HIKVISION 杭州海康威视数字技术股份有限公司
HANGZHOU HIKVISION DIGITAL TECHNOLOGY CO., LTD.

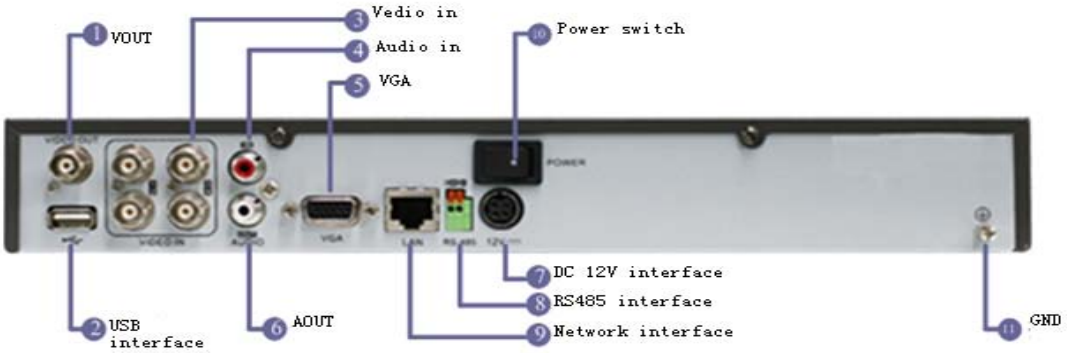
Product Maintenance Manual

（HIK/DS7208HVI-ST/SN）

Functional Characteristics：

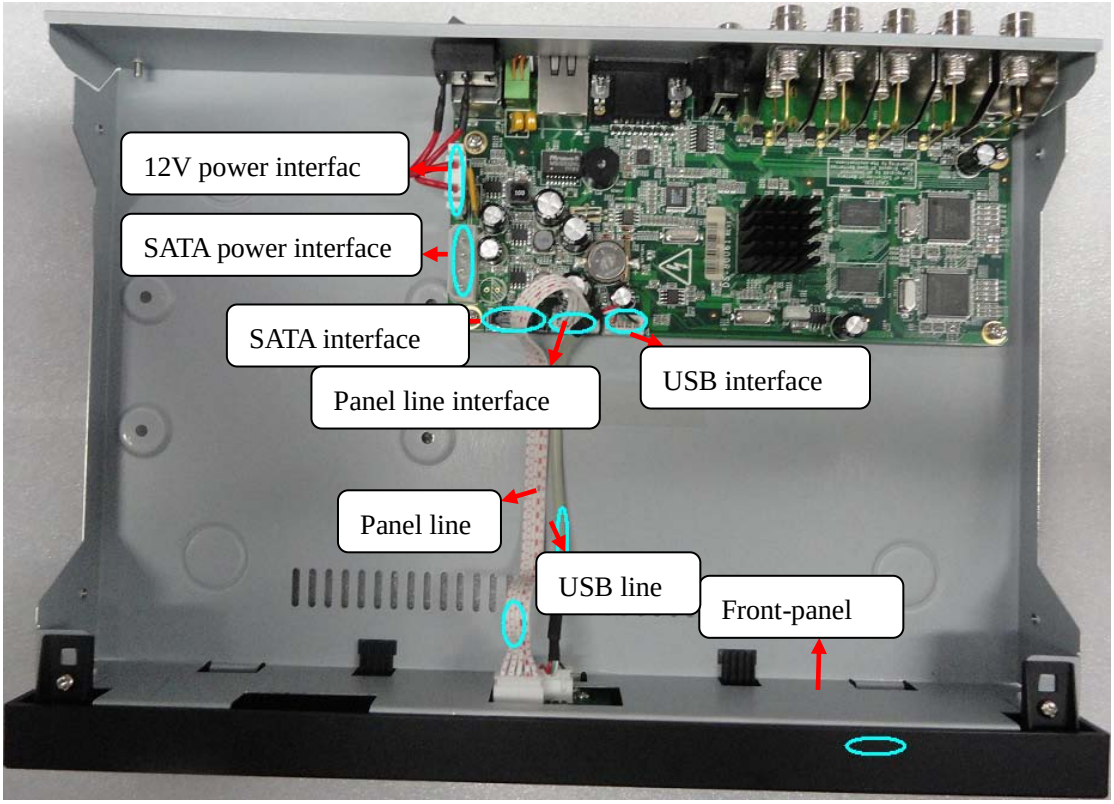
- VGA video output resolution topped 1024 * 768;
- Partial digital zoom by using mouse when in HIKVISION PTZ control mode
- The first channel support 4CIF/2CIF/CIF/QCIF real-time coding, the others channel support CIF/QCIF real-time coding;
- Support preview images and playback image of electronic amplification;
- VGA, VIDEO OUT can be simultaneously screen preview, of which the main output can output menu operation;
- Support four channel synchronous playback;
- Support one SATA interface;
- Support NTP (network school), SADP (automatic search IP address) agreement.

