

# Haier

**CAUTION:**

READ THIS MANUAL CAREFULLY  
TO DIAGNOSE TROUBLE CORRECTLY  
BEFORE OFFERING SERVICE

## **SERVICE MANUAL**

COLOR TV

**MODEL: HLH42ATBB**



**THIS MANUAL IS USED BY QUALIFIED APPLIANCE TECHNICIANS ONLY.  
HAIER DOES NOT ASSUME ANY RESPONSIBILITY FOR  
PROPERTY DAMAGE OR  
PERSONAL INJURY FOR IMPROPER SERVICE PROCEDURES DONE  
BY ONE UNQUALIFIED PERSON.**

# **C O N T E N T**

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## Features

Product features			
No.	Options	Functions	
1	Basic	Screen size	42" Wide
2		Aspect ratio	16:9
3		Brightness	500cd/m2
4		Contrast Ratio(Darkroom)	500:1
5	,	Resolution (HD/ED)	1366*768)
6		Response Time (ms)	8ms
7		Angel of view	176 <sup>0</sup>
8		Supported Colors	16.7M Colors
9	Video	HDTV\EDTV\SDTV	HDTV
10		intergrate NTSC\ATSC TUNER	Yes
11		3D COMB filter	Yes
12		Picture in Picture	YES
13		Multiple Sound modes	YES
14		Color temperature control	YES
15	Audio	Dobly Digital-AC-3	Yes
16		Stereo Surround sound	YES
17		MTS\SAP	Yes
18		Multiple Sound modes	Yes
19	SoftWare	outer speakers output(W)	No
20		Semltransparent menu	Yes
21		ZOOM	Yes
22		V-CHIP\CCD	Yes
23		Trilingual OSD	Yes
24		Auto channel setup	Yes
25		Clock ON\OFF Timer	Yes
26		Sleep timer	Yes
27	Input\Output	RF input	1
28		Composte input	1
29		VGA	1
30		component input	1
31		AV output	1
32		DVI	HDMI
33		Digital Audio output	1
34	Parameter	HDMI	1
35		Audio output power(outer)(W)	2x10W
36		Power consumption (W) (HD/ED)	200W
37		Standby power consumption	3W
38		Voltage range (V)	AC120V 10%

## **Safety Precautions**

### **IMPORTANT SAFETY INSTRUCTIONS**

**Read all of the instructions before using this appliance. When using this appliance, always exercise basic safety precautions, including the following:**

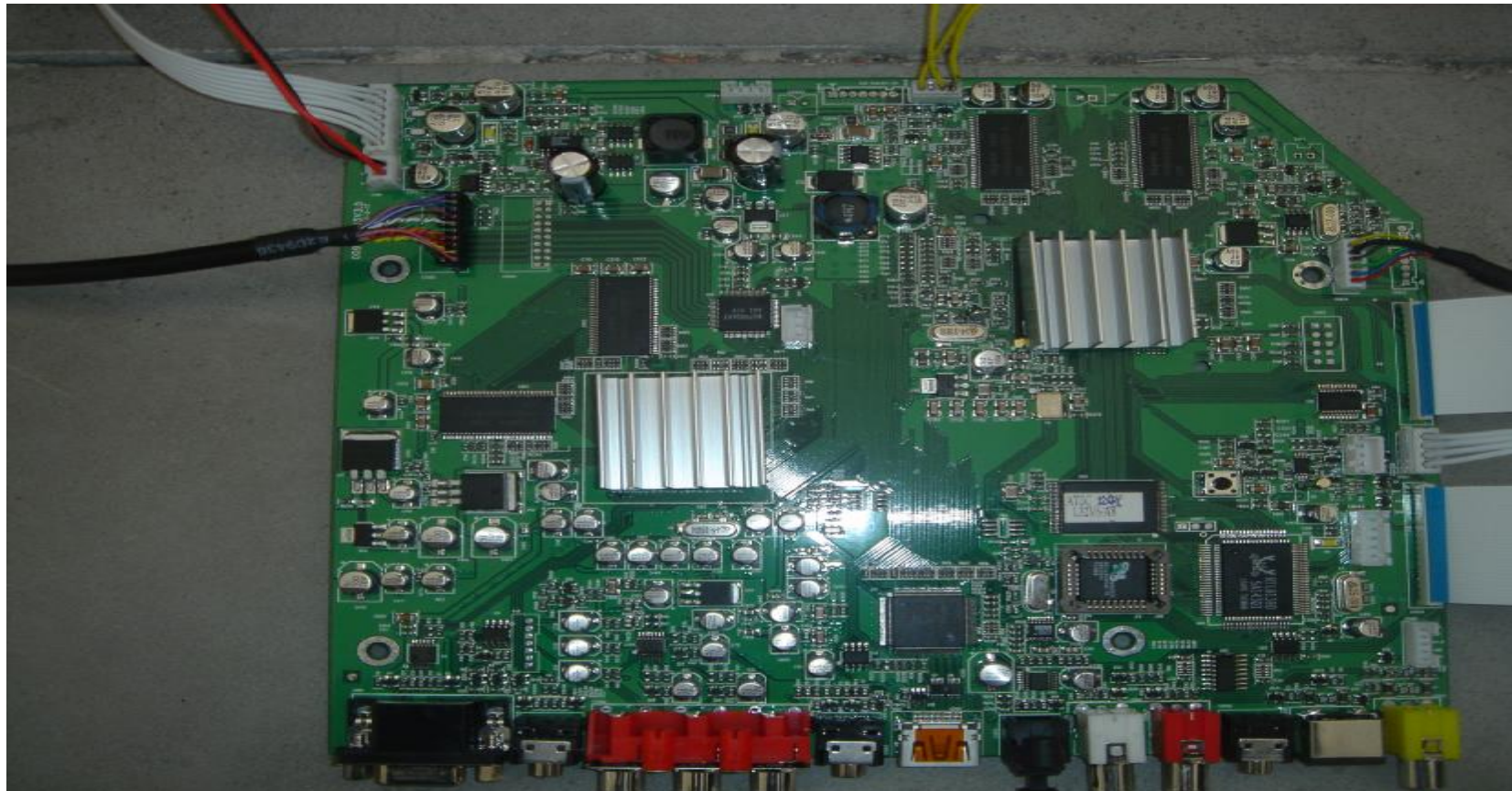
- 1) Save these Instructions ---the safety and operating instructions should be retained for future reference.
- 2) All warning on the appliance and in the operating instructions should be followed.
- 3) Cleaning --- Unplug from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use only dry cloth for cleaning.
- 4) Attachments ---do not use attachments not recommended by the manufacturer as they may cause hazards.
- 5) Water and moisture -- do not place this product near water, for example, near a bathtub, wash bowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool.
- 6) Accessories ---do not place this unit on an unstable cart, stand, tripod, bracket, or table. Use only with a cart, stand, tripod, bracket, or table recommend by the manufacture, or sold with the unit.
- 7) Ventilation ---Slots and openings in the cabinets and the back or bottom are provided for ventilation. These openings must not be blocked. In a built in installation such a bookcase or rack do not install product unless proper ventilation is provided.
- 8) Power Source ---this TV should be operated only from the type of power source indicated on the rating label. If you are not sure of the type of power supply to your home, consult your appliance dealer or local power company.
- 9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet. To prevent electric shock, ensure the grounding pin on the AC cord power plug is securely connected.
- 10) Power cord protection ---Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cords or plugs, convenience receptacle, and the point where they exit from the appliance.
- 11) Lighting precaution ---for added protection for this product during a lighting storm or when it is left unattended for long period of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the product due to lighting and power line surges.
- 12) Never push objects of any kind into this product through openings as they may touch dangerous voltage point or short out parts that could result in a fire or electric shock. Avoid spilling liquid of any kind on the product.
- 13) Servicing ---do not attempt to service the product by yourself, as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to authorized service personnel.
- 14) Unplug this unit from the wall outlet and refer servicing to qualified service personnel under the following conditions:
  - a. When the power supply cord or plug is damaged or frayed.

- 
- b.If liquid has been spilled, or objects have been fallen into the unit.
  - c.If the unit has been exposed to rain or water.
  - d.If the unit does not operate normally by following the operating instructions.  
Adjust only those controls that are covered by the operating instructions, as improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the unit to its normal operation.
  - e.If the unit has been dropped or damaged in any way.
  - f.When the unit exhibits a distinct change in performance; this indicates a need for service.
- 15)Heat --- The product should be situated away heat source such as radiators, heat registers, stoves, or other products (Including amplifiers) that product heat.
- 16)Overloading ---Do not overload wall outlets and extension cord as this can result in a risk of fire or electric shock.

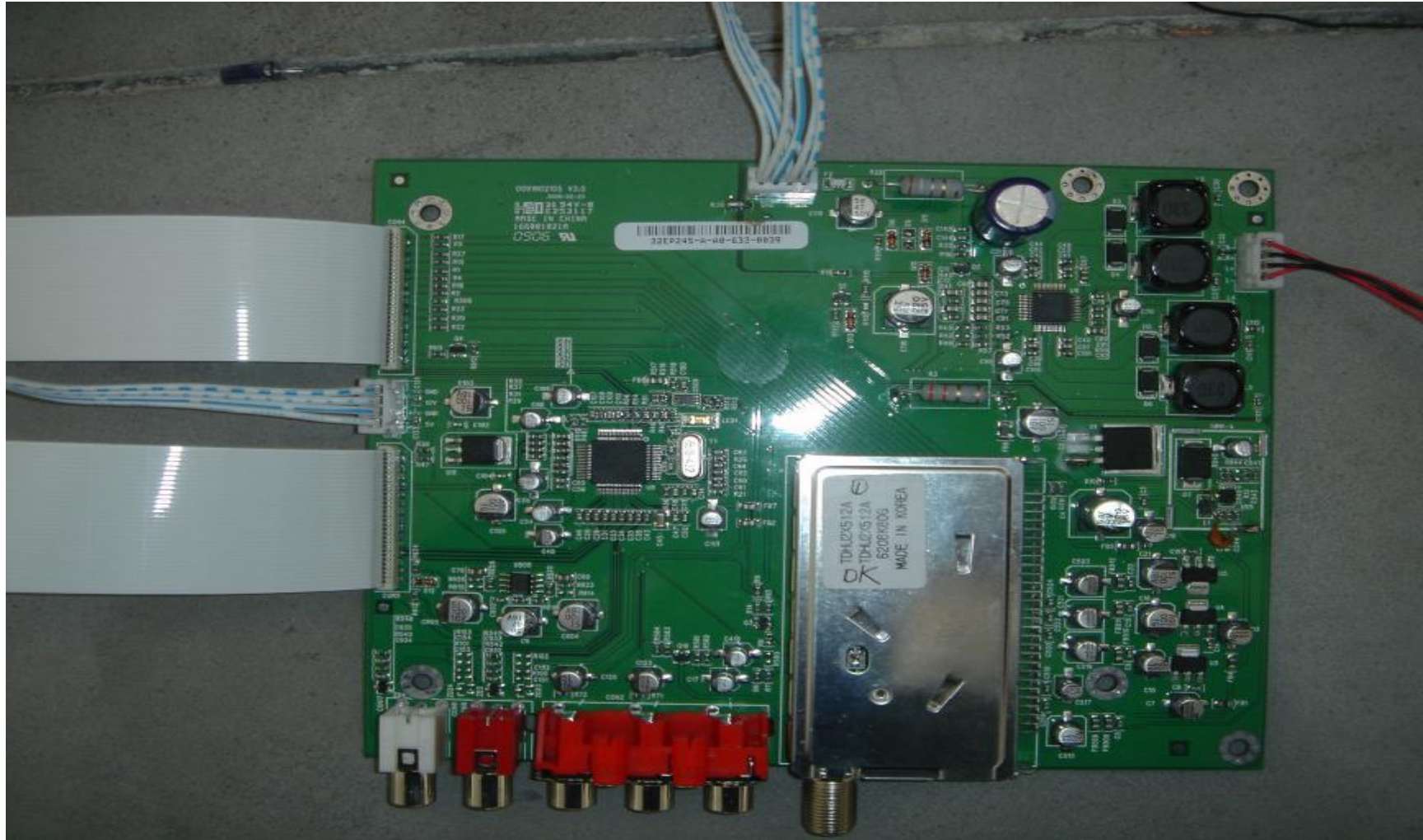
## Images of Module and Circuit Boards

a: Signal flow-chart

Printed Circuit Digital Board(Main Board)



**b、 Printed Circuit Audio Board**



## Key IC Description& Trouble Shooting Guide

### 1) SVP\_EX62

The SVP<sup>TM</sup>EX-62 video processor consists of highly integrated system-on-a-chip devices, targeting the converging HDTV-ready and PC-ready digital CRT TVs, LCD TVs, PDP TVs, and DLP TVs applications where high precision processing of video and data are desired. The SVP<sup>TM</sup>EX-62 contains high precision 10-bit ADCs up to 108 MHz for video and PC RGB inputs conversion. For analog video processing, the SVP<sup>TM</sup>EX-62 integrates a high-performance 5th generation multi-format 3D digital-comb video decoder that supports NTSC, PAL and SECAM\*, an HDTV sync separator, motion adaptive de-interlacing engine, and the video format conversion engine, supporting many output modes, picture-in-picture (PIP), multi-window and picture-on-picture display modes. From the video signals inputs to the processed video outputs, the SVP<sup>TM</sup>EX-62 carries out the video signal processing in 10-bit mode to ensure the maxima video signal fidelity, thus avoiding the color-banding artifacts. Depending on the applications and different product mix, the SVP<sup>TM</sup>EX-62 for LCD/PDP TV applications embed one LVDS transmitter for the interface with the LCD and PDP TV applications.

Trident's DCRE<sup>TM</sup> – Digital Cinema Reality engine, is integrated inside the SVP<sup>TM</sup>EX-62 to provide the most natural cinema-realistic images. The DCRE<sup>TM</sup> technology integrates advanced 3D-comb video decoding, advance motion adaptive de-interlacing, object-based digital noise reduction, cubic4 image scaling, film mode support, average picture level (APL), edge smoothing and dynamic sharpness enhancement. Trident's patented Unified Memory Architecture (UMA) that allows frame rate conversion, 3D comb video decoding, and video enhancement processing to share the same memory buffer to achieve high-speed and cost-effective applications. All these advance digital processing techniques combined with a true 10-bit video data processing for the most optimal video fidelity to provide the most natural and cinema quality video images.

