS & YC	
	PC-RGB	Earphone input	0.5 Vrms

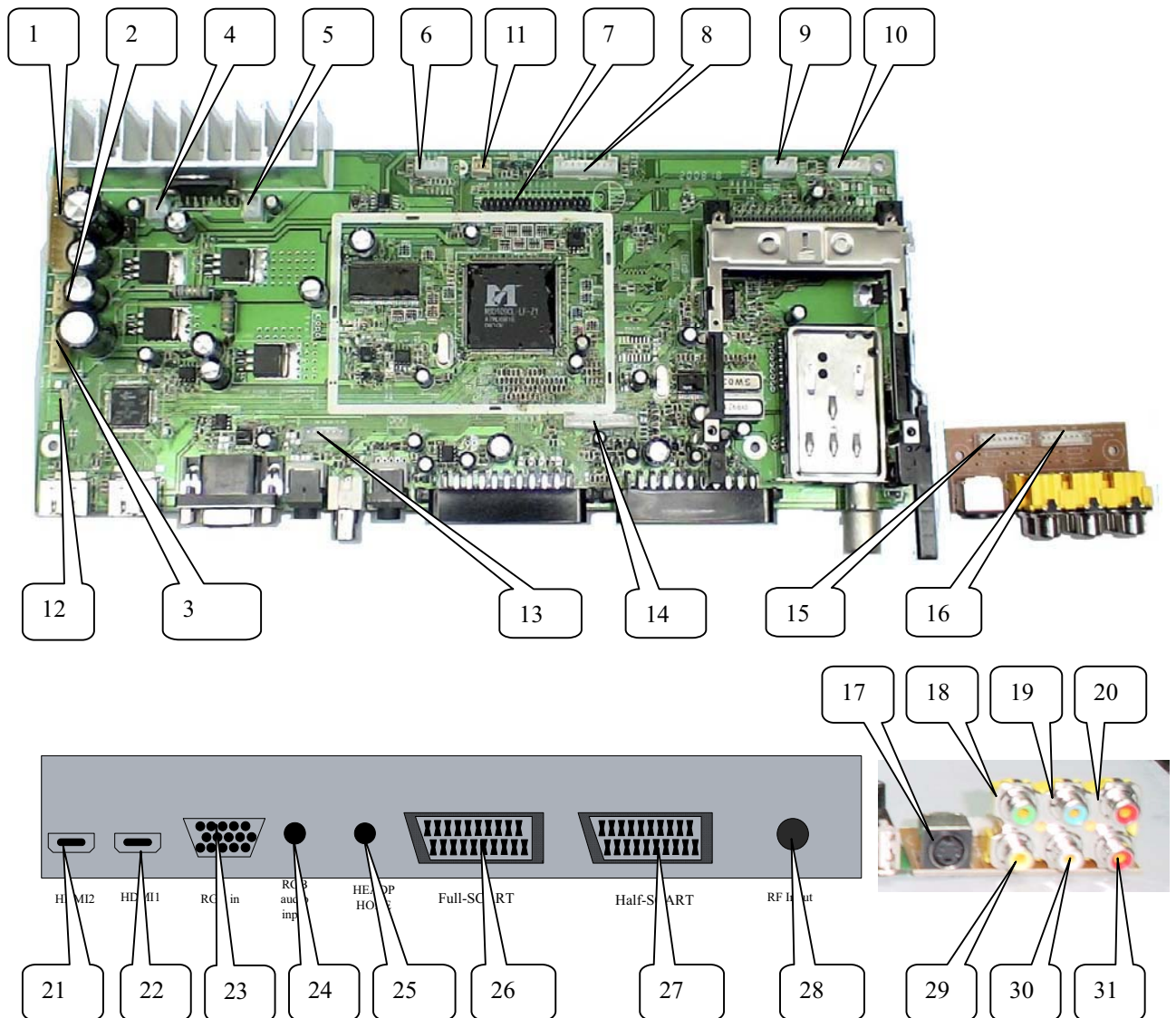
Control board Specification

	CVBS	L/R RCA input	0.5 Vrms
	S-VIDEO		
	YPbPr/YCbCr		
VIDEO OUTPUT	CVBS	Video System	PAL/NTSC/SECAM
		Video level	1.0 Vp-p ±5%
AUDIO OUTPUT	Frequency response	100Hz - 10000Hz @±3dB (1KHz 0dB reference signal)	
	Max Output power	2x10 W(8Ω) THD+N<10%	
	CVBS	Audio level	1.0 Vrms
	EARPHONE	Rating 2 X 1.5mW (36Ω load)	
POWER	Requirement	24V, 12V/2A, 5V/2A, STB5V/2A	
	To Panel	5V, 12V	
3:2/2:2 pull down/film mode	Yes		
Picture Freeze	Yes		
COMB FILTER	3D		
DEINTERLACE	3D		
WEAK SIGNAL ENHANCEMENT	Yes		
NOICE REDUCTION	Yes		
NICAM/A2	Yes		
TELETEXT	1000Pages		
Sound effect	Music -Theater- equalizer -standard		
KEY FUNCTION	MENU, CH+, CH-, VOL+, VOL-, INPUT, POWER		
EXPANSIBLE MODULES	DVD, CARD/USB READER		
TERMINALS	INPUT	TV	1 IEC 75Ω
		PC-RGB	1 D-SUB 15Pin terminal(blue)
		CVBS	1 RCA terminal(yellow)
		SCART	2 SCART terminals
		HDMI	2 DMI terminals
		YPbPr	3 RCA terminals(Green, Blue, Red)
		S-VIDEO	1 S-Video terminal(black)
		USB	1 terminals
		CVBS1 AUDIO	2 RCA terminals(white, red)
		YPBPR AUDIO	
		S-VIDEO AUDIO	
		PC-RGB AUDIO	1 Earphone terminal(black)

3. FUNCTION LAYOUT

TOP VIEW OF LCD CONTROL BOARD

NOTE: The optional connectors and terminals are marked with “*”.



INTERFACE FUNCTION DESCRIPTION

NOTE: The optional connectors and terminals are marked with “*”.

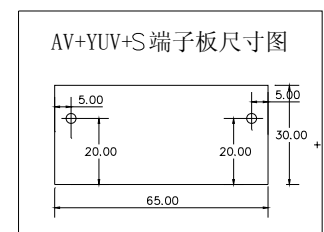
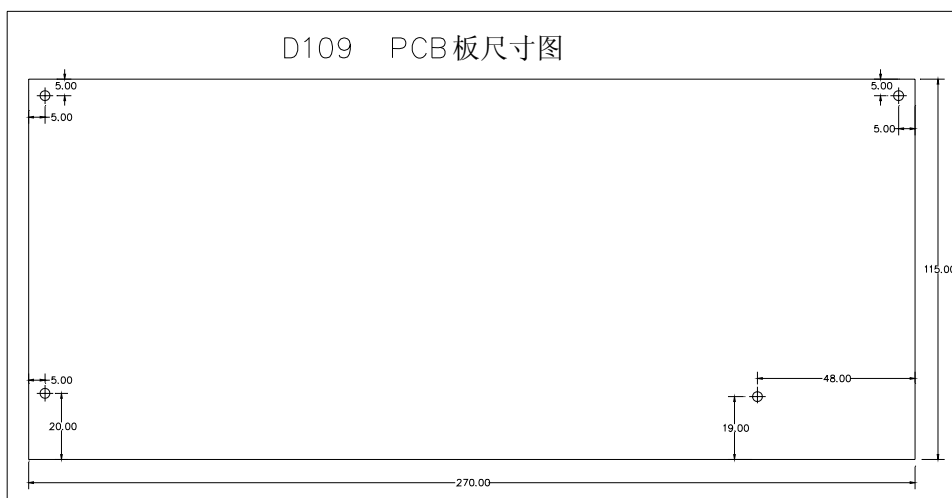
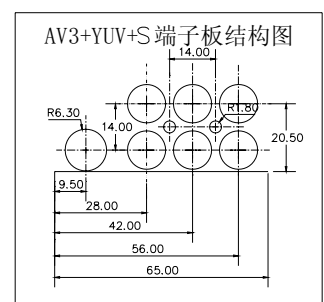
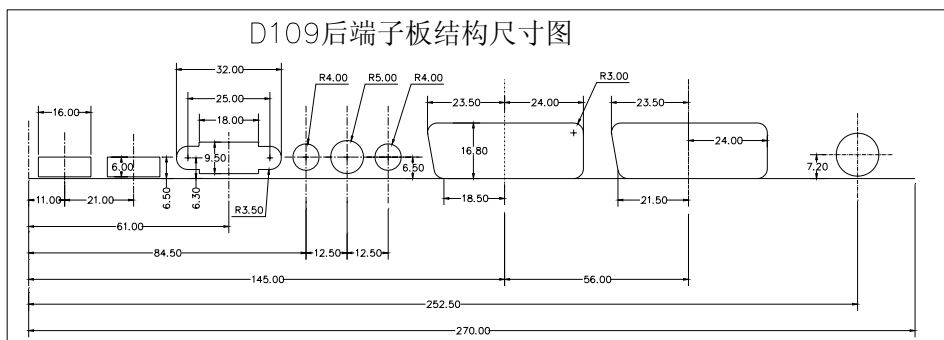
NO.	DESCRIPTION	NO.	DESCRIPTION
1 (CN900)	Power Supply Connector	17	S-VIDEO Input
2 (CN901)	Power Supply Connector	18	Component-Y Input
3 (CN902)	Power Supply Connector	19	Component-Pb Input
4 (J800)	Speaker Connector (Right)	20	Component-Pr Input
5 (J801)	Speaker Connector (Left)	21	HDMI2 Input