1. DS7208HVI-ST/SN Equipment Physical Interface



Note: Note: The back panel is similar to7208HVI-ST/SN(7216HVI-ST/SN)

2. DS7208HVI-ST/SN Equipment Internal Structure



Note: the front panel no menu operation function

3. DS80061 Mainboard Hardware Principle Diagram

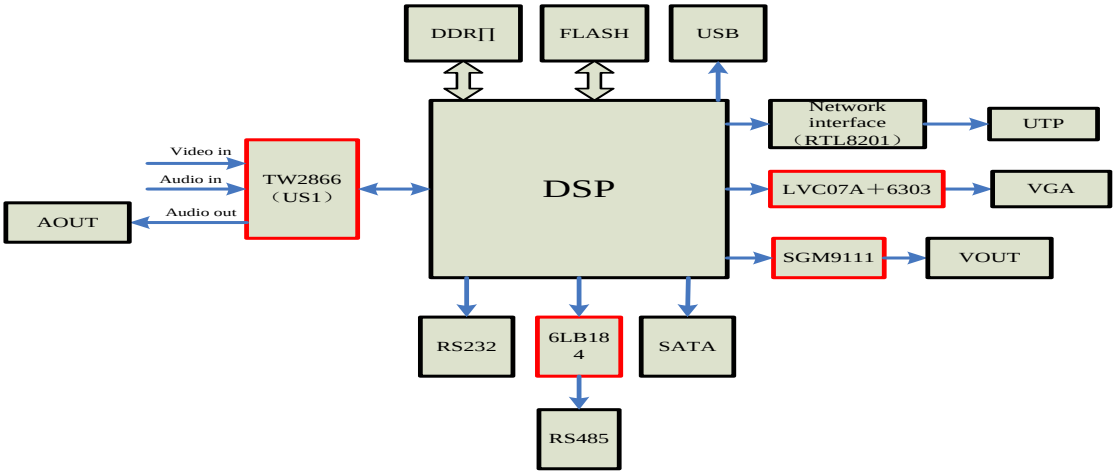


Diagram1.1　DS80061 Hardware Principle Diagram

Note：

- TW2866 (US1) support 1 road audio and 4 road video input, voice talkback Line In input and AOUT output
- VGA signal output directly from KY2010 chip, the external circuit by LVC07A + 6303 control VGA output amplification
- VOUT signal directly from KY2010 chip output, the external circuit control by SGM9111 VOUT signal amplifier output
- no alarm input/out of modules