For achieving the maximum system design flexibility, SVP<sup>TM</sup>EX-62 integrates all video interfaces to support converging digital video, analog video, and PC data applications. The users of Trident's single chip SVP<sup>TM</sup>EX-62 video processor(s) will benefit from many features while maintaining a price competitive advantage over the existing solution(s)

## 2) HiDTV

HiDTV chip is the most advanced and highly integrated component for digital set-top boxes, information appliances, and television. It provides one-stream high-definition decode and display, an assortment of peripheral device controllers, and an embedded MIPS. It can be used as either a SOC (system-on-a-chip) solution or as a discrete PCI multimedia device when coupled with an external CPU.

HiDTV provides system design flexibility for digital video and audio products. It supports transport stream selection and de-multiplexing in a variety of serial and parallel input formats. It descrambles, filters, and decodes worldwide video and audio formats. HiDTV displays graphics and high quality video. It also supports watch-one-record-one (time shift), and picture-in-picture display.

### Features

- One MIPS (T5180) with MMU 180MHz (cache/MEM: 16k, 8k, 8k, 8k)
- One HD MPEG2 decoder
- One hardware TS demux with DVB/DES descrambler
- Supports DVD/SVCD/VCD decoder
- Supports PVR/Time shift
- DPTV\_SVP with de-interlacing/3:2 pull down/edge smoothing/noise reduction
- Trident's 2D graphics engine
- AC3/MPEG2/MP3/AAC ... audio
- Two Video planes and six Graphics planes (CC/Graphics/OSD/Logo/Cursor)
- Two HW timer
- One ATSC/DVB compliant Transport input
- One IEEE1394's TS in/out port
- One IDE/two SmartCard/one UART/two infrared IR/RTC
- PCI Host/PCI slave with bus master
- 8\* PWM-GPIO/I2C/2\*interrupt
- Audio AC link/I2S/SPDIF
- CCIR601/CCIR656/RGB24 inputs
- Digital 24bit RGB/YUV/CCIR601/CCIR656
- Analog RGB/YPbPr (480i, 480p(MV7), 1080i, 720p) output

### 3) MSP 4450

#### Multistandard Sound Processor Family

**Release Note:** Revision bars indicate significant changes to the previous edition. The hardware and software description in this document is valid for the MSP 44x0G version C13 and following versions.

#### 1. Introduction

The MSP 44x0G family of single-chip Multistandard Sound Processors covers the sound processing of all analog TV-Standards worldwide, as well as the NICAM digital sound standards. The full TV sound processing, starting with analog sound IF signal-in, down to processed analog AF-out, is performed on a single chip. Figure 1-1 shows a simplified functional block diagram of the MSP 44x0G.

These TV sound processing ICs now include versions for processing the multichannel television sound (MTS) signal conforming to the standard recommended by the Broadcast Television Systems Committee (BTSC). The DBX noise reduction, or alternatively, Micronas Noise Reduction (MNR) is performed alignment free.

Other processed standards are the Japanese FM-FM multiplex standard (EIA-J) and the FM Stereo Radio standard.

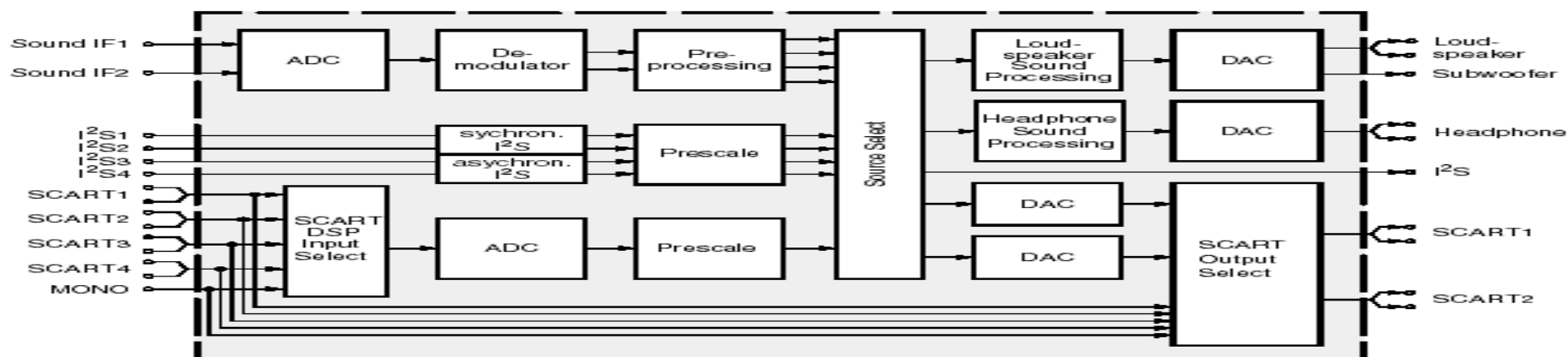
Current ICs have to perform adjustment procedures in order to achieve good stereo separation for BTSC and EIA-J. The MSP 44x0G has optimum stereo performance without any adjustments.

All MSP 44x0G versions are pin compatible to the MSP 34xyD. Only minor modifications are necessary to adapt a MSP 34xyD controlling software to the MSP 44x0G. The MSP 44x0G further simplifies controlling software. Standard selection requires a single I<sup>2</sup>C transmission only. **Compared to the MSP 44x0G-B8 version, the I<sup>2</sup>S input configuration has been modified. Please refer to Section 4.4. on page 59.**

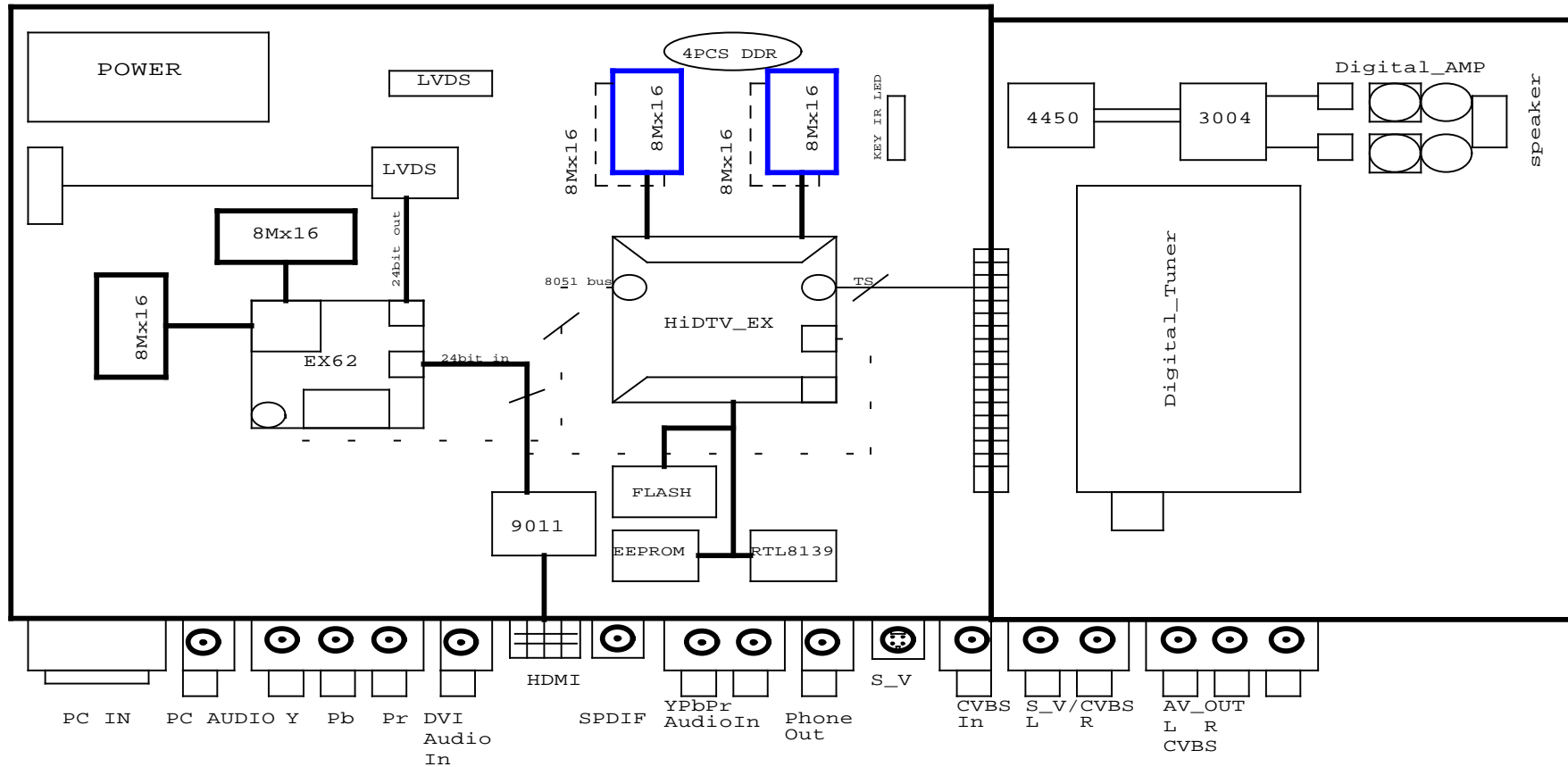
The MSP 44x0G has built-in automatic functions: The IC is able to detect the actual sound standard automatically (Automatic Standard Detection). Furthermore, pilot levels and identification signals can be evaluated internally with subsequent switching between mono/stereo/bilingual; no I<sup>2</sup>C interaction is necessary (Automatic Sound Selection).

The MSP 44x0G can handle very high FM deviations even in conjunction with NICAM processing. This is especially important for the introduction of NICAM in China.

The ICs are produced in submicron CMOS technology. The MSP 44x0G is available in the following packages: PSDIP64-1, PMQFP80-11, and PMQFP64-2.

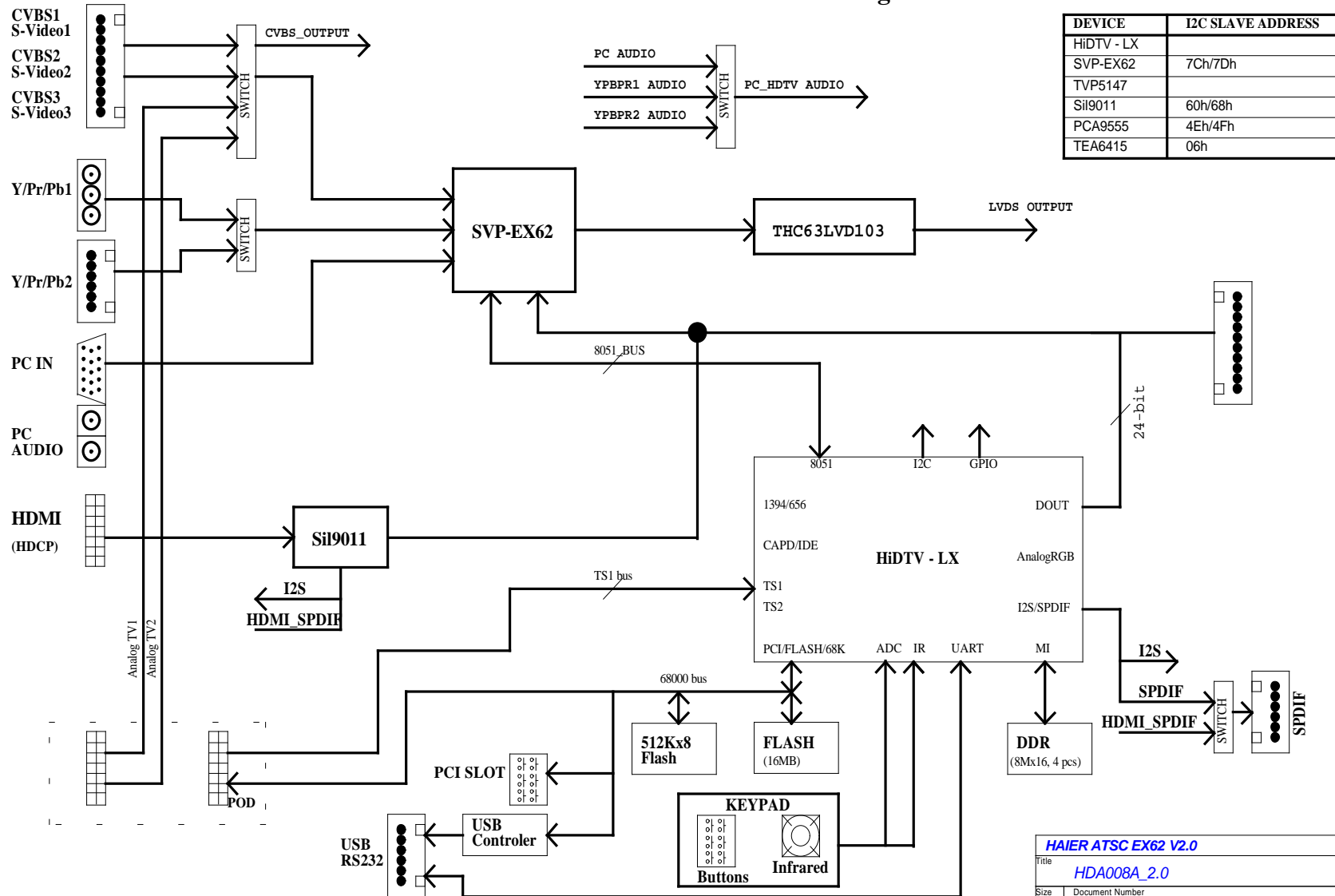


# Signal Flowing Chart



<b>HAIER ATSC EX62 V2.0</b>			
Title			
<b>HDA008A_2.0</b>			
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A	<b>Board Placement</b>		A
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# HDA005A Board Block Diagram



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Size		
B	Document Number	Rev
	Block Diagram	A
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## Bus Control Adjustment

### 1) Factory Mode

Press Menu-88939433-OK,Then enter the Factory Mode.You can check the version of the software,adjust some settings.But we don't advise you change this settings.because of the TV has already hold in the state of optimality.If you have to chang this settings,please connect with the local service center.