Control board Specification

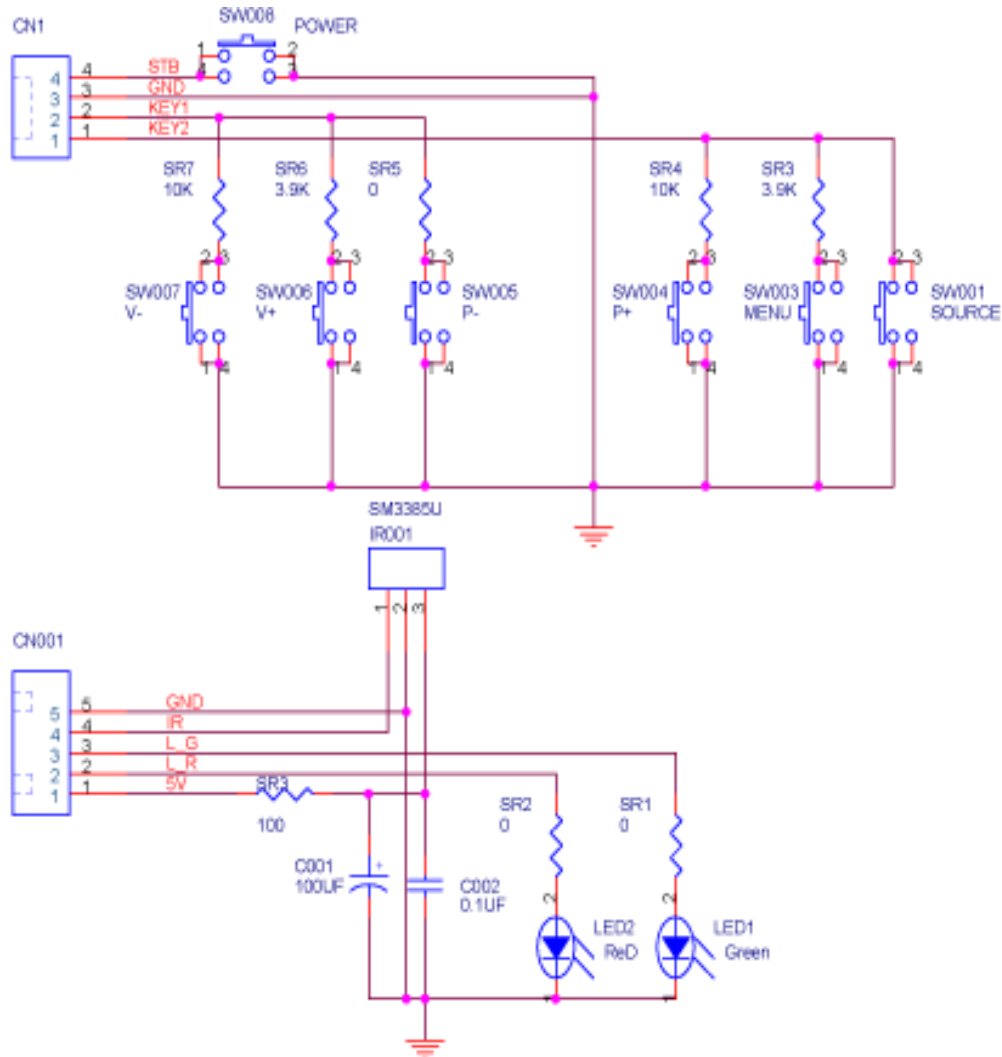
6(CN904)	Inverter Connector	22	HDMI1 Input
7(LVDS)	LVDS Panel Connector	23	PC-RGB Input
8(CN404)	Key Board & IR Receiver Connector	24	PC-Audio Input
9(CN403)	Debugging Interface	25	PC-Audio Input
10(CN313)	Side HDMI expandable board	26	FULL-SCART
11(CN309)	Expandable DVD Combo	27	HALF-SCART
12(CN392)	External HDMI Connector	28	RF Input
13(CN308)	Expandable YPbPr input	29	CVBS Input
14(CN307)	Expandable AV and S-video input	30	CVBS/YPbPr Audio (Left) Input
15(CN4)	Side S-video and audio	31	CVBS/YPbPr Audio (Right) Input
16(CN3)	Side AV and YPbPr		

4. PCB DIMENSION

The height of the control board is 27.0 mm.



5. KEY BOARD AND IR BOARD SCHEMATICS



6. INTERFACE DEFINITION

- CN900: (to power supply board, 12V input of main board)

NO.	SYMBOL	DESCRIPTION	NO.	SYMBOL	DESCRIPTION
1	GND		7	+12V	Power for the main board, Maximum load current:4A
2	GND		8	+12V	
3	GND		9	+12V	
4	GND		10	+12V	
5	GND		11	+12V	
6	GND		12	+12V	

- CN901: (to power supply board)

NO.	SYMBOL	DESCRIPTION
1	5V	+5V power for main board
2	GND	
3	GND	
4	5V	Power input for panel

- CN902: (to power supply board, +5V standby power of main board)

NO.	SYMBOL	DESCRIPTION
1	STB	Voltage of Standby Control
2	GND	
3	GND	
4	GND	
5	5V_STB	Power for standby, Maximum load current: 2A
6	5V_STB	

- CN404: (to key and IR board)

NO.	SYMBOL	DESCRIPTION	NO.	SYMBOL	DESCRIPTION
1	GND		6	IR	IR signal in
2	POWER	Standby key input	7	KEY2	Ch+, menu, source key
3	LED_R	R led output	8	KEY1	Ch-, Vol+, Vol- key
4	LED_G	G led output	9	GND	
5	+5V_STB	Power for IR and key			

- CN403: (DEBUG PORT)

No.	Name	Description
1	GND	
2	RX	
3	TX	
4	+5V	

- CN309: (Expandable side YPBPR)

No.	Name	Description
1	YUV_Y	Side YUV-Y in
2	GND	
3	YUV_PB	Side YUV-PB in
4	GND	
5	YUV_PR	Side YUV-PR in
6	GND	

● CN307: (Side-YC+AV expandable board)

No.	Name	Description
1	SIDE_AV	Side AV in
2	GND	
3	SIDE_Y	Side S_video Y in
4	GND	
5	SIDE_C	Side s_video c in
6	GND	
7	AV_R	Side AV audio R in
8	GND	
9	AV_L	Side AV audio L in
10	GND	

● CN904: (to panel inverter, control signal)

No.	Name	Description
1	GND	
2	4.5V	Output for Select
3	3.3V	Output for Select
4	INV_SW	Inverter on/off +5V on; 0V off;

● J800: (Right audio speaker output)

No.	Name	Description
1	R-	GND
2	R+	

● J801: (Left audio speaker output)

No.	Name	Description
1	L+	
2	L-	GND

● CN1: (Side HDMI expandable board)

No.	Name	Description
1	SW	
2	GND	
3	GND	
4	+3.3V	
5	+5V	

● CN309: (Side DVD CONTROL)