4. DS80061 Mainboard Hardware Modules Diagram

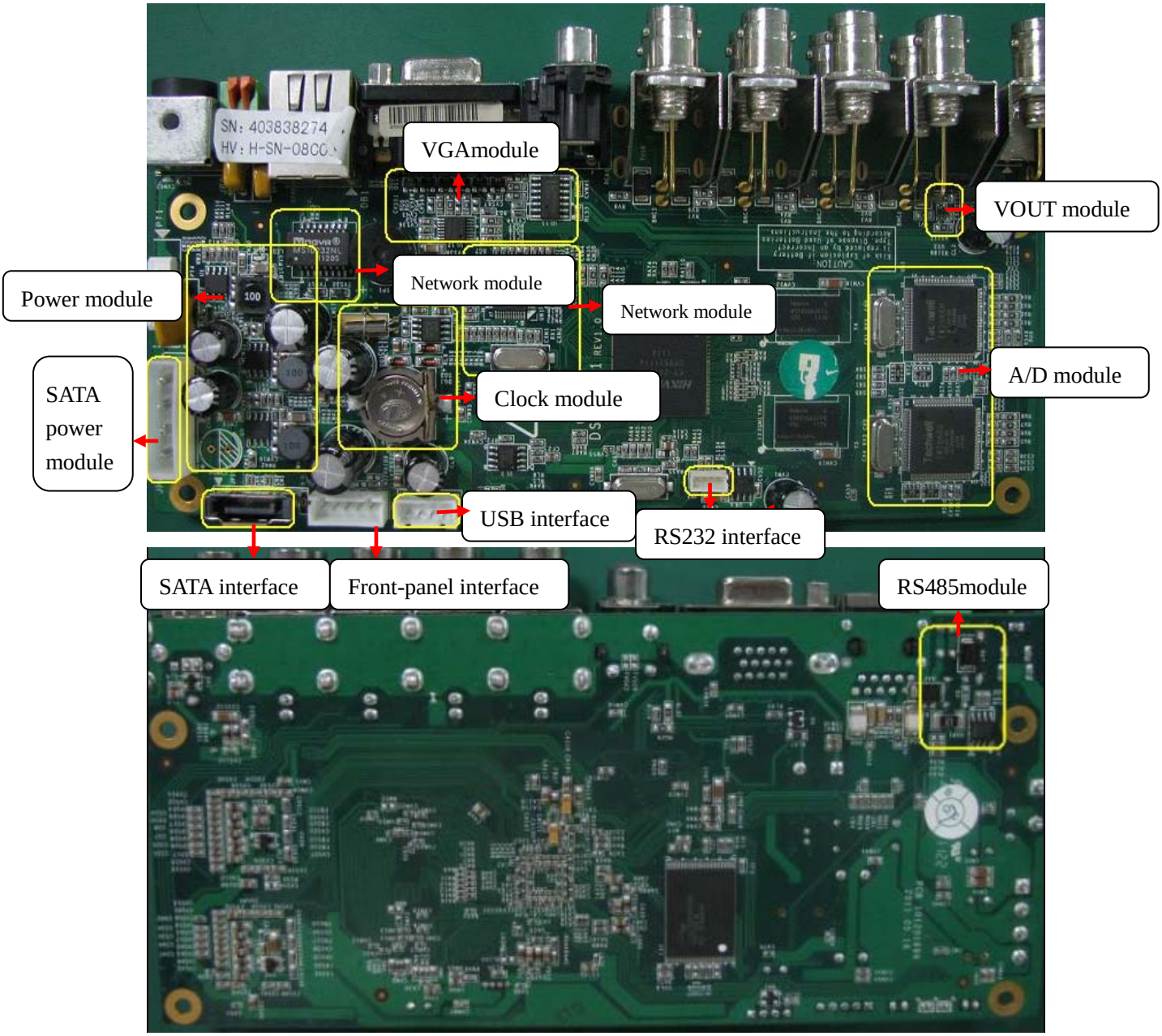
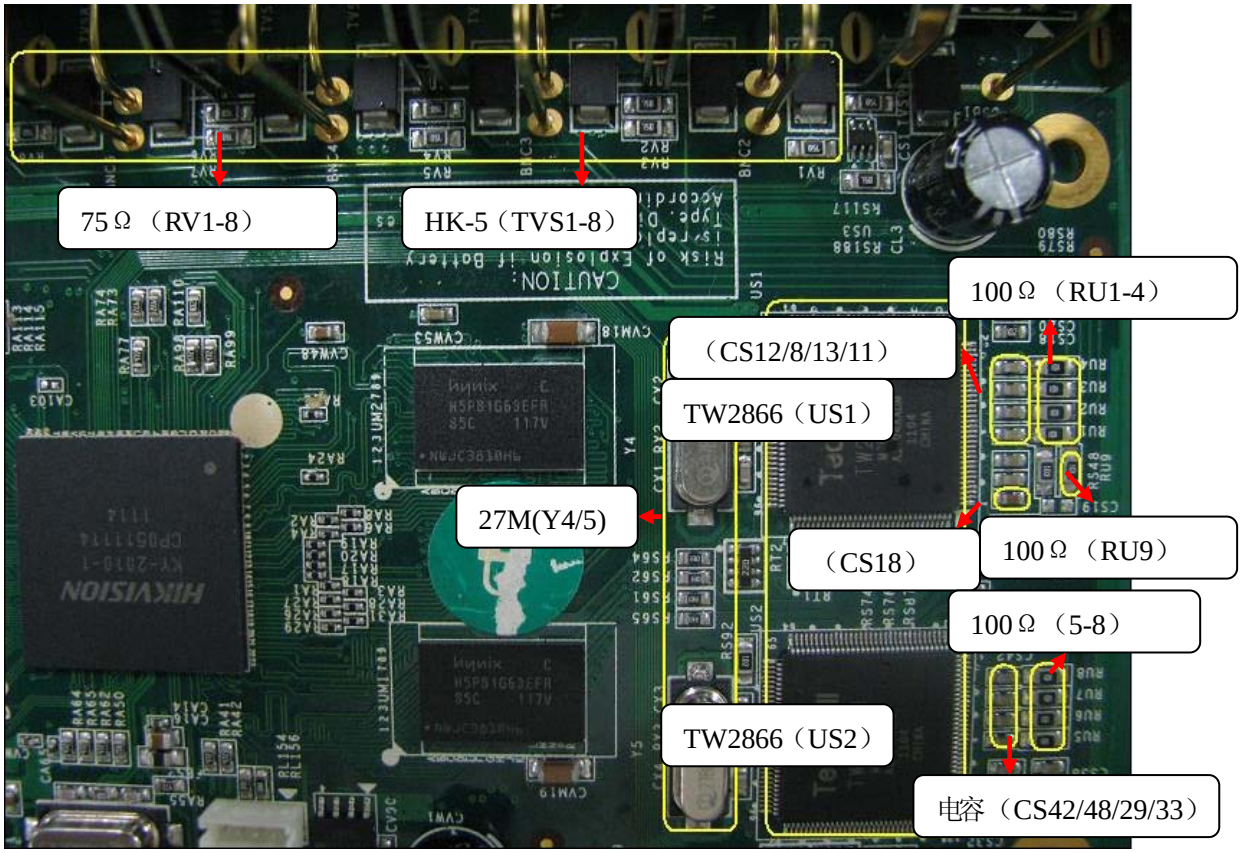