White Balance	LB Bri	20		Cold TMP	Rcut	252
	LB Crt	20			Rdrv	251
	Ccut	63			Gcut	252
	CDrv	2			Gdrv	3
	RCut	248			Bcut	244
	RDrv	253			Bdrv	5
	GCut	244		Warm TMP	Rcut	8
	GDrv	3			Rdrv	3
	BCut	236			Gcut	252
	BDrv	251			Gdrv	3
	Cold TMP				Bcut	248
	Warm TMP				Bdrv	238
Video Setting	Video Mode	STD Bri	50	20		
		STD Crt	50			
		STD Color	50			
		STD Tint	0			
		STD Sharp	50			
		Mild Bri	40			
		Mild Crt	50			
		Mild Color	40			
		Mild Tint	0			
		Mild Sharp	40			
		Vivid Bri	40			
		Vivid Crt	60			
		Vivid Color	70			
		Vivid Tint	0			
		Vivid Sharp	50			
	DTV Mode	STD Bri	51	50		
		STD Crt	50			
		STD Color	50			

		STD Tint	0			
		STD Sharp	50			
		Mild Bri	40			
		Mild Crt	50			
		Mild Color	40			
		Mild Tint	0			
		Mild Sharp	40			
		Vivid Bri	60			
		Vivid Crt	60			
		Vivid Color	70			
		Vivid Tint	0			
		Vivid Sharp	50			
	VGA Mode	STD Bri	51	50		
		STD Crt	50			
		STD Color	50			
		STD Tint	0			
		STD Sharp	50			
		Mild Bri	40			
		Mild Crt	50			
		Mild Color	40			
		Mild Tint	0			
		Mild Sharp	40			
		Vivid Bri	60			
		Vivid Crt	60			
		Vivid Color	70			
		Vivid Tint	0			
		Vivid Sharp	50			
	YPbPr Mode	STD Bri	50			
		STD Crt	50			
		STD Color	50			
		STD Tint	0			
		STD Sharp	50			
		Mild Bri	40			
		Mild Crt	50			
		Mild Color	40			
		Mild Tint	0			
		Mild Sharp	40			
		Vivid Bri	60			

		Vivid Crt	60		
		Vivid Color	70		
		Vivid Tint	0		
		Vivid Sharp	50		
	HDMI Mode	STD Bri	50		
		STD Crt	50		
		STD Color	50		
		STD Tint	0		
		STD Sharp	50		
		Mild Bri	40		
		Mild Crt	50		
		Mild Color	40		
		Mild Tint	0		
		Mild Sharp	40		
		Vivid Bri	60		
		Vivid Crt	60		
		Vivid Color	70		
		Vivid Tint	0		
		Vivid Sharp	50		
	Bri MAX	30	32		
	Ctr MAX	45	63		
	Color MAX	112			
	Sharp MAX	30	16		
	Tint MAX	511			
	Bri Mid	0			
	Ctr Mid	30			
	Color Mid	56			
	Sharp Mid	20	12		
	Tint Mid	0			
	Bri Min	-20	-33		
	Ctr Min	8			
	Color Min	0			
	Sharp Min	0			
	Tint Min	-511			
Audio Setting	Audio Mode	Live 120Hz	11	10	
		Live 200Hz	40		
		Live 500Hz	70		
		Live 1K2Hz	50		

		Live 3KHz	40			
		Live 7K5Hz	35			
		Live 12KHz	30			
		Pop 120Hz	90	60		
		Pop 200Hz	10			
		Pop 500Hz	70			
		Pop 1K2Hz	30			
		Pop 3KHz	60			
		Pop 7K5Hz	50			
		Pop 12KHz	55			
		Rock 120Hz	20			
		Rock 200Hz	30			
		Rock 500Hz	40			
		Rock 1K2Hz	50			
		Rock 3KHz	60			
		Rock 7K5Hz	70			
		Rock 12KHz	80			
	Max Volume	115		113		
	80 Volume	114		112		
	Mid Volume	111		110		
	20 Volume	108		105		
	Min Volume	64				
	PWM	50				
Factory INI	Clear Rom	Right to clear				
Factory Options	Test Paten					
	Safeware Version	L_HIDTV_AU32_HAC_060518				
	TOFAC	M				
Aging Mode:OFF						
Press EXIT,exit factory						

### Remark:

The date of the chart only is a example,please don't adjust the factory mode base on it.

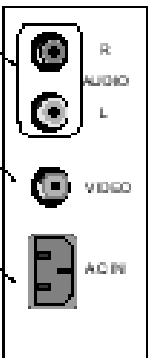
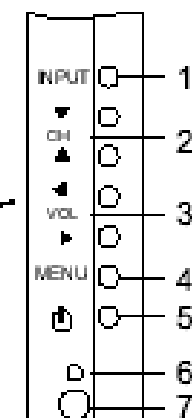
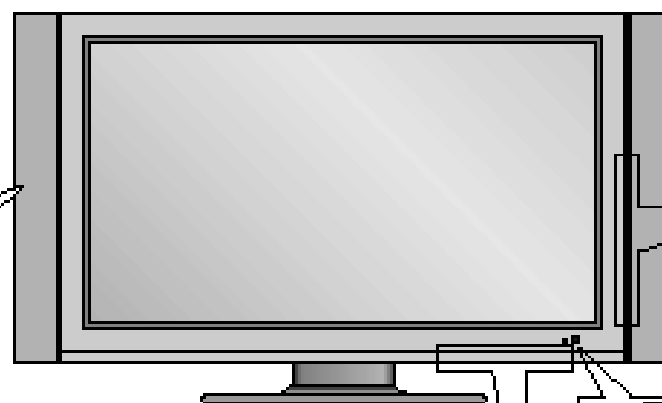
## 2) Others

## HLH26ATBB HLH32ATBB HLH37ATBB HLH42ATBB

**AUDIO2 Input**  
connect to hear stereo sound from an external device.

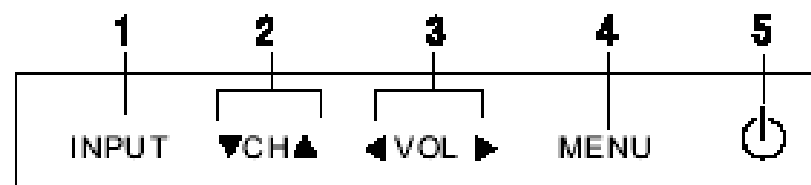
**VIDEO2 Input**  
Connects the video signal from a video device.

**Power Cord Socket**  
This TV operates on AC power. The voltage is indicated on the Specifications page. Never attempt to operate the TV on DC power. (Only for HLH42ATBB)

Only for:  
HLH42ATBB

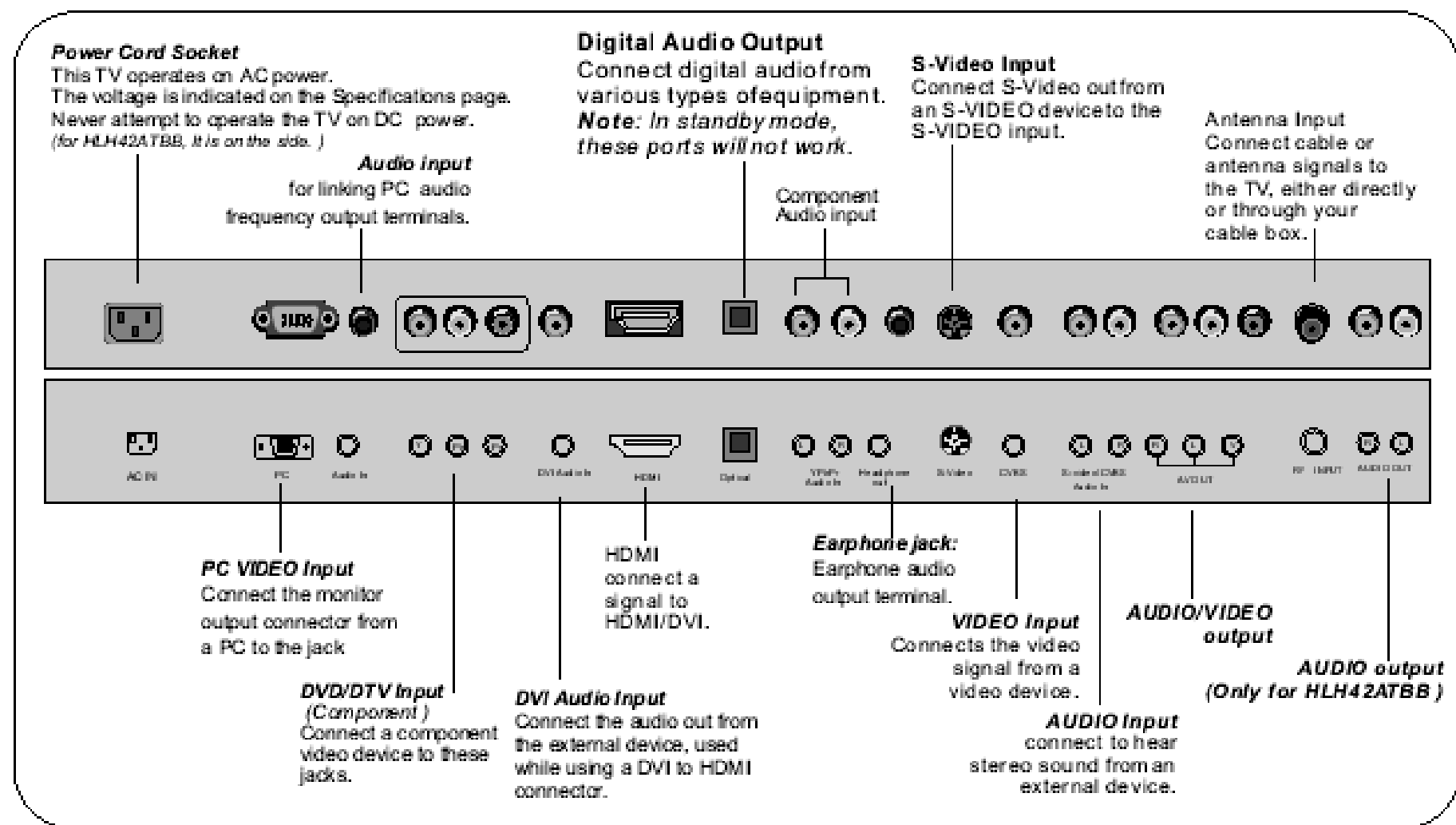
1. INPUT: all input source display and OK confirm.
2. CH (▼▲): program minus and plus, menu options.
3. VOL (◀▶): volume decrease and increase, menu reset and entry.
4. MENU: menu display.
5. ⏻ (POWER): Is used to activate the display or return to standby mode.
6. Power indicator: in red when standby mode, in blue when display.
7. Remote control signal receive window.



(The buttons are on the bottom of the TV set)