No.	Name	Description
1	GND	
2	D_SW	+5V ON; 0V OFF

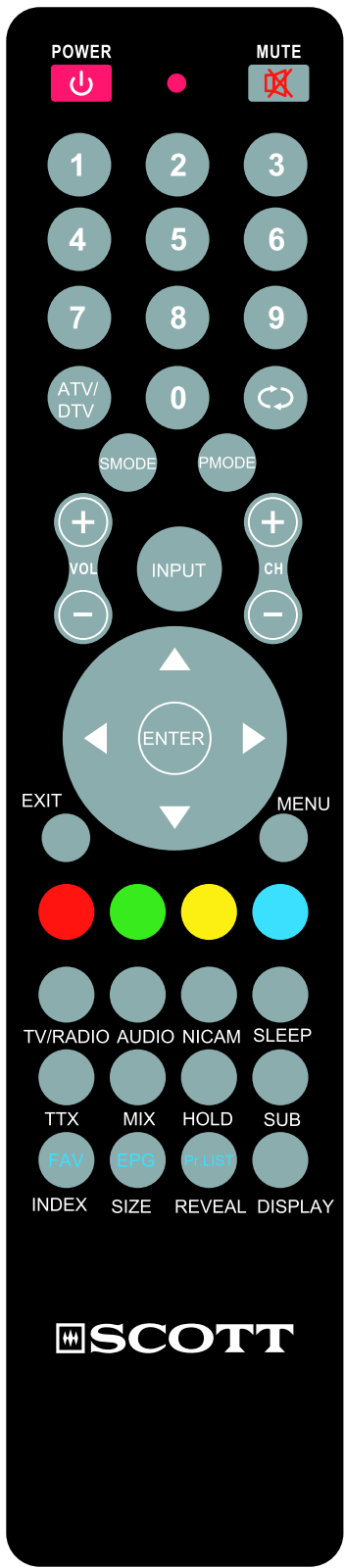
5 ● LVDS: (connect to panel signal input port)

No.	Name	Description	No.	Name	Description
1	00+		18	E1-	
2	00-		19	E2+	
3	01+		20	E2-	
4	01-		21	EC+	
5	02+		22	EC-	
6	02-		23	E3+	
7	0C+		24	E3-	
8	0C-		25	NC	
9	03+		26	NC	
10	03-		27	GND	
11	NC		28	GND	
12	NC		29	GND	
13	GND		30	GND	
14	GND		31	VDD	
15	E0+		32	VDD	
16	E0-		33	VDD	
17	E1+		34	VDD	

7. CONFIGURATION & GENERAL PRECAUTIONS

- 1 Relative humidity: $\leq 80\%$.
- 2 Storage temperature: $-10\sim+60\text{ }^{\circ}\text{C}$.
- 3 Operation temperature: $0\sim+40\text{ }^{\circ}\text{C}$.
- 4 Protect the control board from static; it may cause damage to the IC.
- 5 Disconnect the TV before the power supply of panel is connected correctly.
- 6 Do not drop any metal on the control board when it is working.
- 7 Do not push or pull the connector when the control board is working.
- 8 Do not disassemble the module.
- 9 If the surface or the control board is dirty, clean it with soft dry cloth.
- 10 Can't be pressed and distorted.

Introduction of Factory Menu



Method of Entering the Factory Menu

- 1, Power on the LCD TV at normal mode.
- 2, Press “Input” Key, and the screen displays the main menu, after that press the numeral key “2580”, the following information will be displayed on the left top corner of the screen.



Method of Factory Reset

- 1, after entering the factory menu, and choose the “FACTORY RESET” function by the right direction button “→”.
- 2, the screen will be shutdown (display screen change to black) for a while and turn on quickly.
- 3, Press the “Menu” key to Exit the “Factory Menu”.

MSTAR upgrade and debugging

SINHO

1: Preparation for upgrade

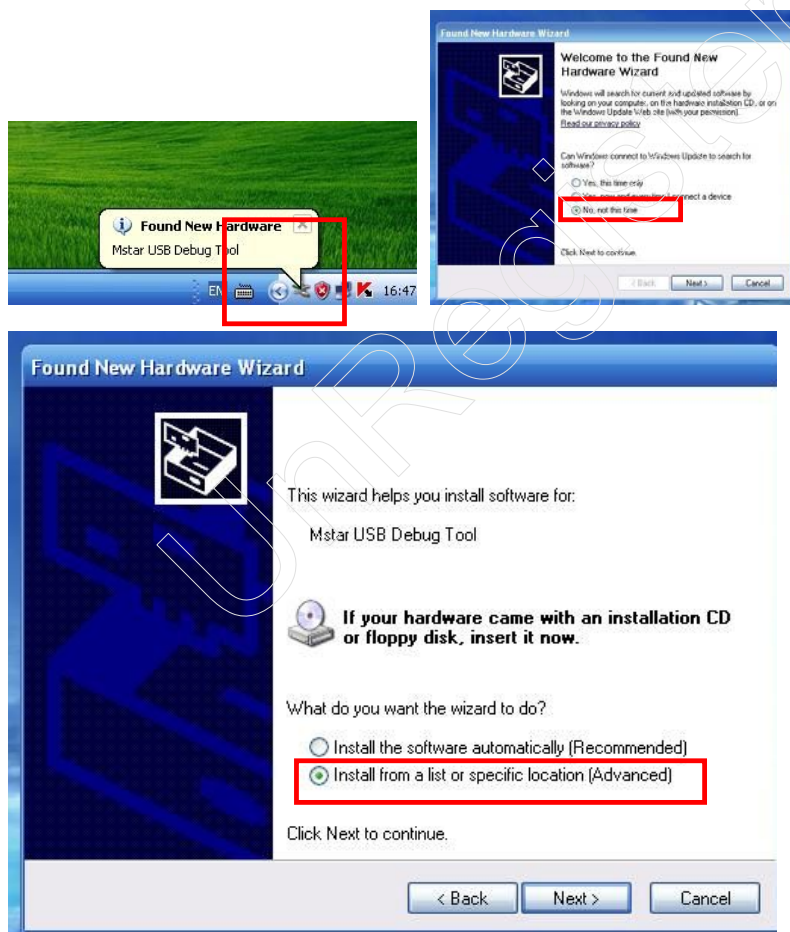
- (1), Mstar hardware upgrades tools and USB cable、VGA cable.
- (2), Mstar hardware upgrade drive and software upgrades tools. (below)
- (3), Main board and power supply