Diagram 1.2 DS80061 Mainboard Hardware Modules Diagram

5. DS80061 Mainboard Hardware Module Introduction

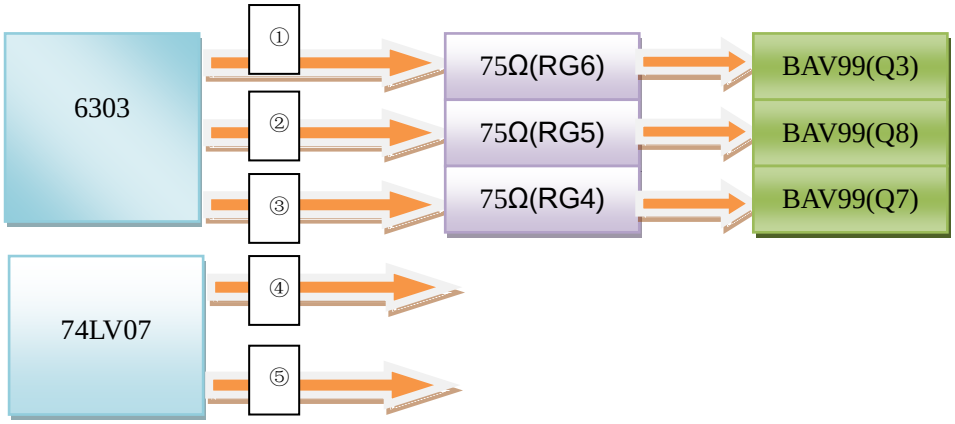
5.1. Audio Video A/D Module

- Video A/D Module Main Control Chip：TW2866 Audio
- TW2866（US1）PIN 6 control first audio input（input matching resistance 100 (RU9) and capacitance (CS18)）
- TW2866（US1）PIN 13/17/21/25 control 1-4 road vedio input（BNC input matching 4 HK-5 production tube（TVS2/4/6/8）; 4 75Ωresistance（RV2/4/6/8）; 4 100Ωresistance（RU1/2/3/4）; 4 capacitance（CS12/8/13/11））
- TW2866（US2）PIN 13/17/21/25 control 5-8 road vedio input（BNC input matching 4 HK-5 production tube（TVS1/3/5/7）; 4 75Ωresistance（RV1/3/5/7）; 4 100Ωresistance（RU5/6/7/8）; 4 capacitance（CS42/48/29/33））
- 27 M (Y4/Y5) : TW2866 work clock, PIN 82 input 27 M
- Audio video A/D module component：



5.2. VGA Output Module (Local Preview Image Output Module)

- VGA main chip module: LVC07A, 6303; LVC07A PIN 2 output single(VS) and 1 K resistance (RL50) connect 5V voltage, PIN 4 output signal (HS) and 1 K (RL51) resistance connect 5V voltage
- BAV99: control VGA output amplification, if BAV99 (Q9) 3 feet low level (voltage 0 V), it means the system to detect VGA display; If you meet VGA display, system and output signal and system menu VGA; If behind the VGA display, the system only output VGA signal; If the high level (close to 3.3 V), it means the system does not detect the display
- VGA signal output basic schemes:



① : PIN 10 output “R” signal ;

② : PIN 11 output “B” signal ;

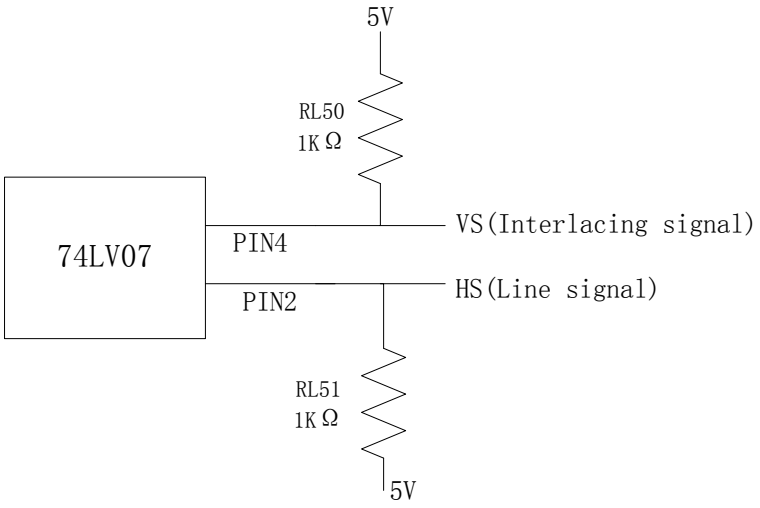
③ : PIN 12 output “G” signal ;

④ : PIN 4 output “HS” signal ;

⑤ : PIN 2 output “VS” signal ;

VGA master chip : 74LV07 and 6303

Description:

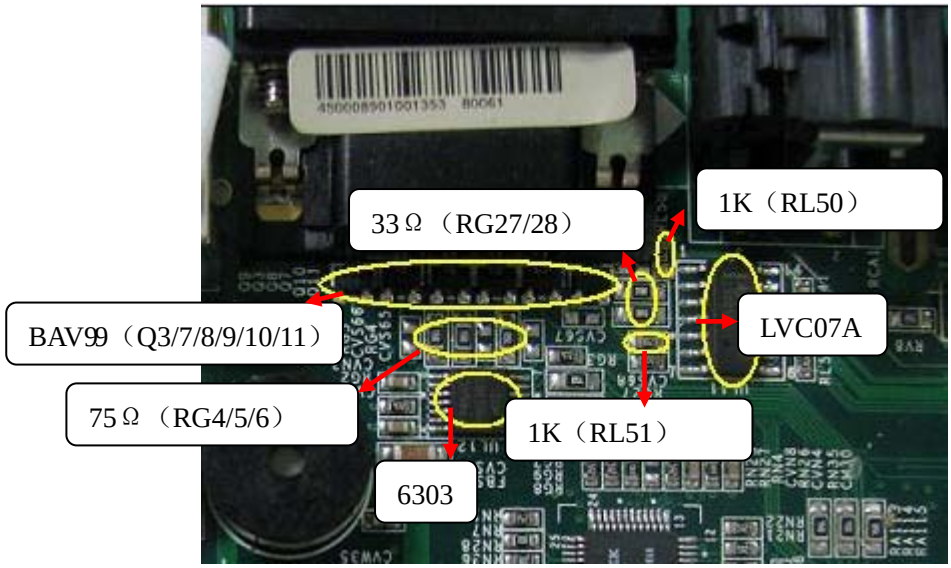


BAV99 :

If the PIN 3 of BAV99(Q9) is Low-level (0V), Said system detects VGA monitor;

If the PIN 3 of BAV99(Q9) is high-level (nearly 3.3V),said system doesn't detect VGA monitor;

- VGA module components：

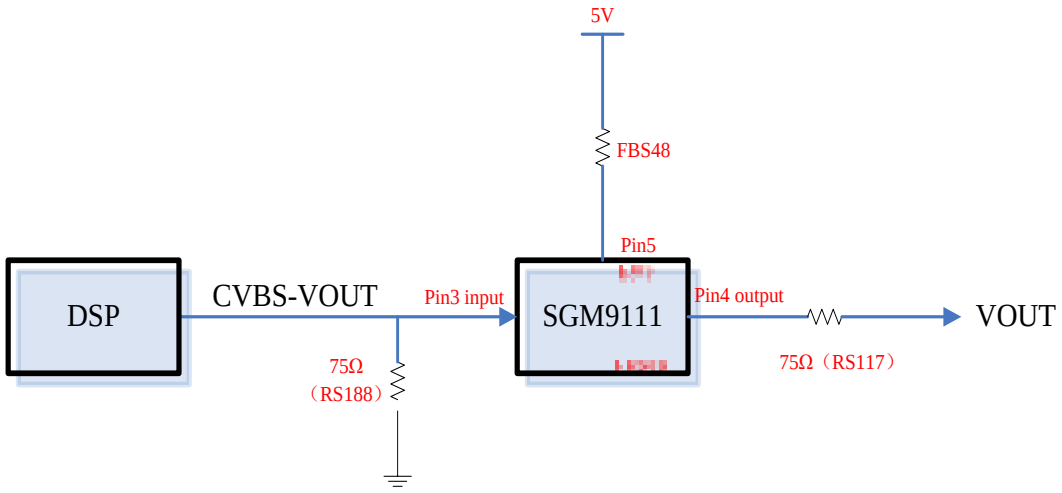


5.3. VOUT Output Module (Local Preview Image Output Module)

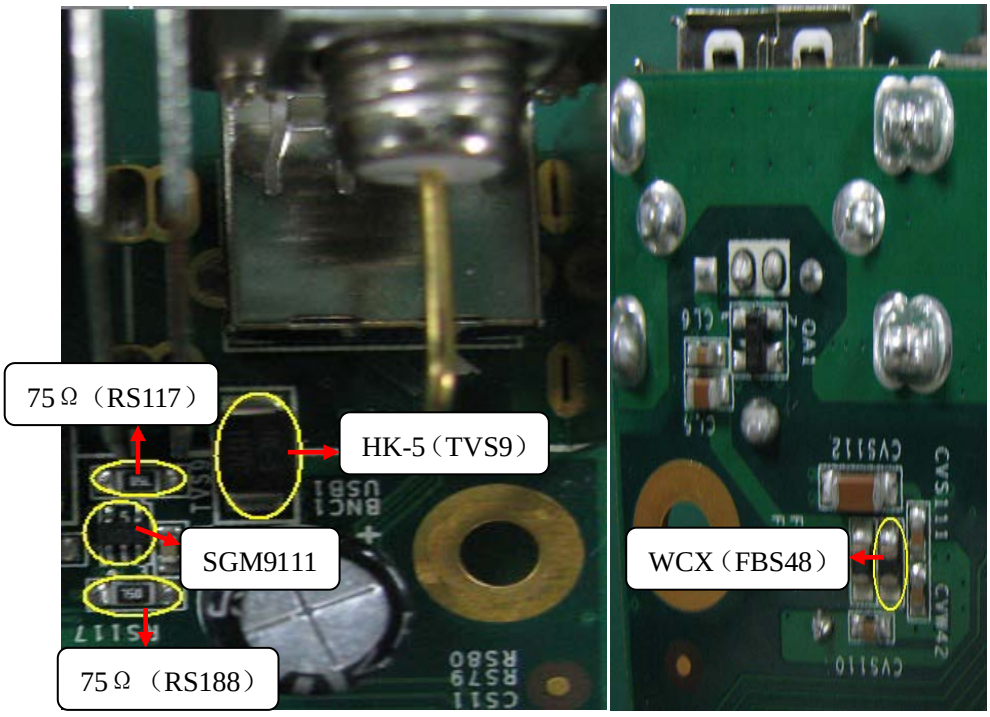
- VOUT main control chip: SGM9111, PIN 3 pull-down 75Ωresistance (RS188) grounding and input CVBS-OUT signal, PIN 4 through the 75Ωresistance (RS117) output VOUT signal, working voltage through a