## Back panel controls

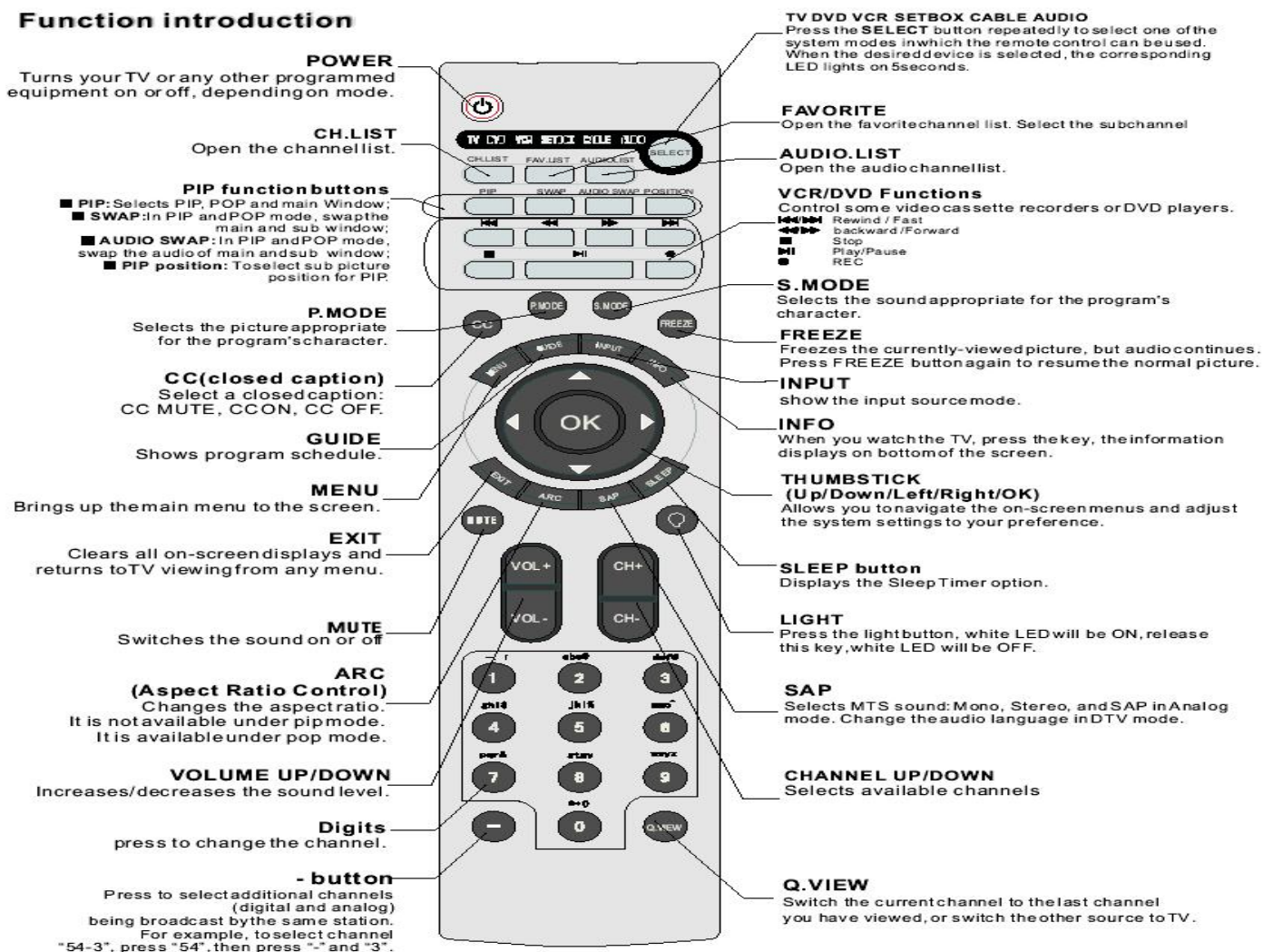
HLH26ATBB HLH32ATBB HLH37ATBB HLH42ATBB



# Universal Remote Controller

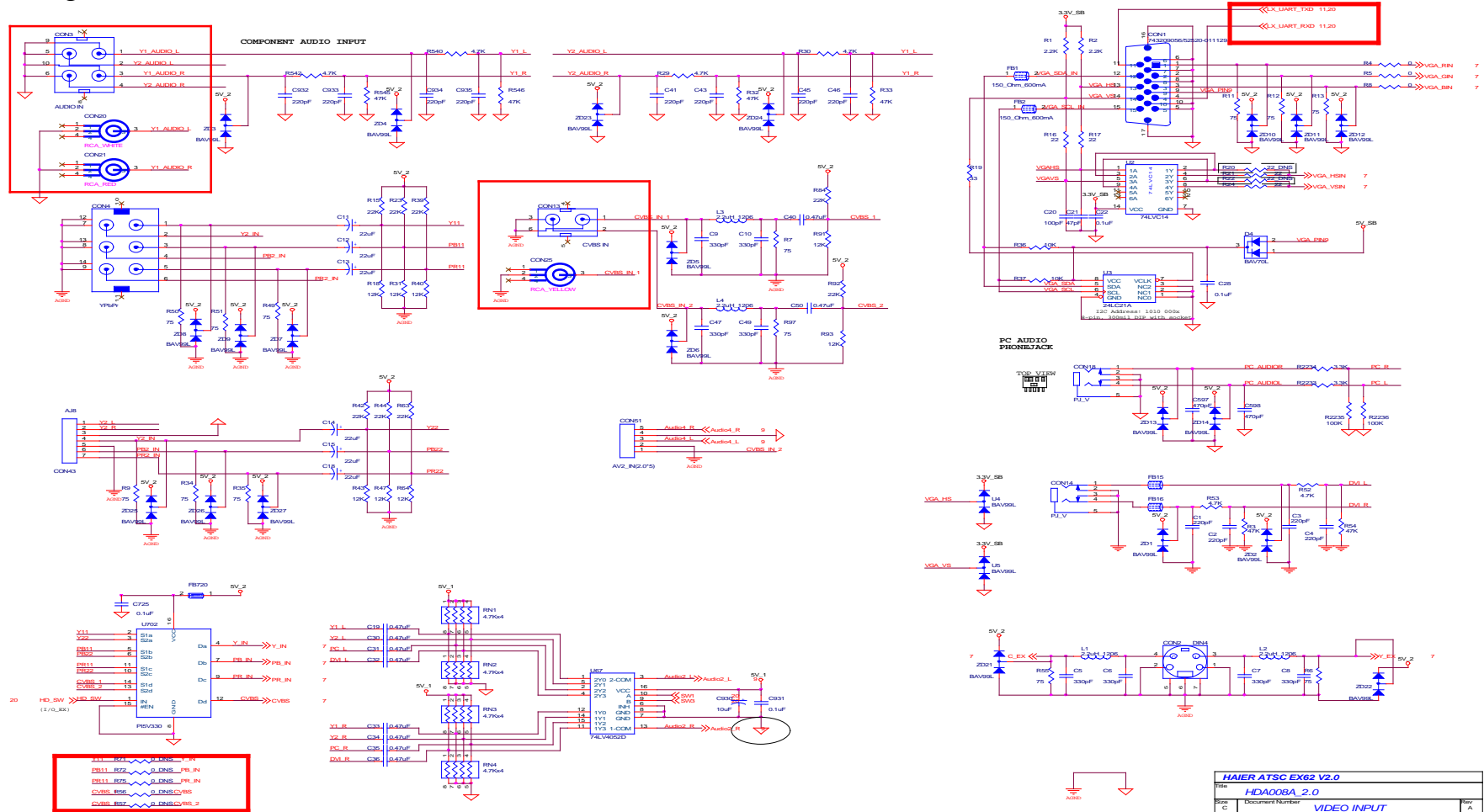
- The remote controller cannot be operated unless the batteries are properly loaded.
- When using the remote control, aim it at the remote control sensor on the TV.