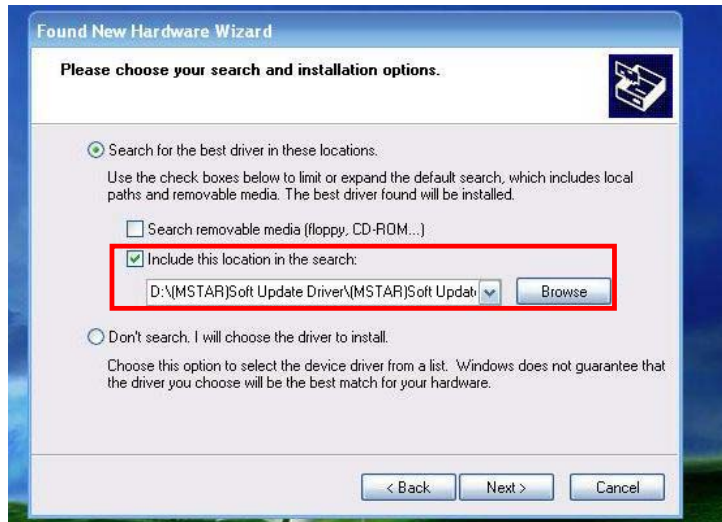
(MSTAR) Soft Updata driver.rar

2, Hardware upgrade drive install

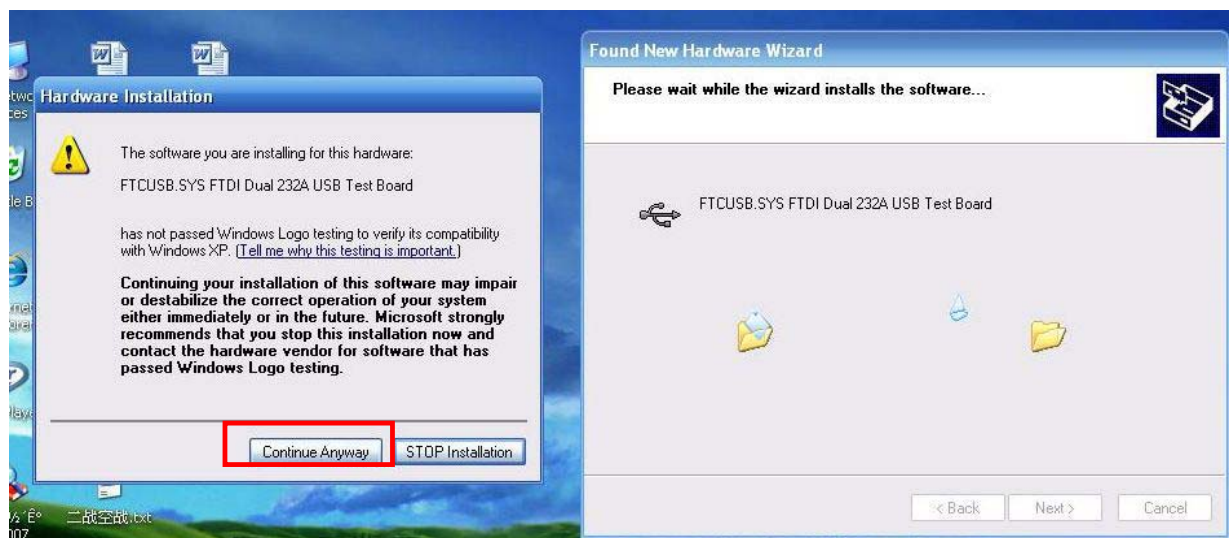
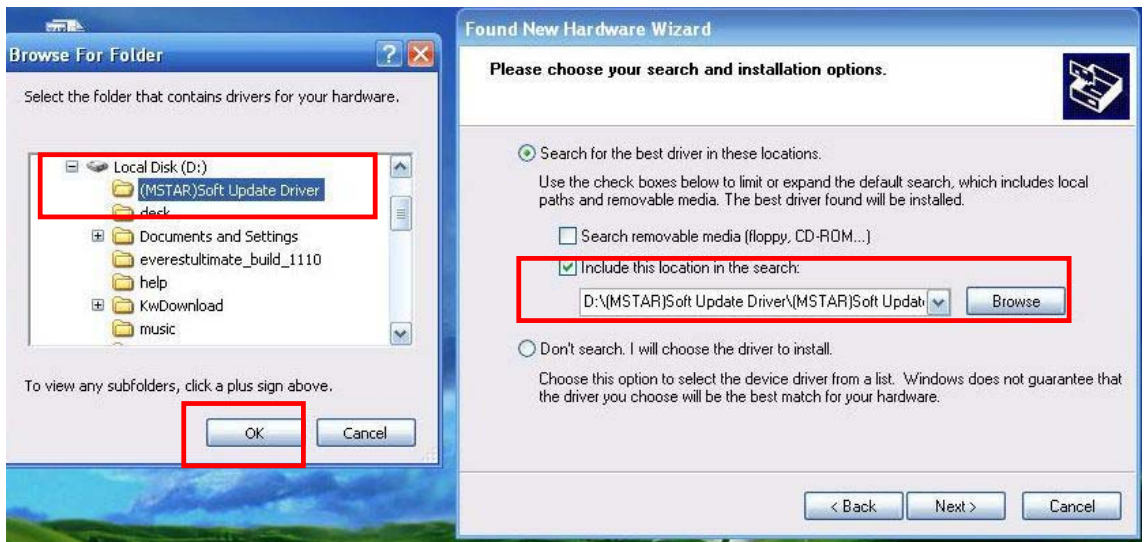
(1), Please connect hardware upgrade board with USB of computer by USB cable, then it will appear “Recognition to the hardware” and point out install the procedure. Below:



(2), Please choose “install from list or position established”, enter into next step, and according to the instruction to choose hardware drive to install.



(3). Please pay attention. In the installation process, choose the one promoting , Please choose the drive where it is to install.

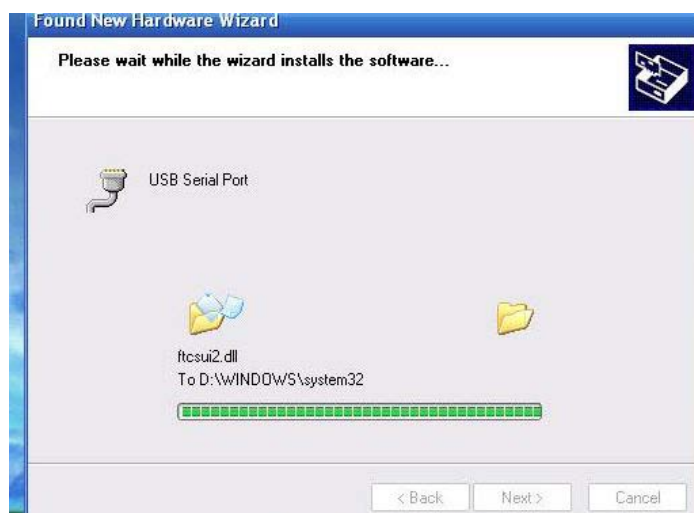




(1)

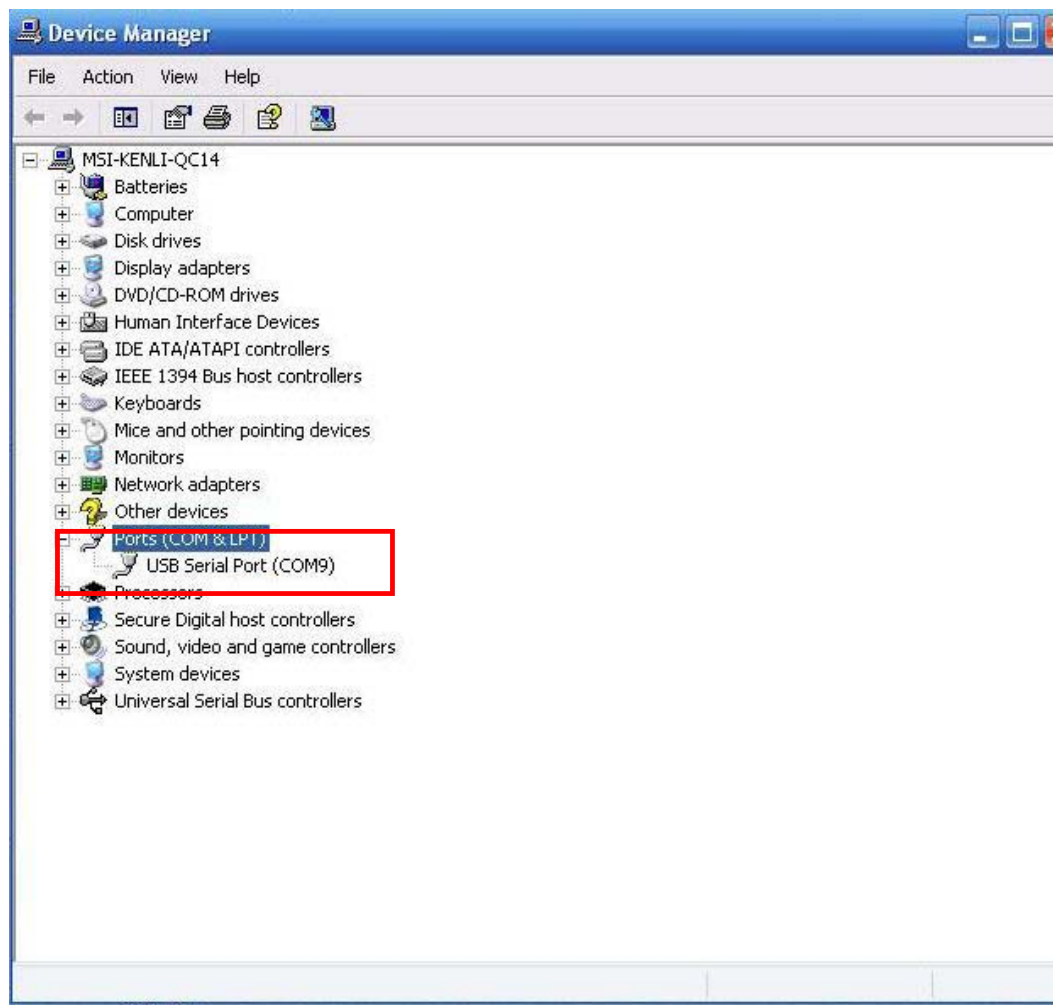


(2)