WCX(FBS48) for 5V power supply

- VOUT interface TVS protection tube: VOUT interface connect HK-5 (TVS9)
- VOUT signal output basic schemes:

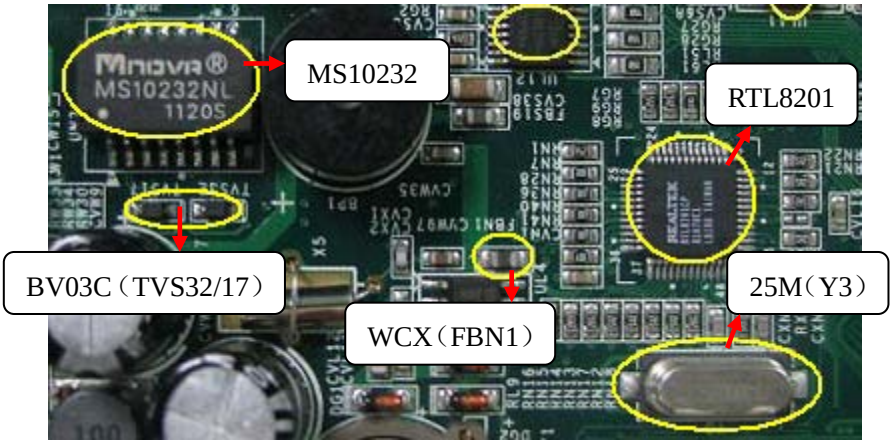


- VOUT Module components：



5.4. Network Module

- Network module components：



5.4.1 LAN master chip :

Chip name	pin	Description	voltage
RTL8201	36	Operation voltage input “pin 36” via “FBN1”	V≈3.3V

5.4.2 Transformer

Chip name	Description
MS10232NL	Network transmission signal amplification, rectification

5.4.3 Crystal

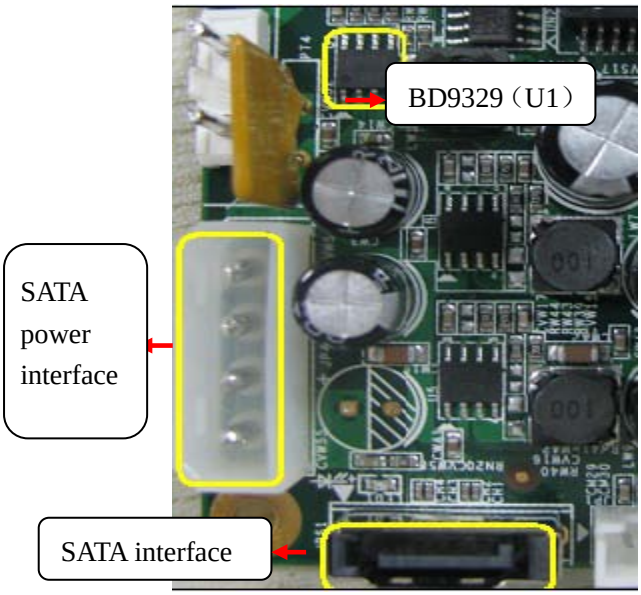
Chip name	Description
25M(Y3)	RTL8201 clock chip

5.4.4 Signal amplification chip :

BV03C（TVS32/17）: used to amply signal transmission (TX) / Receive (RX) ;