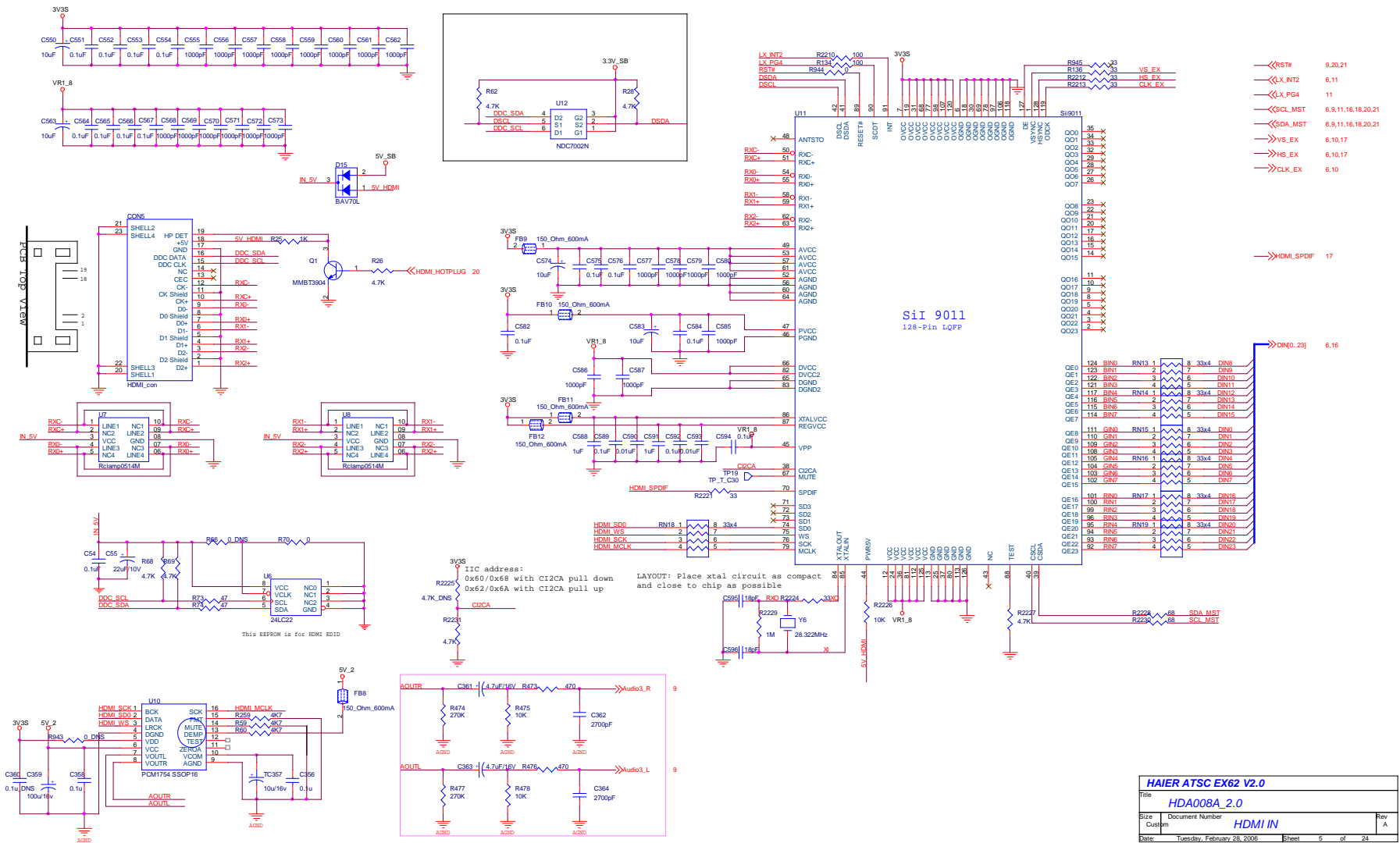
## Function introduction



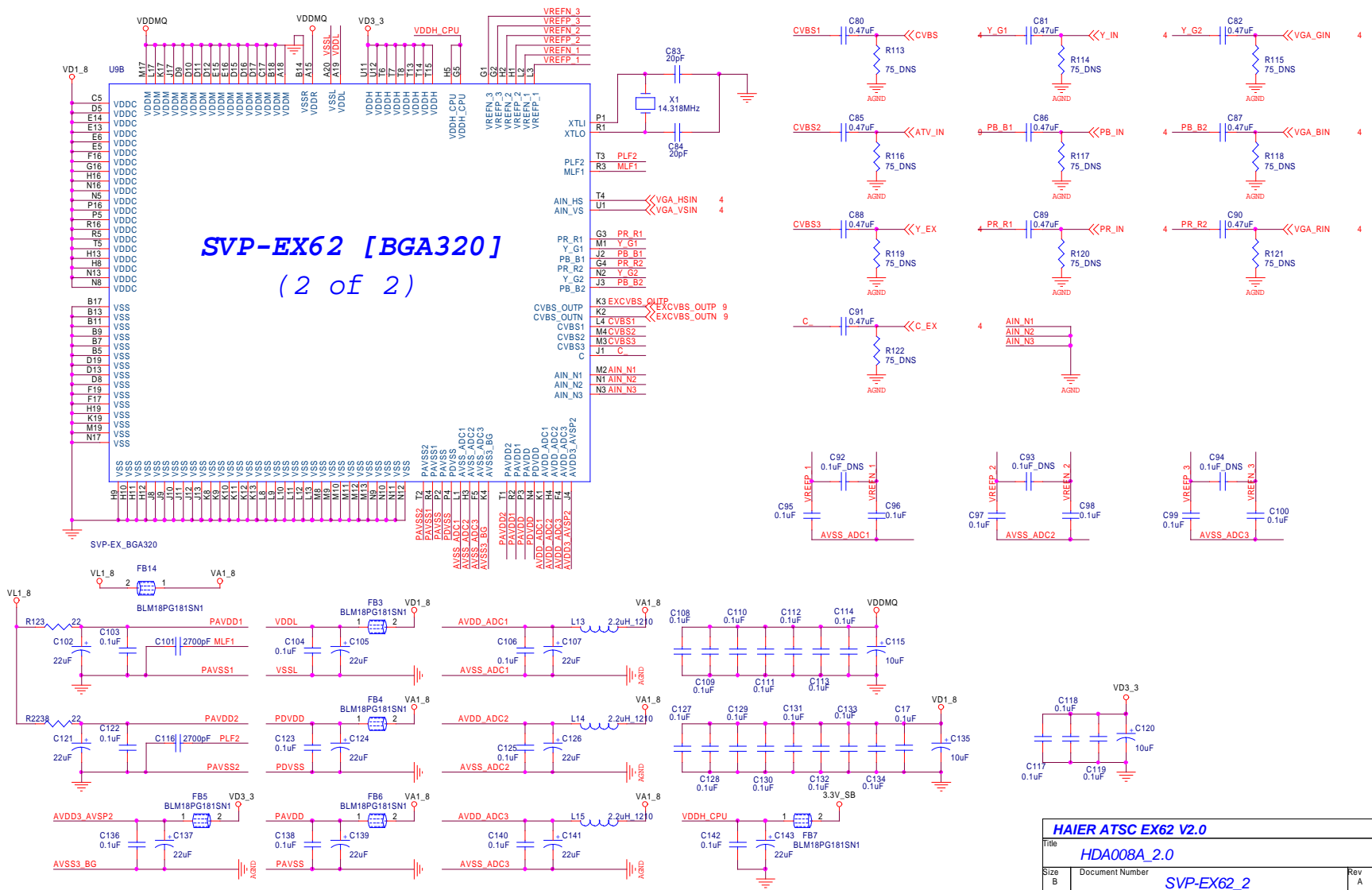
# Circuit Diagram

## a) Digital Board

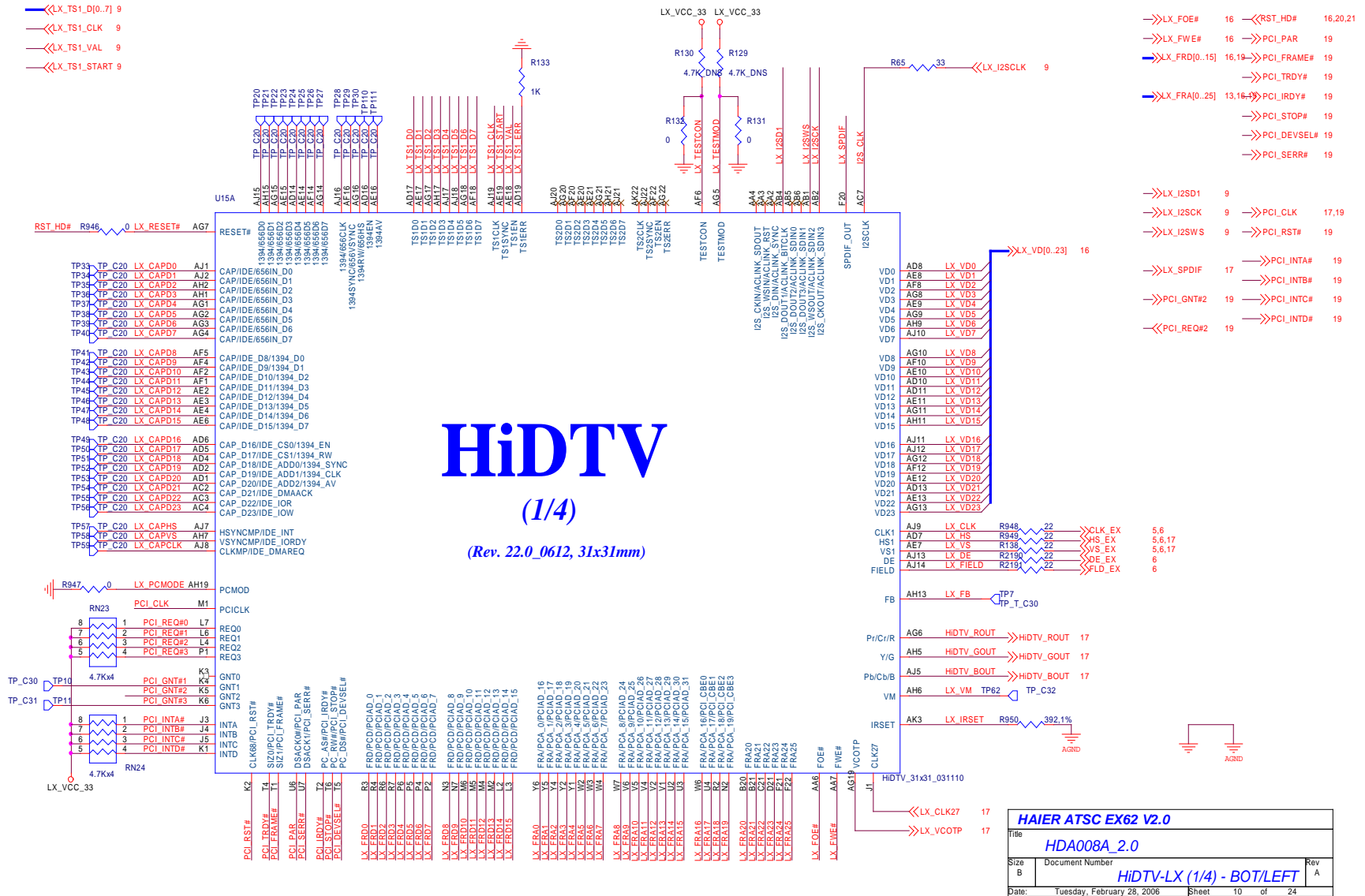




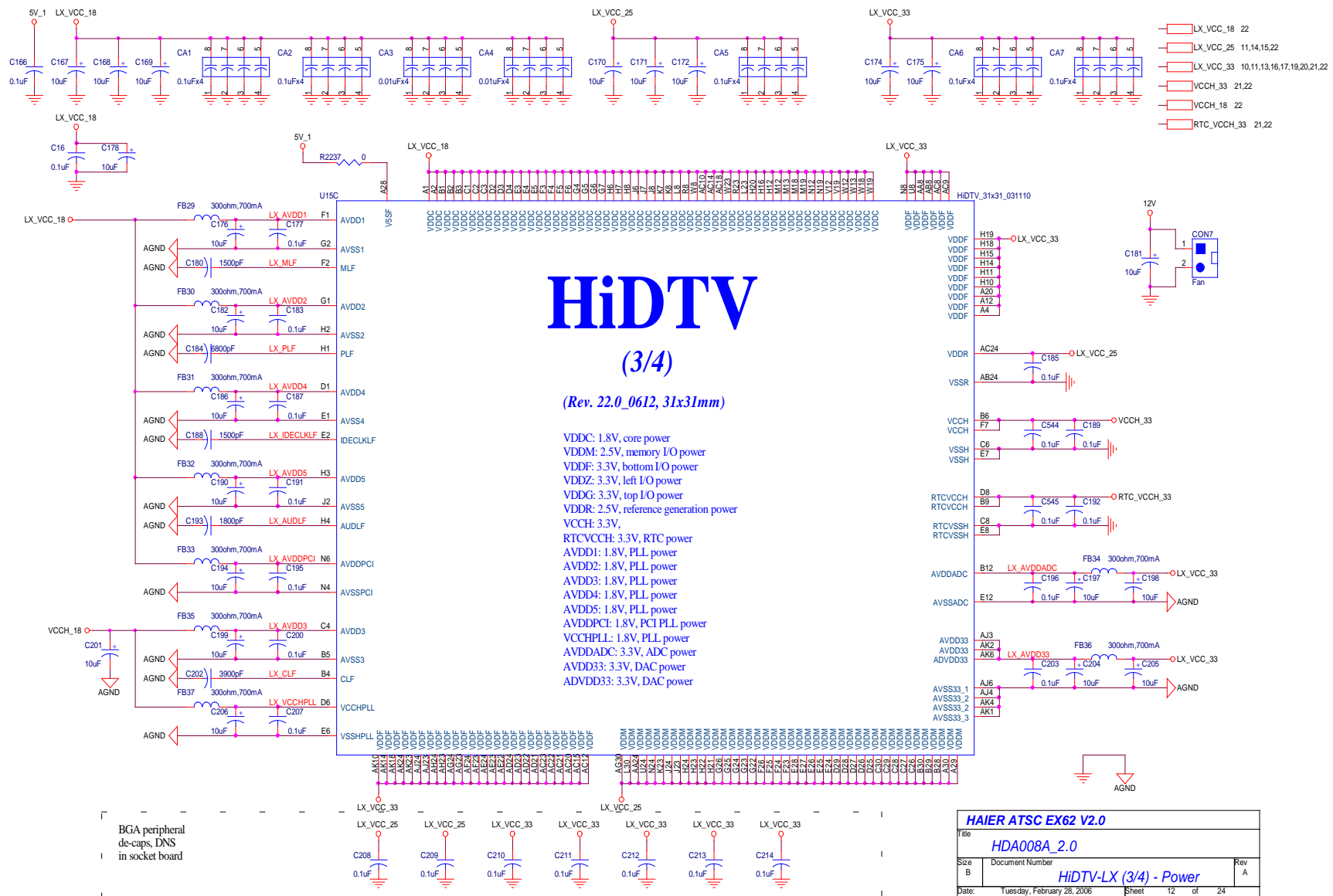


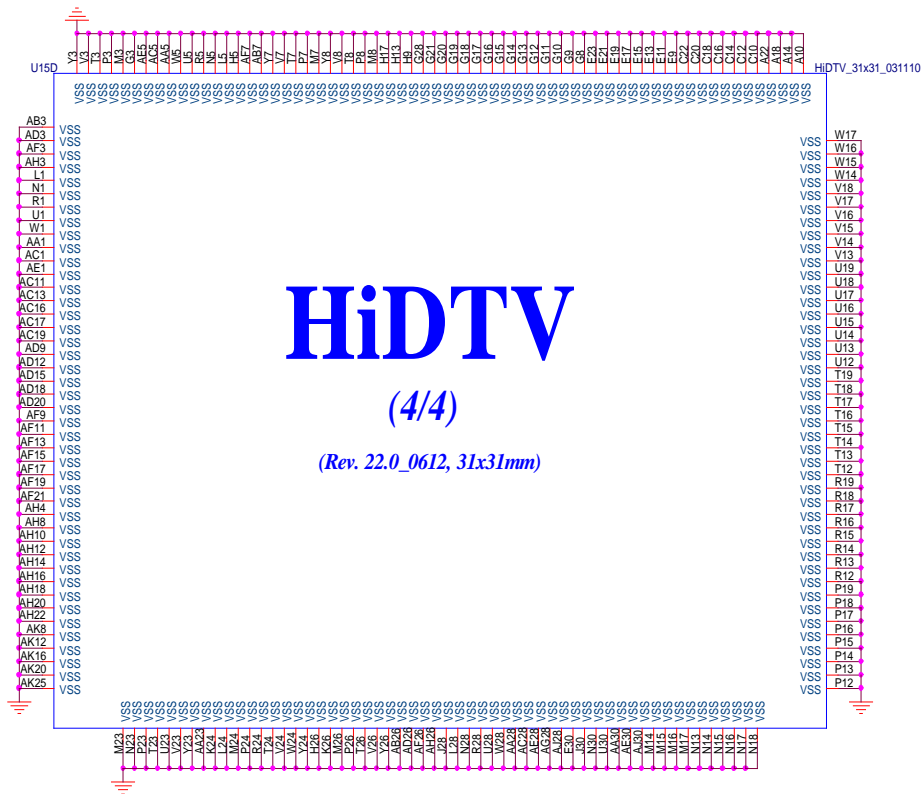


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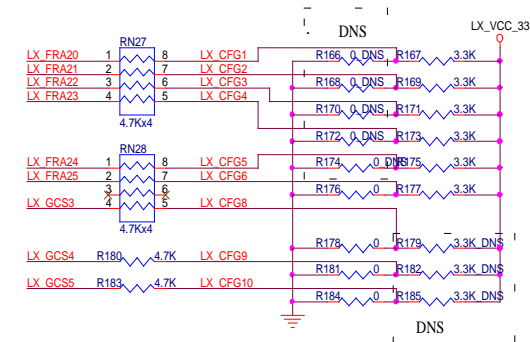








→ LX\_FRA[0..25] 10,16,19  
→ LX\_GCS[3..5] 11



No	PIN	Configure Pin	Description	Setting
1	FRA20	PIN_REG_DDR	For UMAC type configure	
2	FRA21	PIN_REG_TYPE0		
3	FRA22	PIN_REG_TYPE1		
4	FRA23	PIN_REG_TYPE2		
5	FRA24	PIN_REG8051EN		
6	FRA25	ROMSIZ0	Data Bus Width	1: 16-bit Data Bus (Flash Bootup) 0: 8-bit Data Bus (EEPROM Bootup)
7	GCS2	CONM_SN		1: Slave; 0: Master
8	GCS3	ENDIAN_SEL[0]	MIPS ENDIAN Mode	Default: 2'b00
9	GCS4	ENDIAN_SEL[1]		
10	GCS5	M68K_PCI_SEL	M68K/PCI select	1: M68K/Flash; 0: PCI/Flash

HAIER ATSC EX62 V2.0			
Title		HDA008A_2.0	
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11,15 LX\_DM[0..63] <<=

11,15 LX\_DQS[0..7] <<=

11,15 LX\_DM[0..7] <<=

11,15 LX\_MA[0..11] <<=

11,15 LX\_BA[0..1] <<=

11,15 LX\_WE# <<=

11,15 LX\_CAS# <<=

11,15 LX\_RAS# <<=

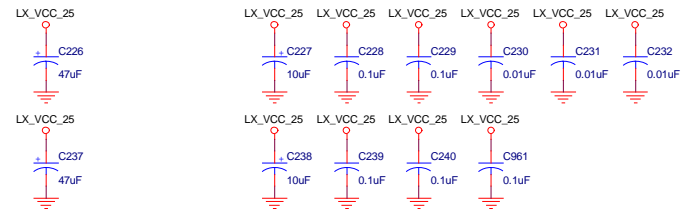
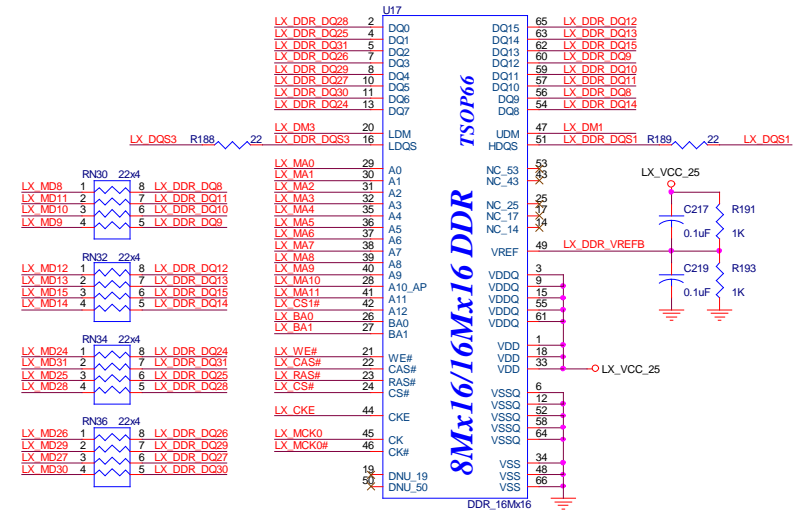
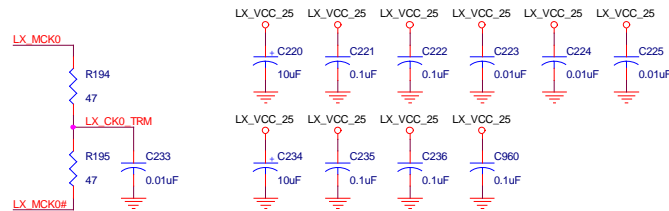
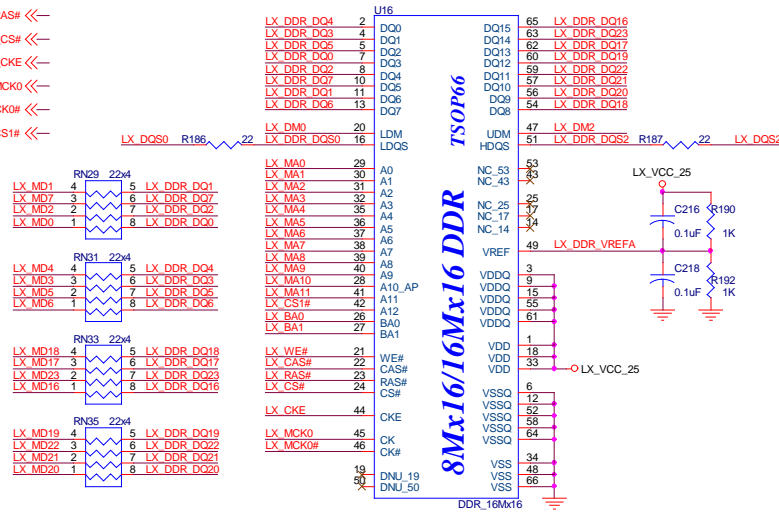
11,15 LX\_CS# <<=

11,15 LX\_CKE <<=

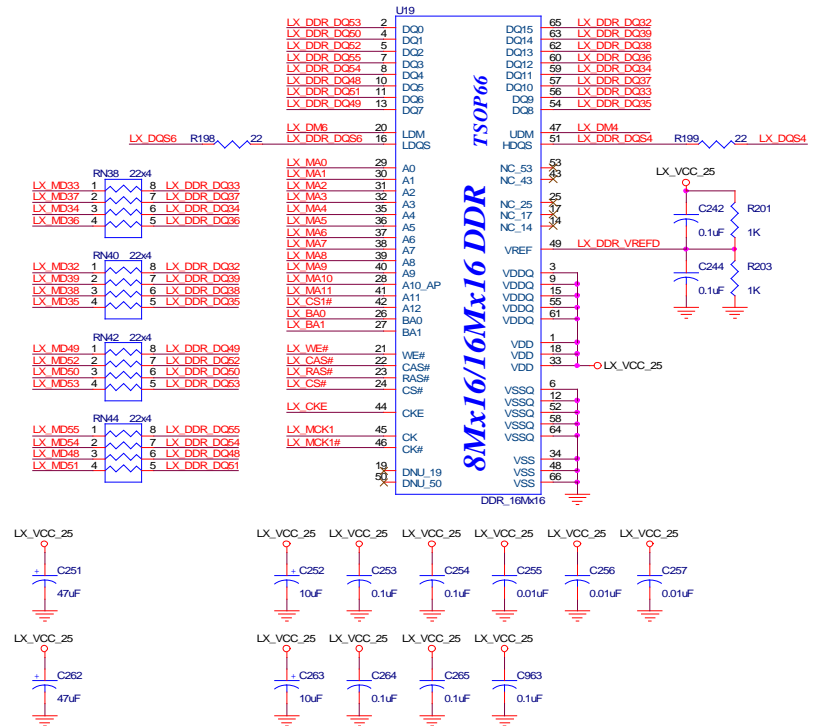
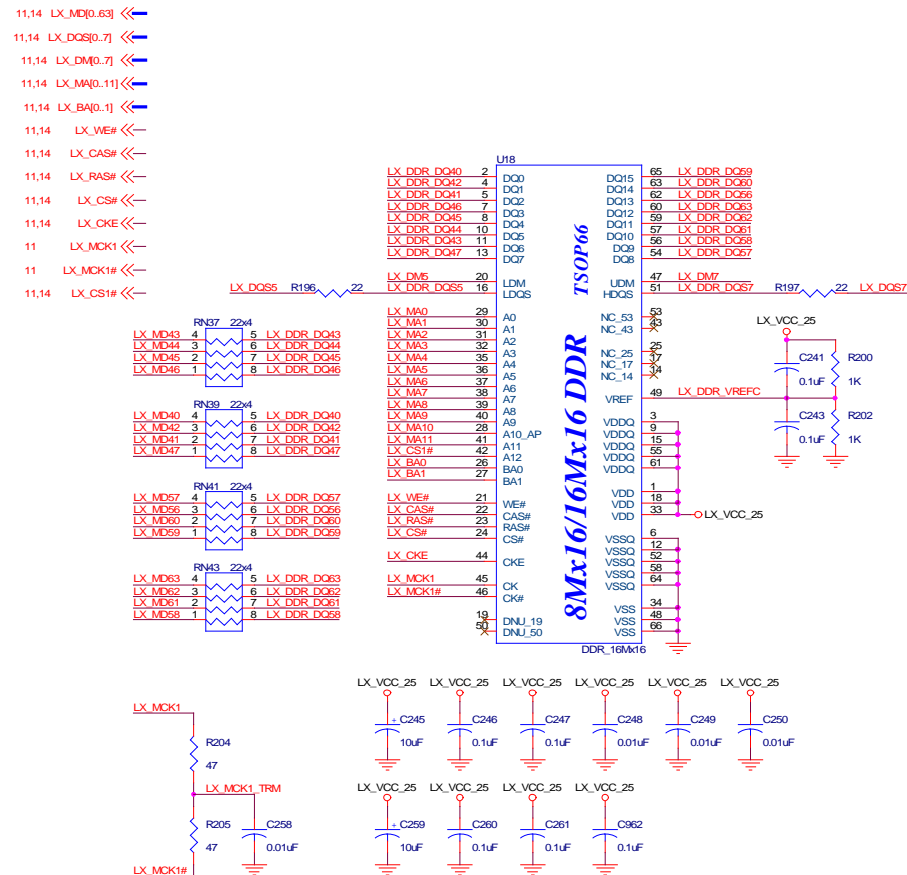
11 LX\_MCK0 <<=