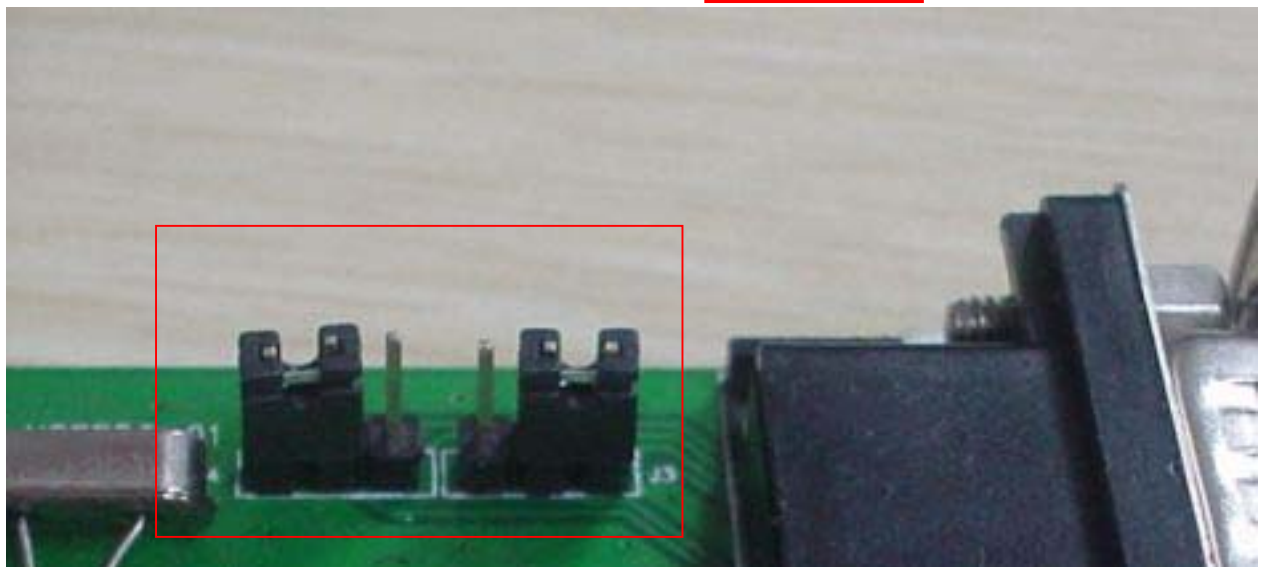
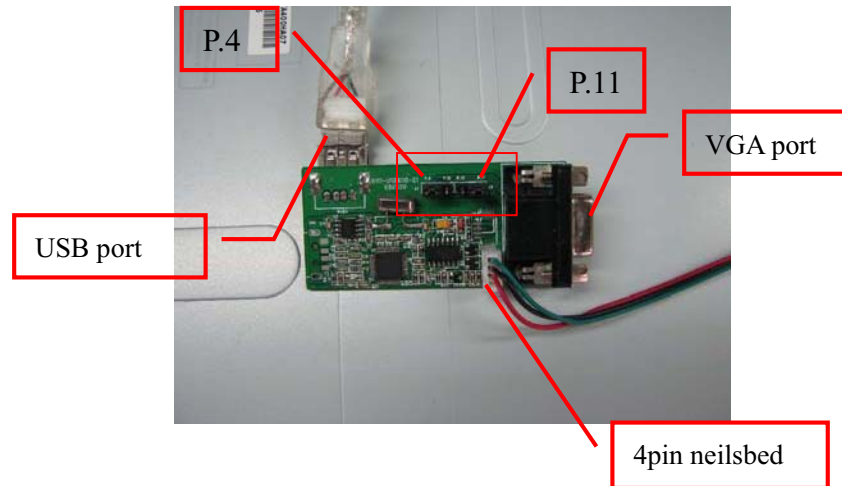
(3)



(4), In the install process, you must do the (2) (3) three times, after that, the installation finished.

3: Upgrade Process:

(1) Choice of hardware board jump apparatus: Choose P.11 and P.4 as picture.shown:

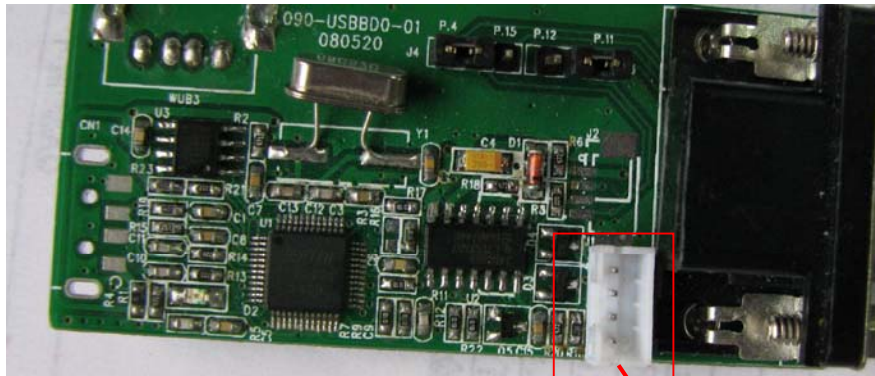


NOTE: upgrade board jump risk should arrcording to previous picture.

The first way: 4pin line which connected with AD Board and upgrade board:

Use one 4PIN line to connect the AD board and upgrade board.

For Mstar6M19:



4pin neilsbed

CN403

SDA ----- **TXD**

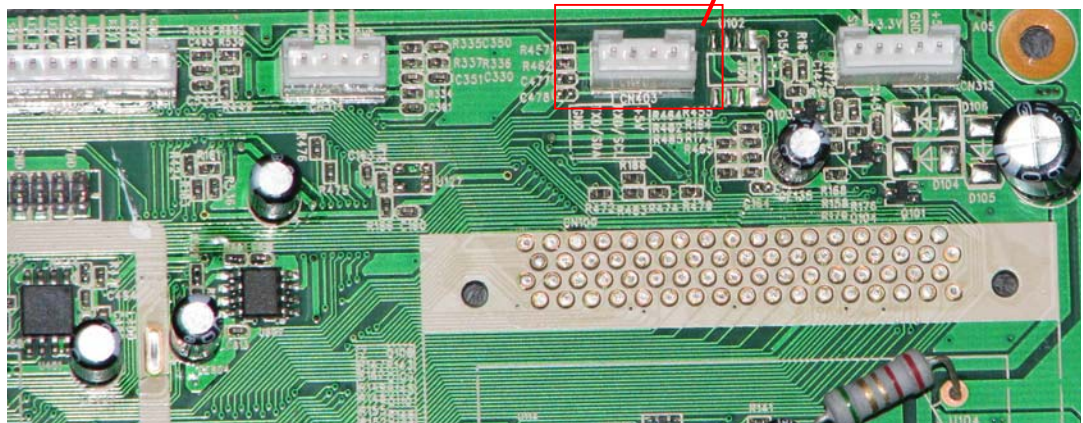
SCL ----- **RXD**

GND ----- **GND**

5V **NC** **5V**

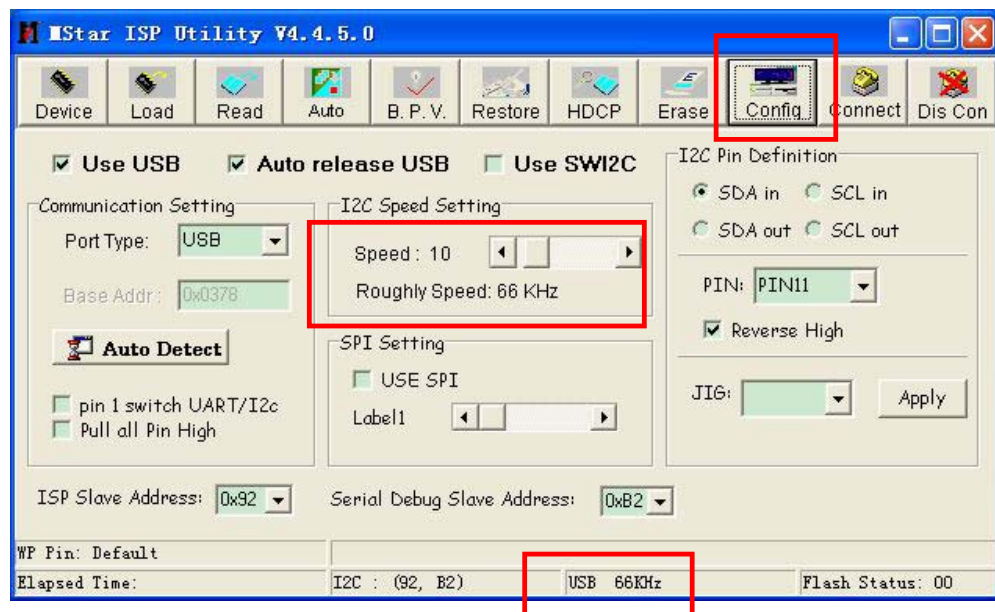
4pin neilsbed

CN403

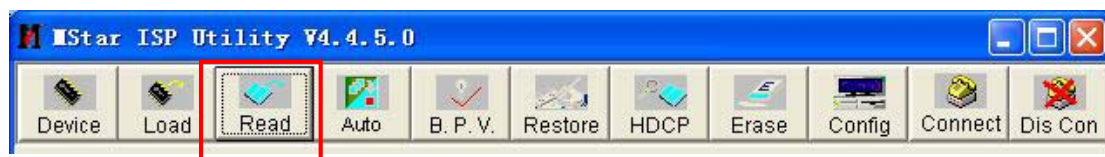




(2) Open the upgrade window  as picture. shown, and choose Config first to click "Use USB"..“Auto release USB”, and pls ensure to choose “Port Type èUSB”,“Speedè(5~45)” (**we recommend to choose Speed 10**) 。



2、Click “READ”



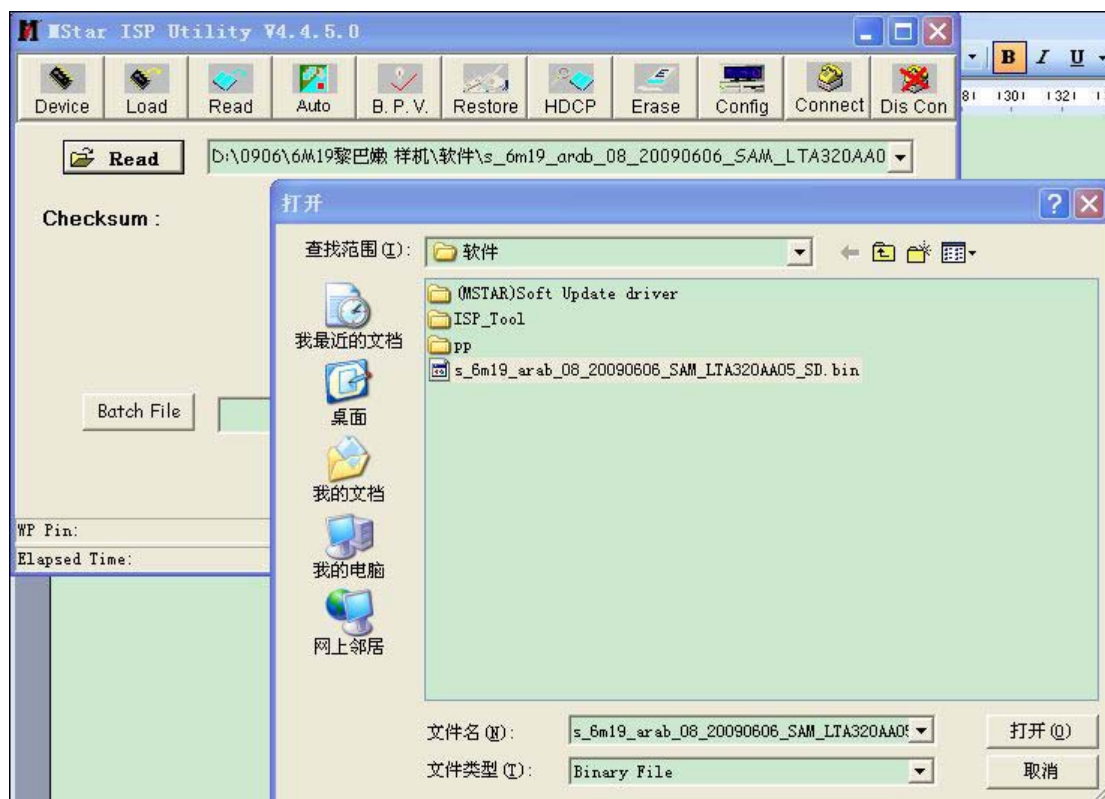
You can see the picture as below



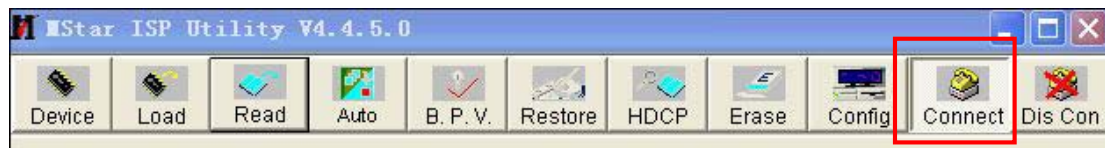
Then click “READ”



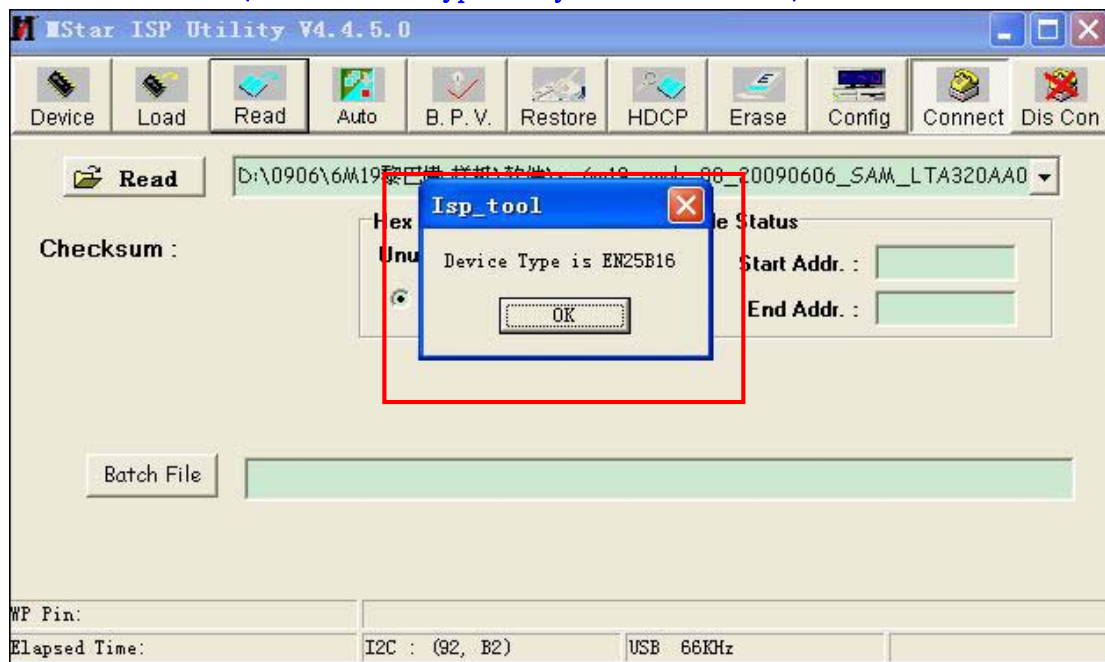
Select the Bin file which you want to upgrade