11 LX\_MCK0# <<=

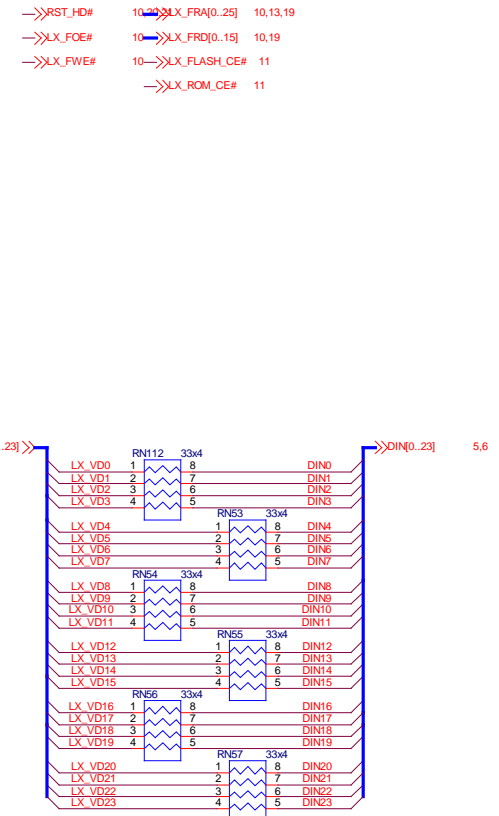
11,15 LX\_CS1# <<=

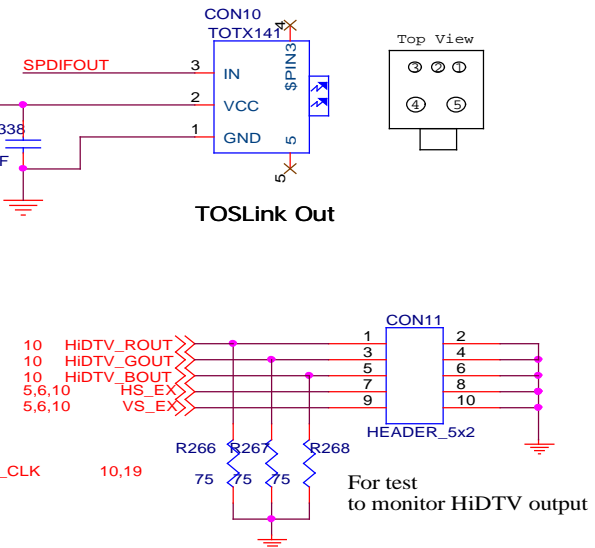
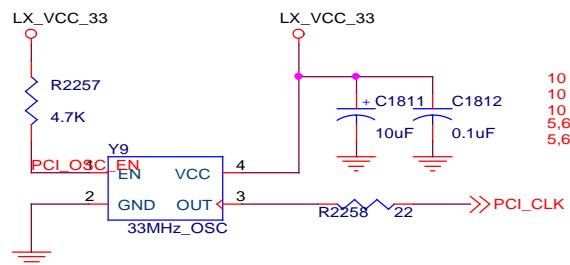
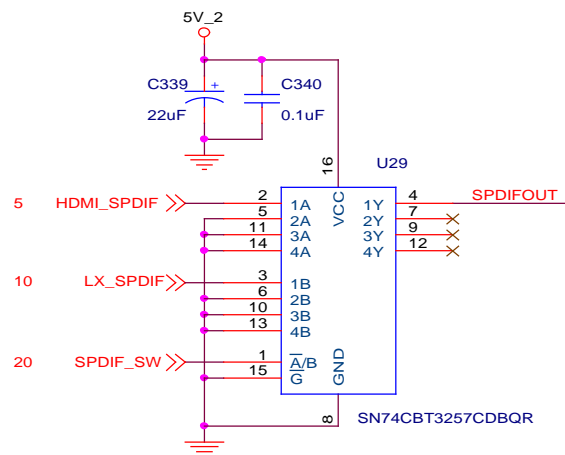
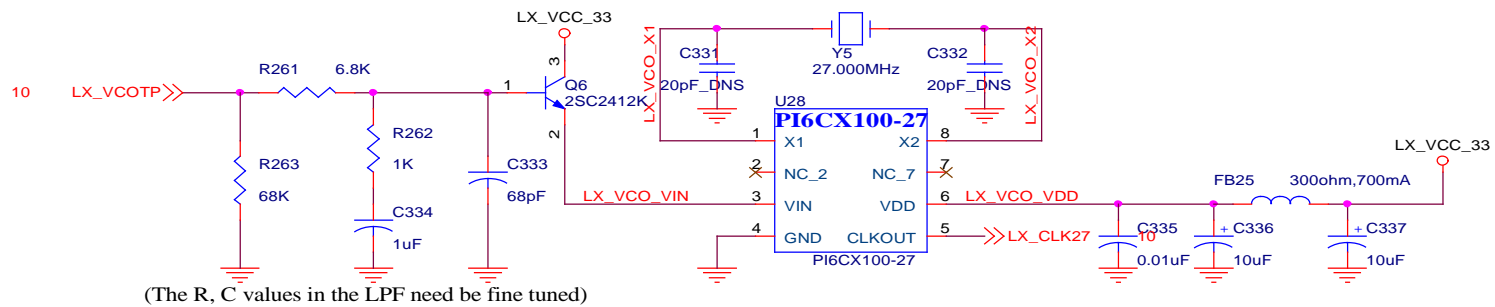


HAIER ATSC EX62 V2.0			
Title			
HDA008A_2.0			
Size	Document Number	Rev	
B		HiDTV LX DDR(1/2)	
Date:		Tuesday, February 28, 2006	Sheet 14 of 24

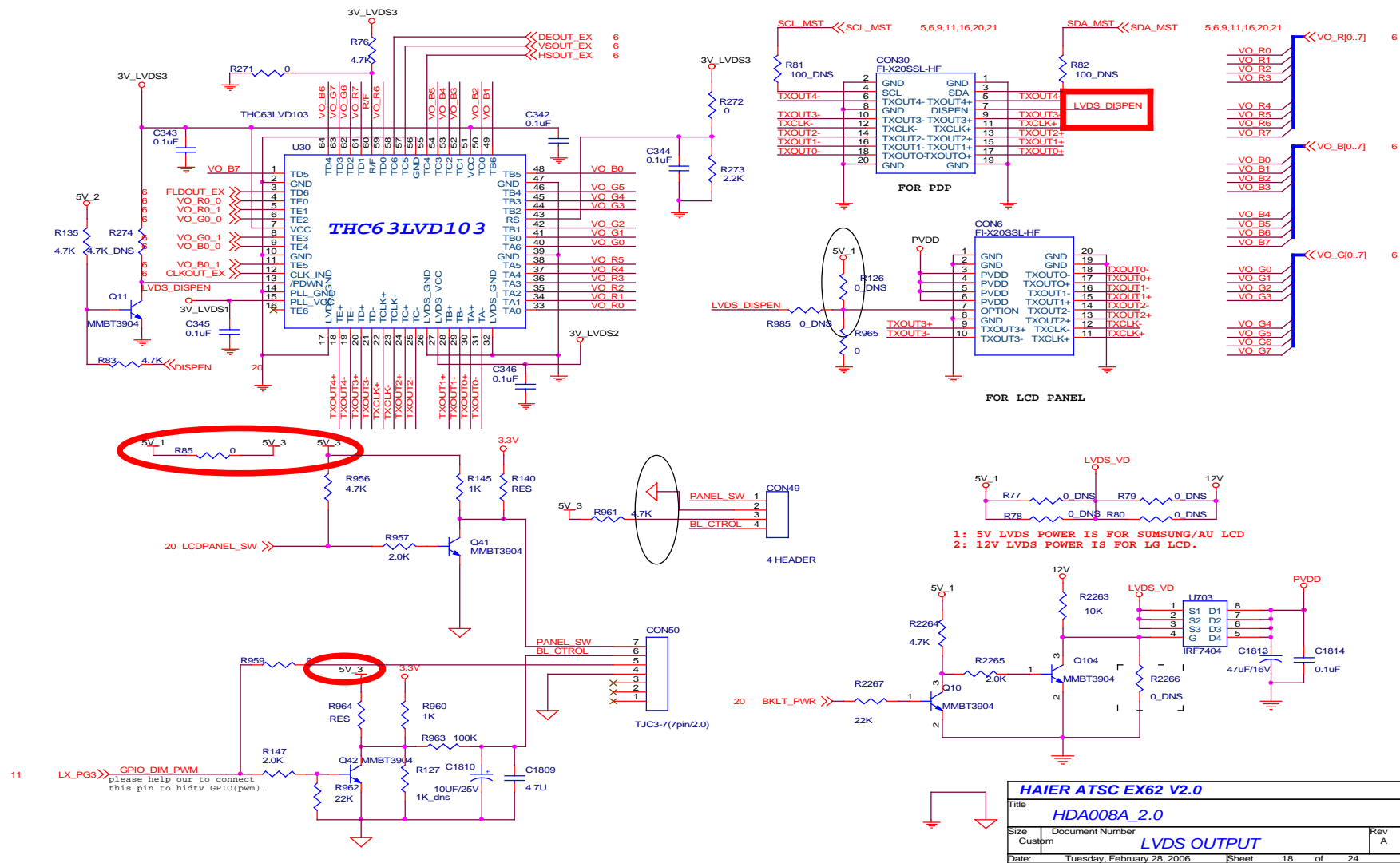


HAIER ATSC EX62 V2.0			
Title			
HDA008A_2.0			
Size	Document Number	Rev	
B		A	
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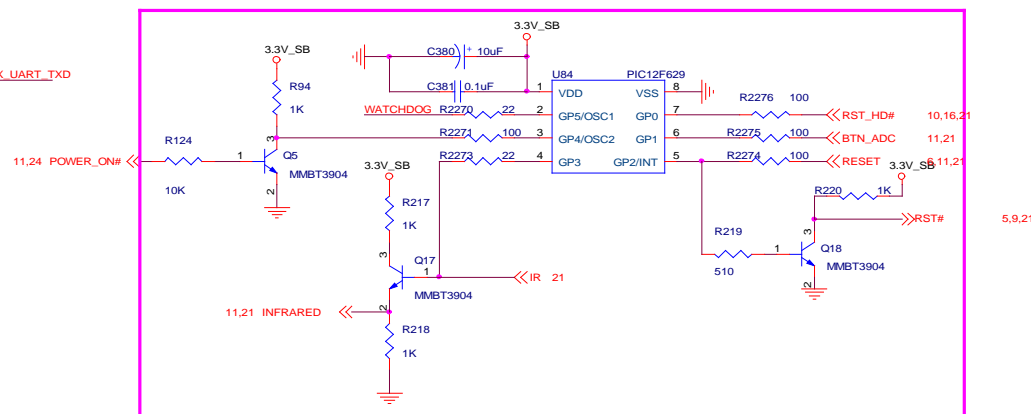
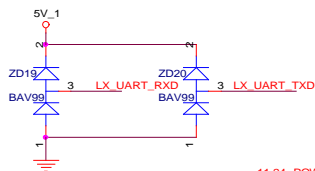
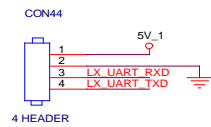
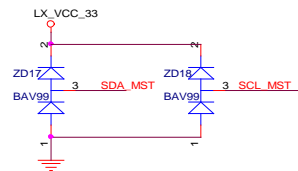
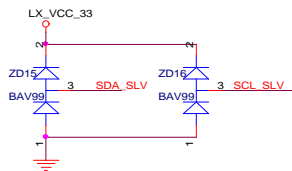
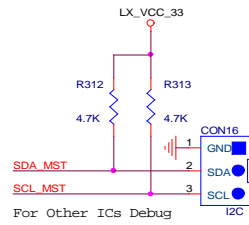
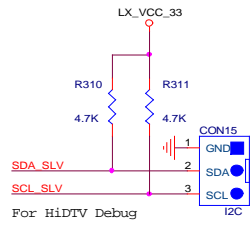




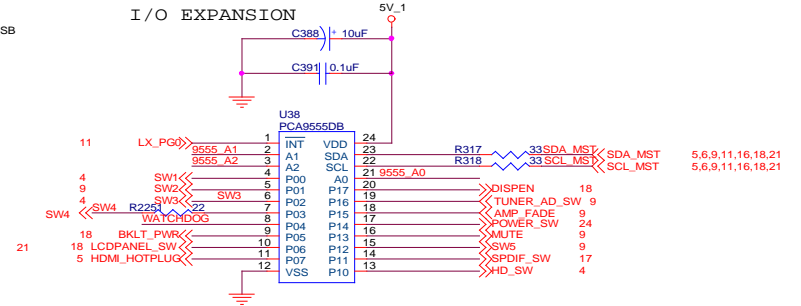
HAIER ATSC EX62 V2.0			
Title			
HDA008A_2.0			
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A	VCO, SPDIF		A
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## I/O EXPANSION



5V\_1

R327 4.7K 9555 A0

9555 A1

9555 A2

Default I2C ADDRESS:  
0x4E/4F

— SCL\_MST 5,6,9,11,16,18,21

— SDA\_MST 5,6,9,11,16,18,21

— PWRBT 11,21

— SCL\_SLV 11

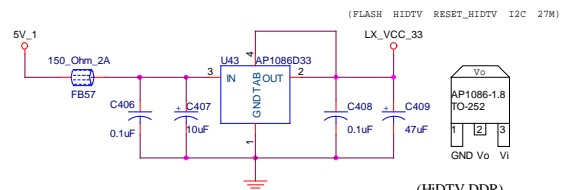
— SDA\_SLV 11

— LX\_UART\_RXD 4,11

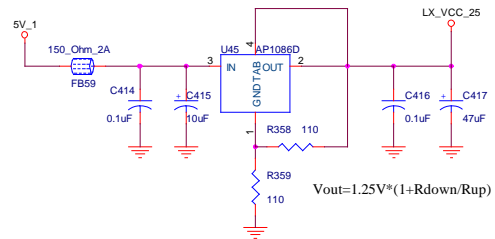
— LX\_UART\_TXD 4,11

HAIER ATSC EX62 V2.0			
Title			
HDA008A_2.0			
Size B	Document Number		Rev A
I2C, RS232, GPIO			
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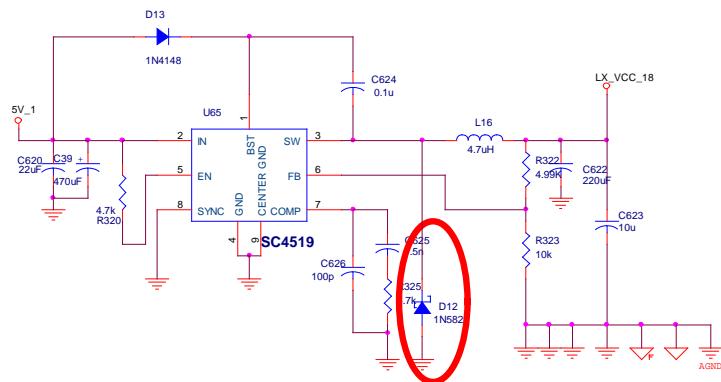
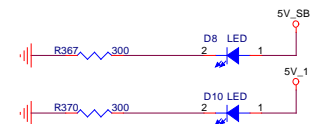
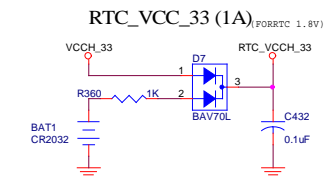
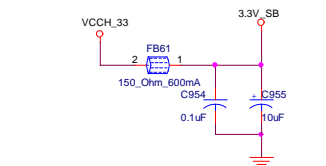
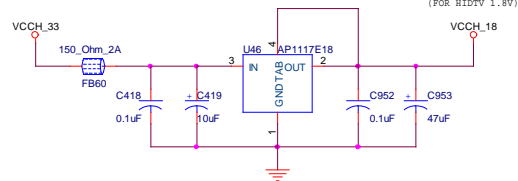
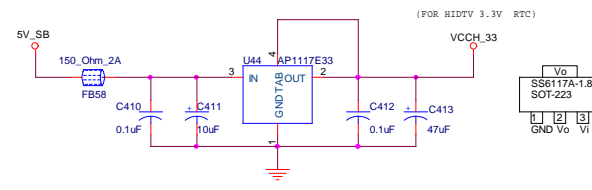




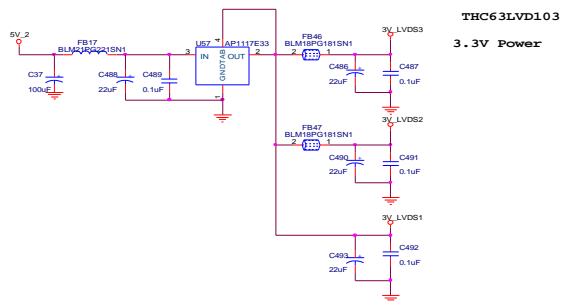
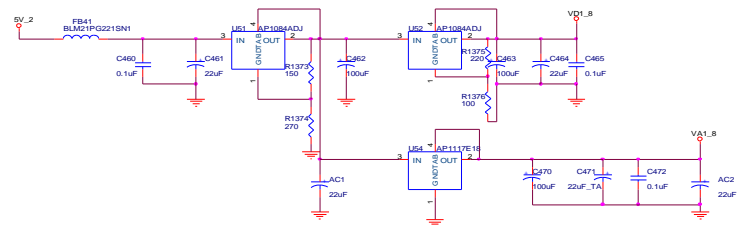
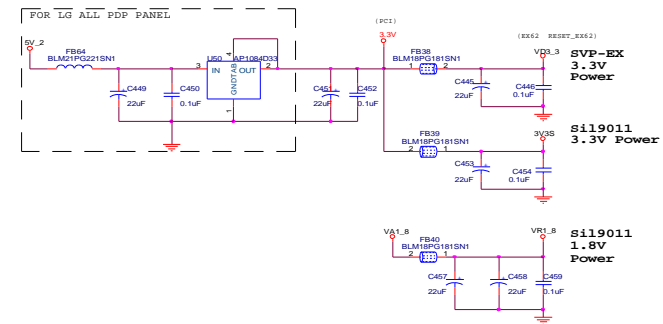
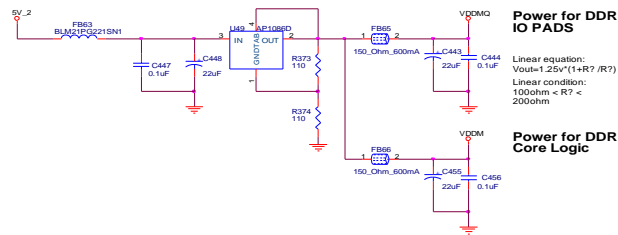
(HiDTV DDR)



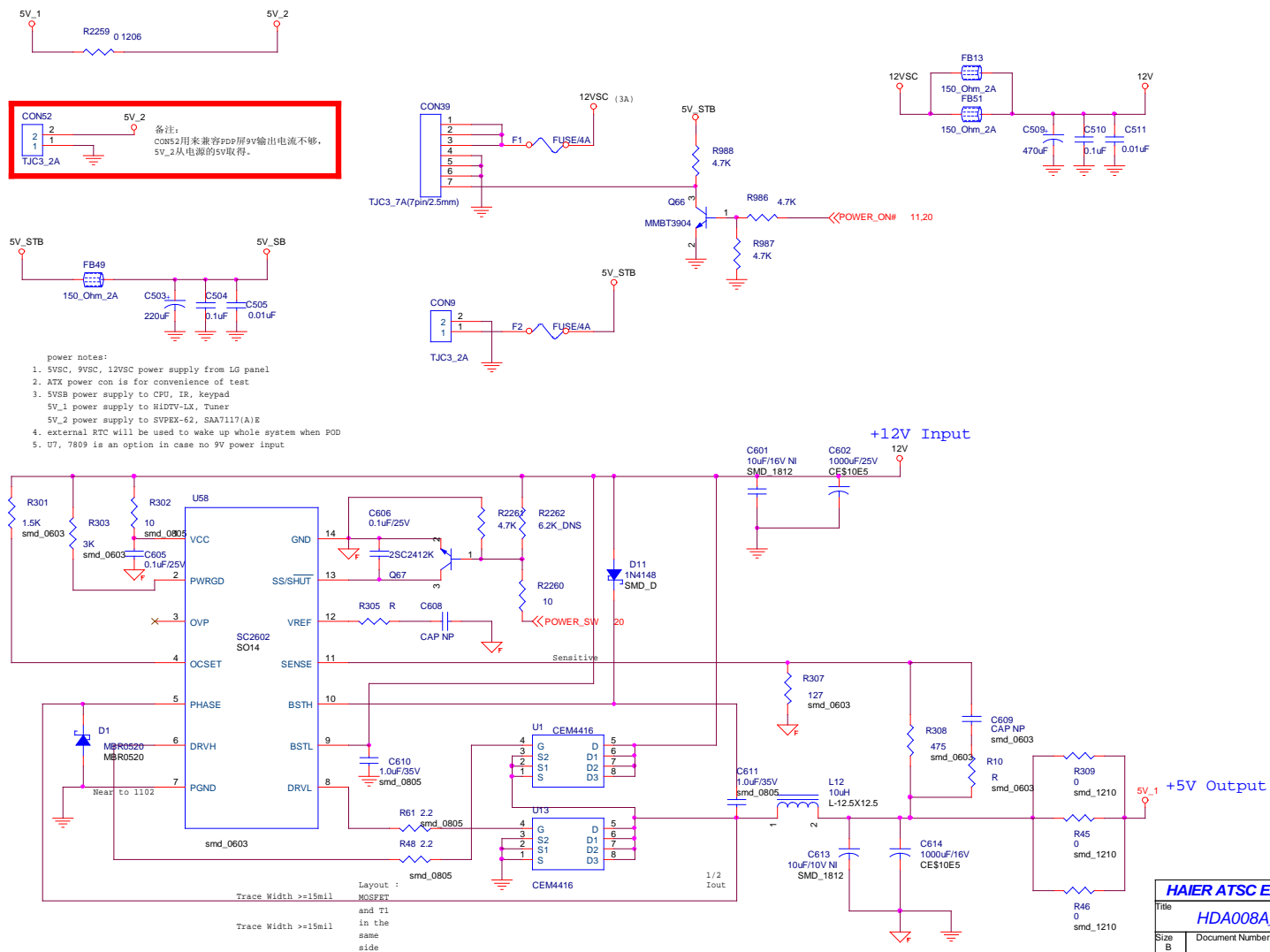
$$V_{out} = 1.25V * (1 + R_{down}/R_{up})$$



HAIER ATSC EX62 V2.0			
Title		HDA008A_2.0	
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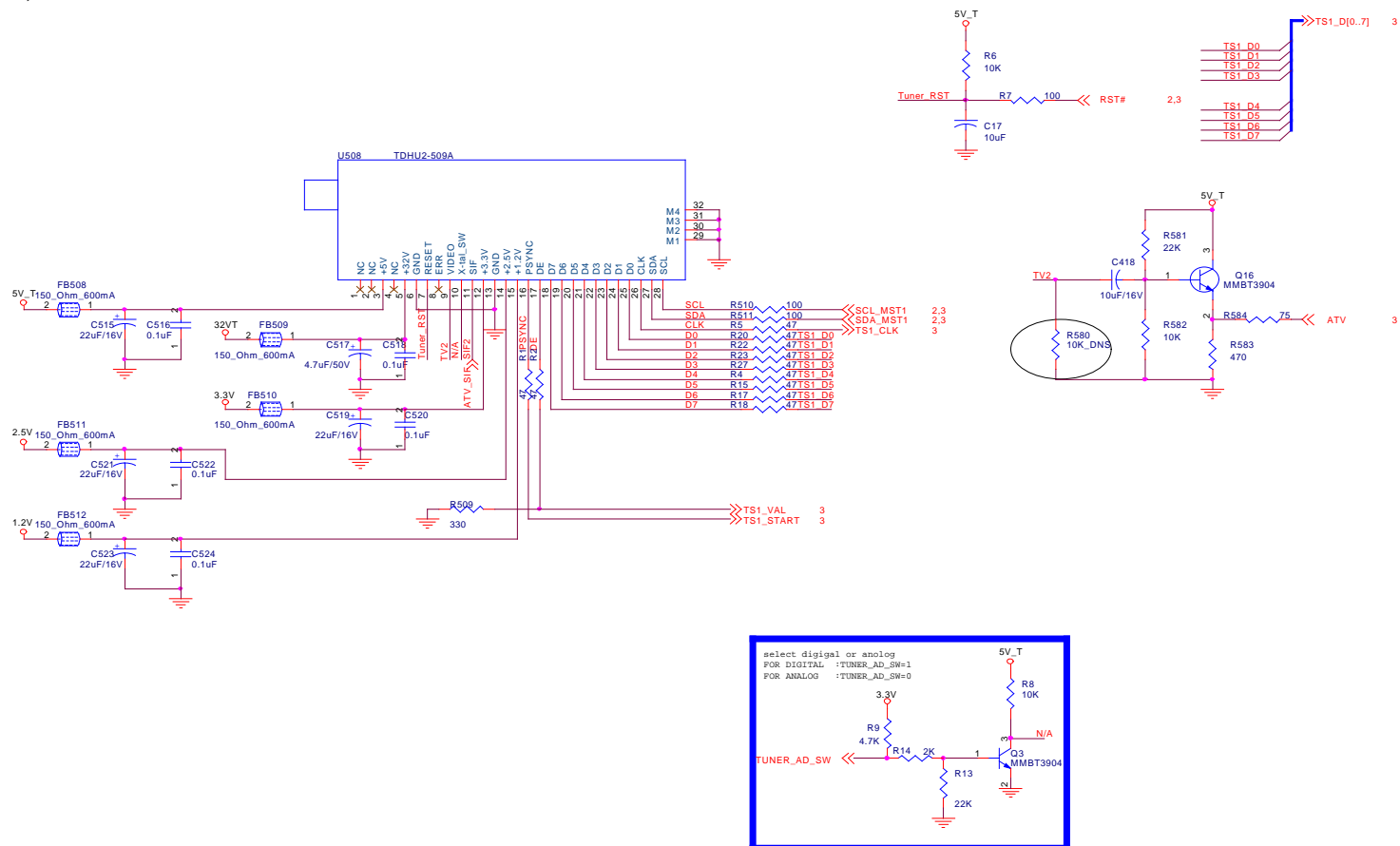


HAIER ATSC EX62 V2.0			
File	HDA006A_2.0		
Doc	Document Number	Power Supply - 2	
Date	Tuesday, February 28, 2006	Rev	A