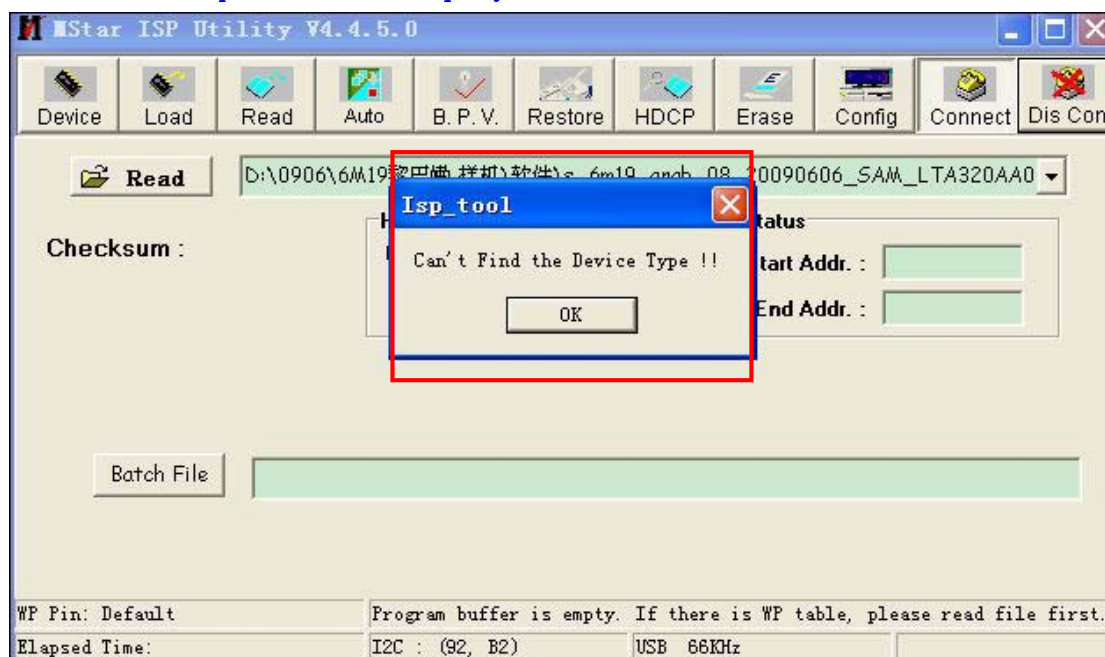
3、click “Connect” ,



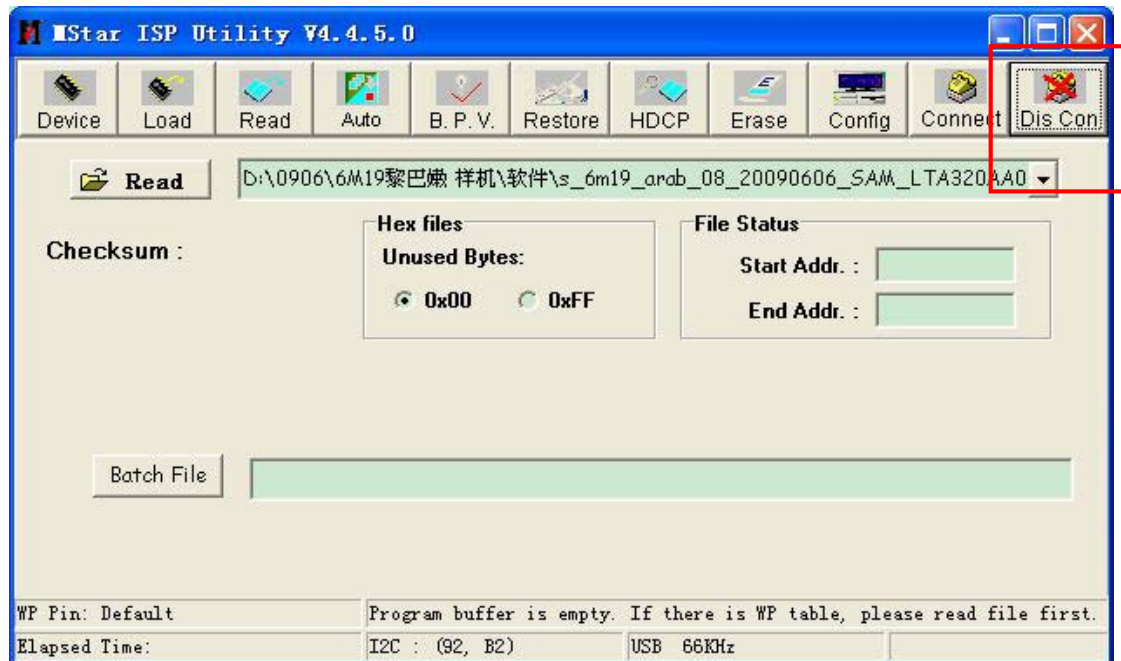
If all of the connecting is OK, the screen will display a Flash type like the picture as below(this Flash type only be referenced)



Or the computer will display this window,

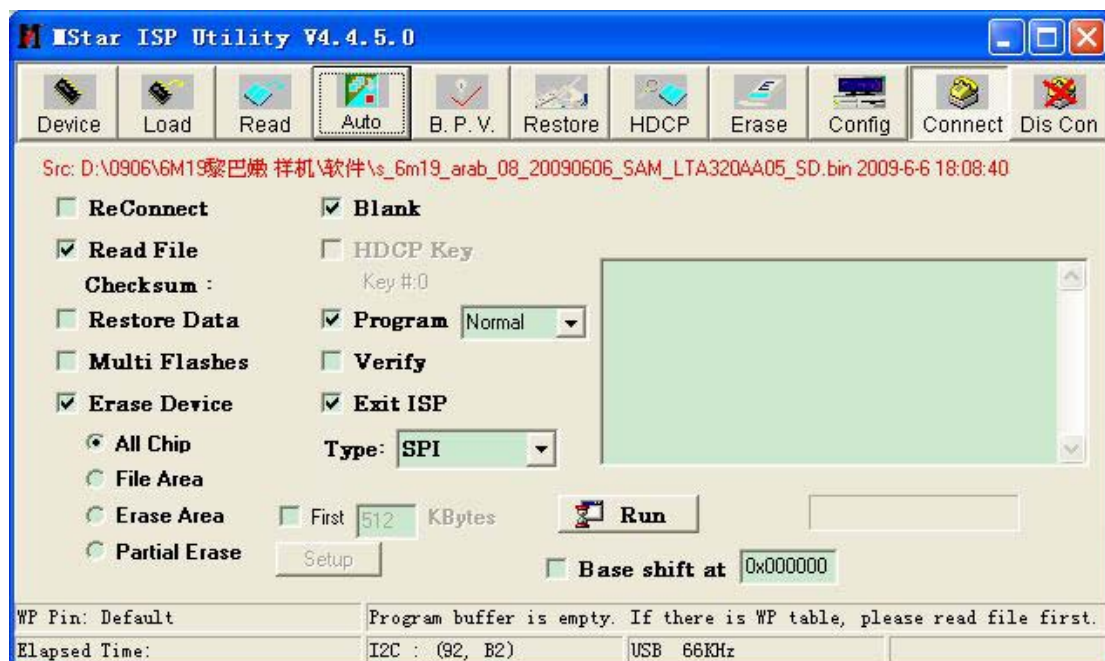


Here you can click “Dis Con” ,

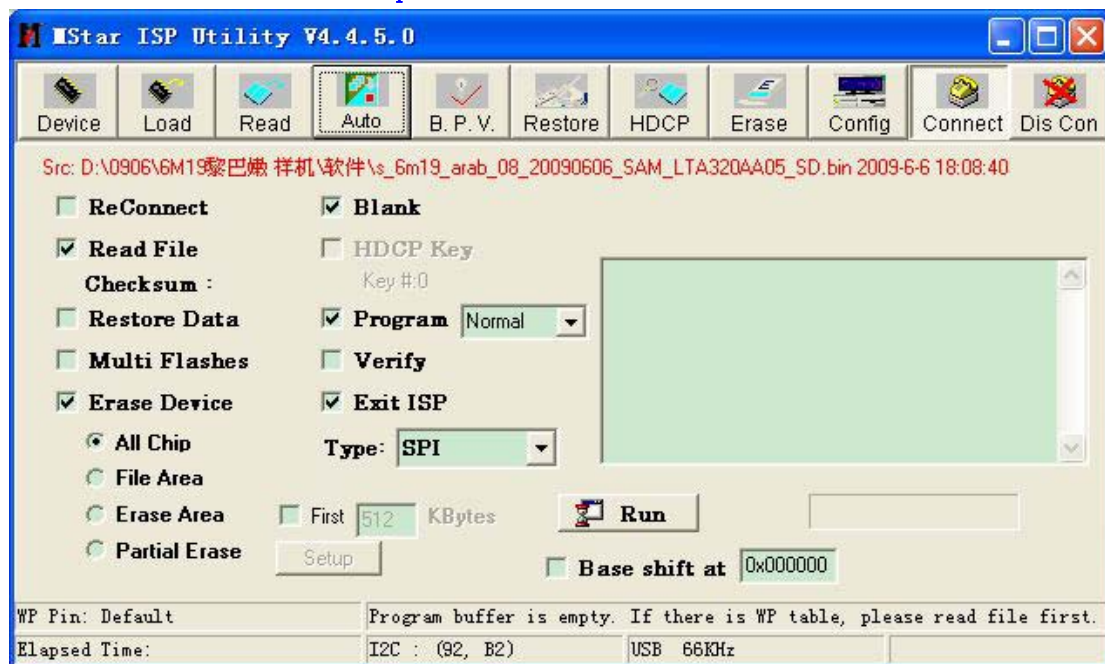


Then click “Connect” again so that the screen display the right “Flash type” . If the screen clew that “wrong” is all the time, please make sure the hardware connecting is OK.