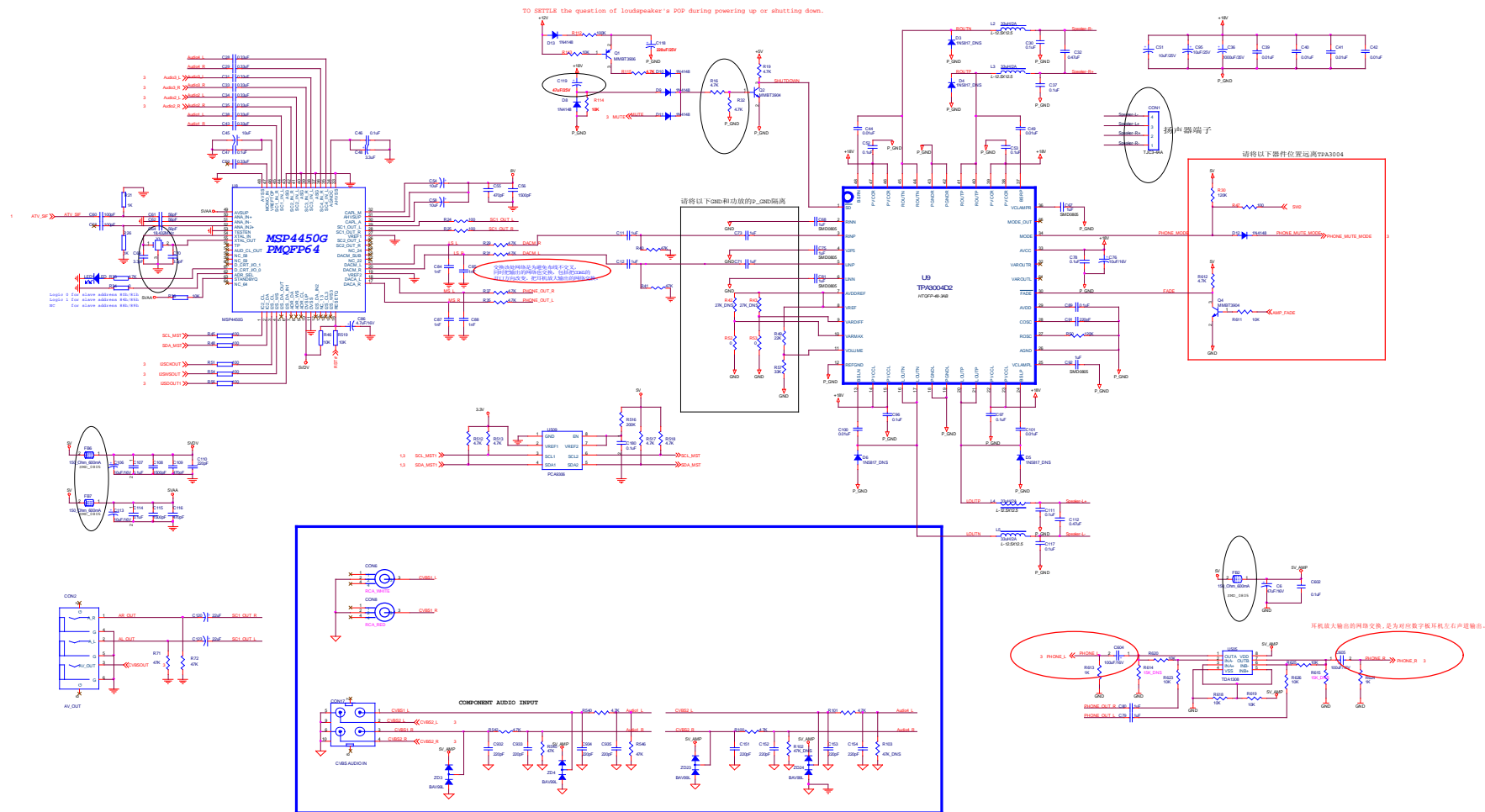


HAIER ATSC EX62 V2.0		
Title		
HDA008A_2.0		
Size B	Document Number	Rev A
Power Supply - 3		
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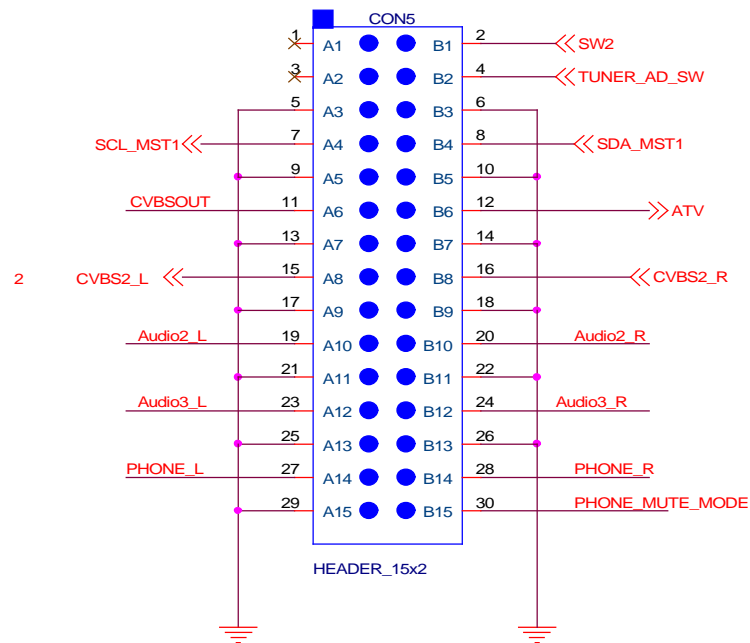
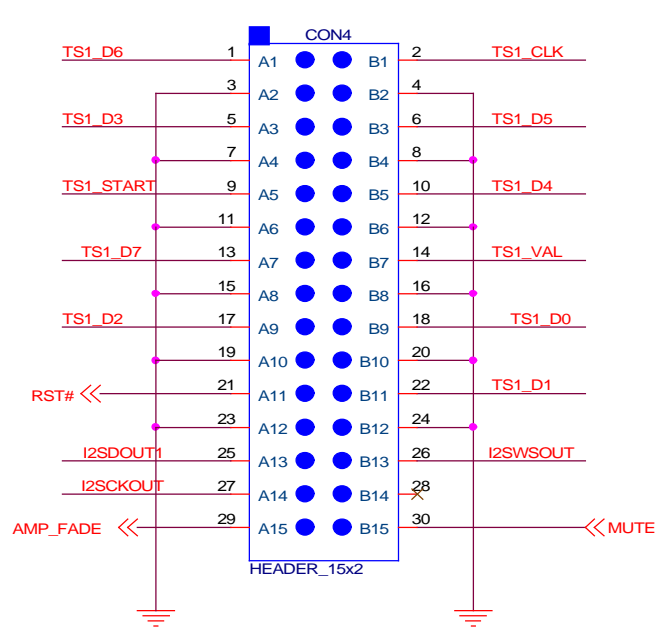
### b) Audio Board



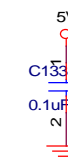
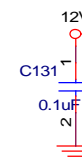
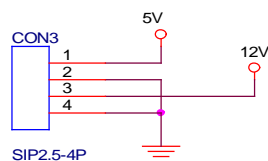
		Title <b>TDA008A</b>	
Schematic Name <i>Tuner</i>			Rev <i>A</i>
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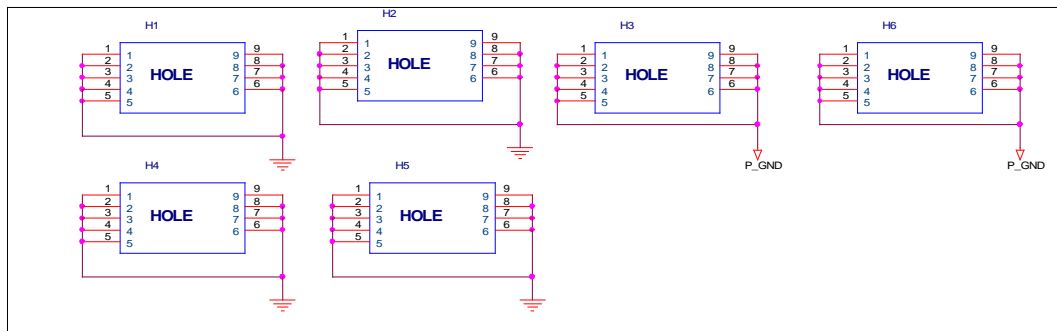
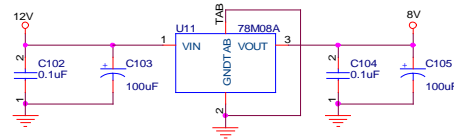
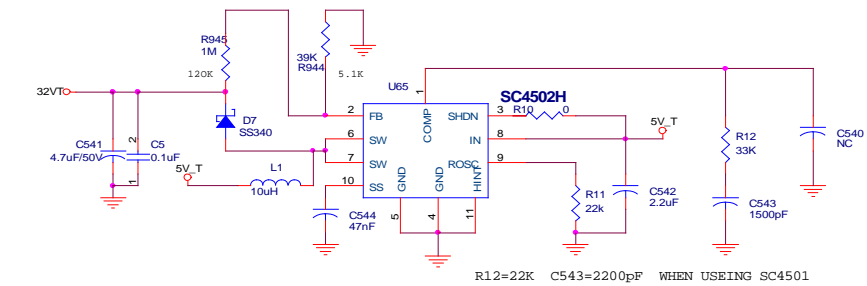
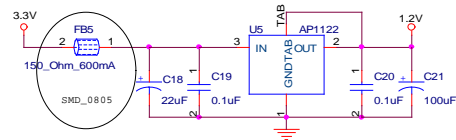
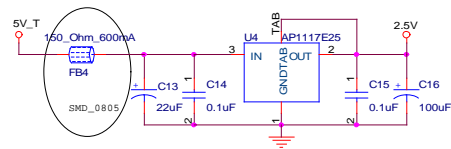
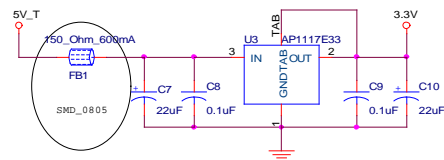
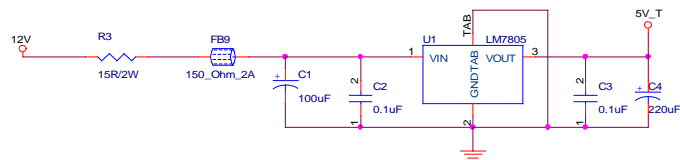
HAIER ATSC EX62 V2.0	
TDA008A 2.0	
Audio Processor	
10	11



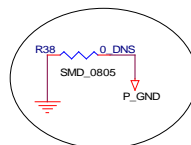
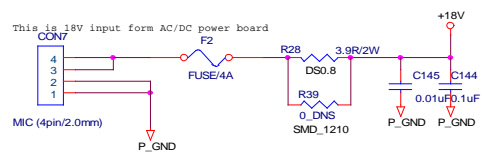
- <<TS1\_D[0..7] 1
- <<TS1\_CLK 1
- <<TS1\_VAL 1
- <<TS1\_START 1
- 7 — >>CVBSOUT 2
- >>I2SDOUT1 2
- >>I2SWSOUT 2
- >>I2SCKOUT 2
- >>PHONE\_MUTE\_MODE 2
- 2 — >>PHONE\_L 2
- >>PHONE\_R 2
- >>Audio2\_L 2
- >>Audio2\_R 2
- >>Audio3\_L 2
- >>Audio3\_R 2



		Title	
		TDA008A	
Schematic Name			Rev
Interface			A
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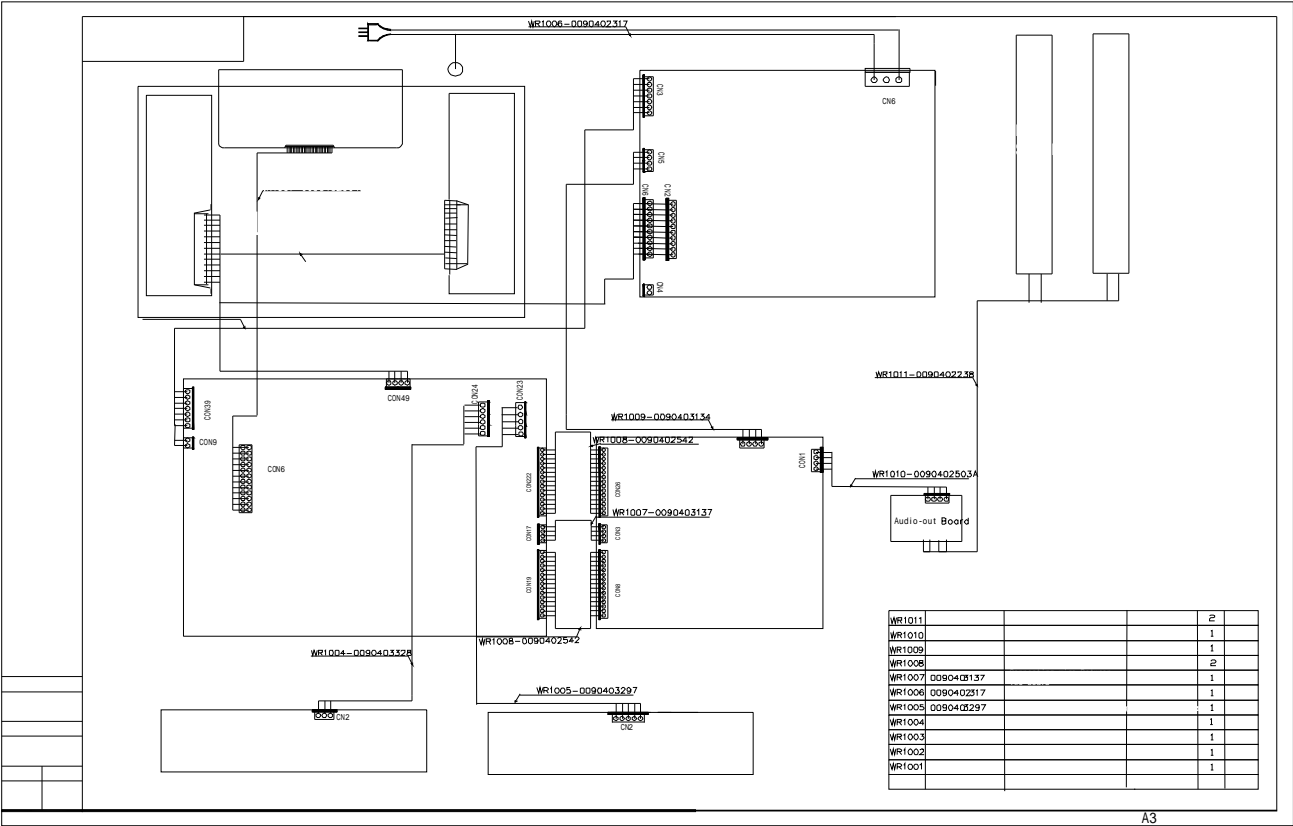


IF Vamp=16.5V pls Assemble R28 to drop 2V.  
otherwise assemble R39



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Schematic Name		Rev	
Power		A	
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# Connection Sketch Interpretat



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