If the screen displayed the right FLASH type, please click “confirm” , then click “AUTO” .



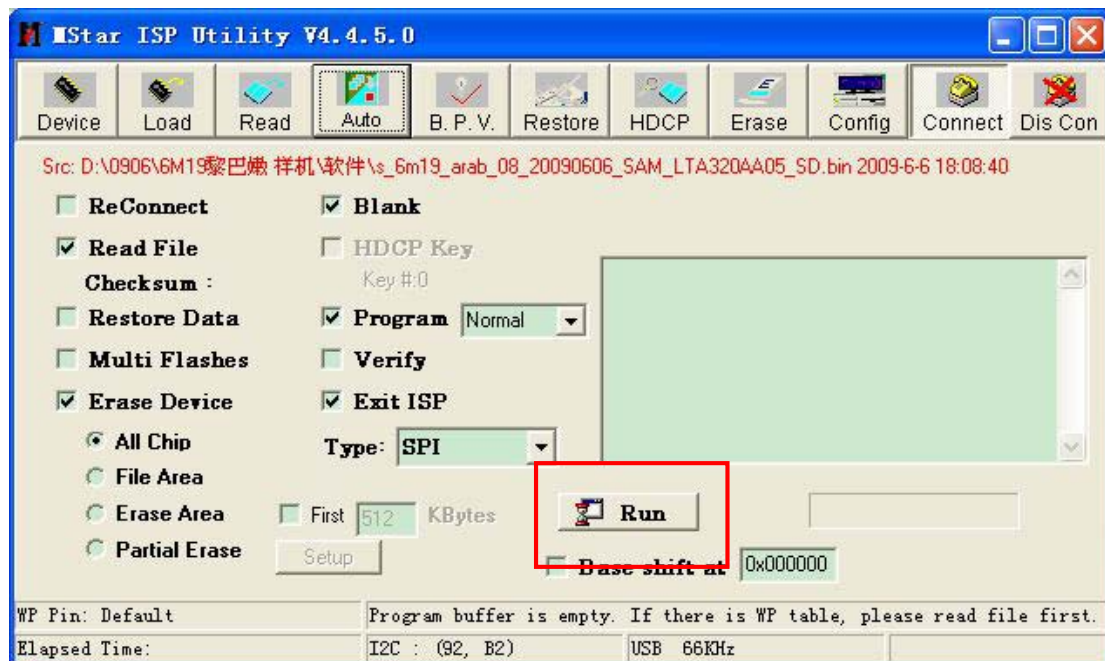
You can see the next picture as below



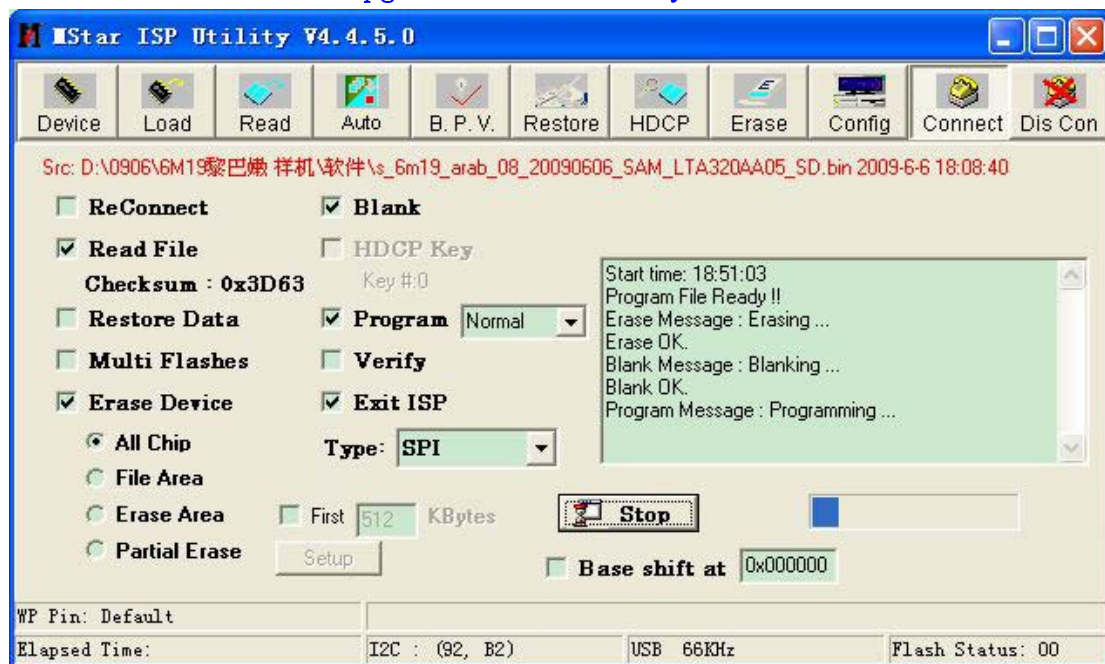
At last, please choose “Auto” and select “Blank, Read File, Program, Exit ISP, Erase Device, All Chip” like the picture below, please pay attention that don't select “Reconnect”.

Note: The red font words which displayed in the software are the BIN file which you wanted to upgrade.

4、Then click “RUN”

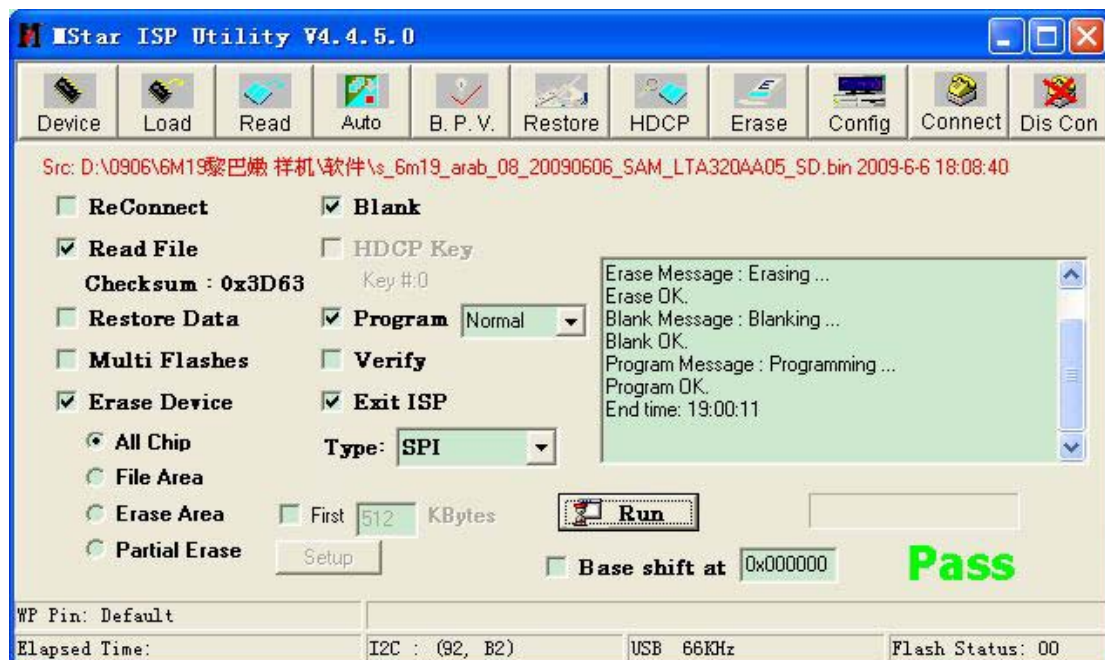


The software will upgrade automatically.



At this time, you should not to press “STOP” , or will break off the power.

If you are finished the software, the screen will display “PASS” , or “FAIL” .



If the operation failed, please press “Dis Con” , then press “Connect” , after that press “RUN” again , and afterward the screen will display “PASS” .

You have upgraded the software success. It may be cost you five minutes. If the response time is too slow, please check if the hardware setting is OK.

If you finished the upgrade, you can shut off the “ISP_Tool V4.4.5.0” and pull out the line which is used for upgrading software. Then please restart the power for the LCD TV.