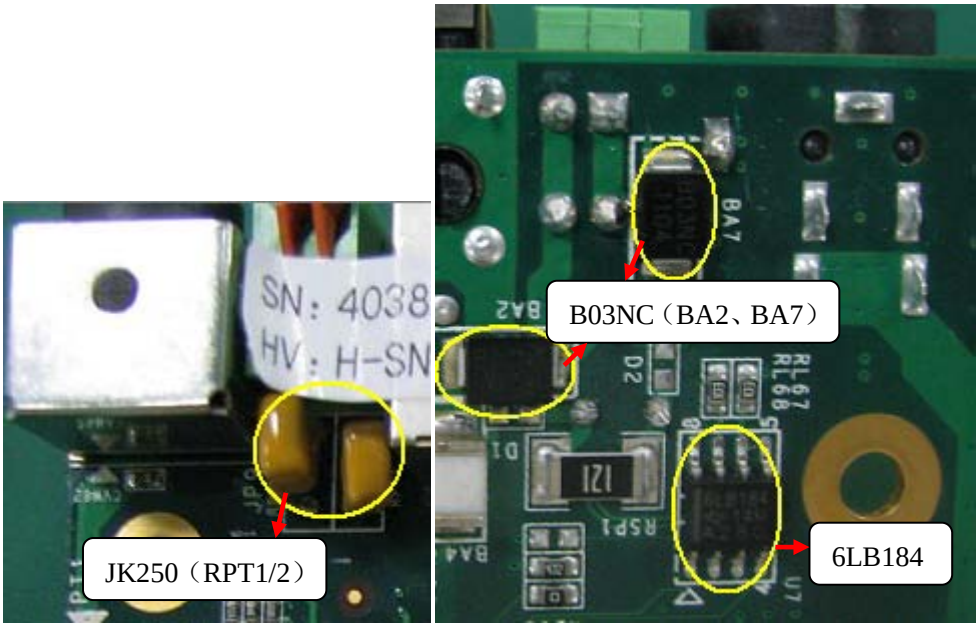
5.5.SATA Module

- SATA main control chip: KY2010
- BD9329 (U1) power piece: PIN 2 enter 12 V, PIN3 output 5V for SATA power source
- SATA module part:



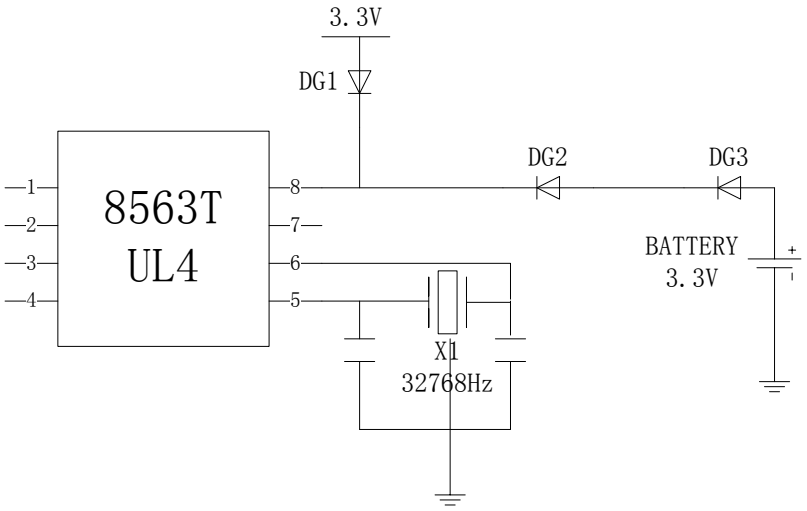
5.6. RS485 Module

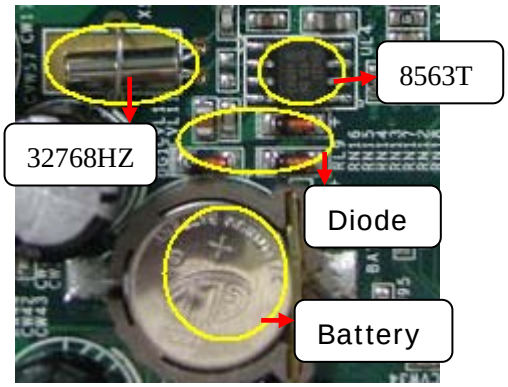
- RS485 main control chip:6LB184, PIN 6, 7 were TX +,TX-,the difference voltage close to 5 V
- TVS（B03NC）：B03NC（BA2、BA7）protect the sending end (TX +, TX-R +, R-)
- Thermistors (JK250) : JK250 (RPT1/2) protect the sending end (TX +, TX-R +, R-)
- RS485 module part:



5.7. Clock Module

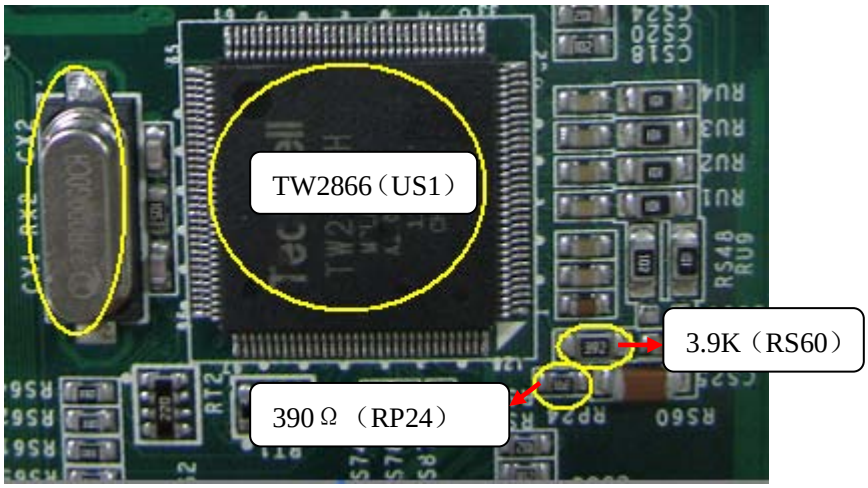
- Clock control chip: 8563 T
- 32768 HZ: 8563 T reset the clock
- Battery: External Battery, normal voltage 3.3 V
- Diodes (DG1, DG2, DG3) : DG1 connects to 3.3 V voltage, DG2, DG3 Battery are connected at one end, when the mainboard electricity, DG2, DG3 globe, DG1 conduction, Battery don't power supply; When the mainboard power cuts, in turn, the Battery power supply, DG2, DG3 conduction, DG1 deadline
- The clock module component





5.8. Voice Talkback Module

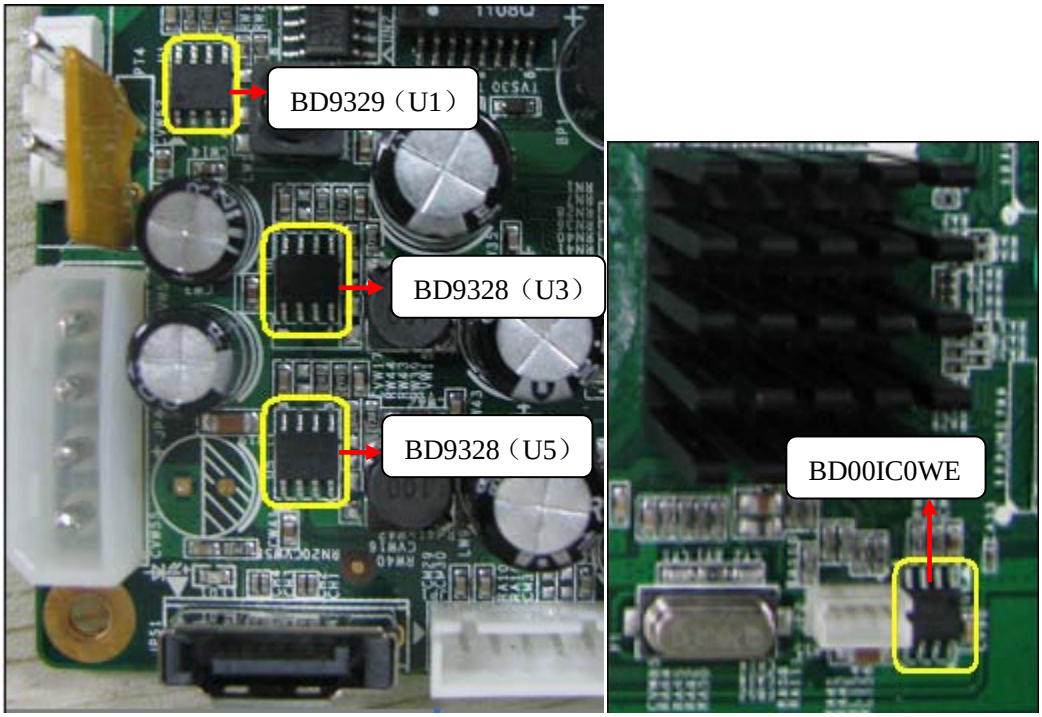
- Voice talkback module main control chip: TW2866 (US1), PIN 2 through 3.9 K resistance (RS60) + 390Ωresistance (RP24) output Aout
- Voice talkback module part:



- (note: voice talkback Line In input and the first road audio input share)

5.9. Power Supply Module

- The power module component：



- BD9329 (U1) : 2 feet enter 12 V, 3 feet output 5 V, mainly for the SATA hard disk normal power
- BD9328 (U3) : 2 feet enter 12 V, 3 feet output 3.3 V, mainly for the power of BD00IC0WE turn 1.8 V output, as well as the other components provide normal work voltage
- BD9328 (U5) : 2 feet enter 12 V, 3 feet 1 V, mainly for the KY2010 system starts kernel working voltage
- BD00IC0WE (U6) : 8 feet input 3.3 V, foot 1 output 1.8 V, mainly for the KY2010 system working voltage and DDR2 memory work voltage

6. DS80061 Mainboard Failure Analysis

VGA and VOUT and output image, but not at the same time output system menu, the system default first detection VGA output, then detection VOUT output

6.1. First Meet VGA Display

Boot to meet VGA monitor (or also meet VGA display and VOUT monitor), BAV99 (Q6) PIN 3 low level effective, display output VGA signal and system menu, monitor only VOUT signal

6.2. First Meet VOUT Monitor

Boot first meet VOUT monitors, BAV99 (Q9) 3 feet is high level, the high level signal feedback to the CPU, monitor output VOUT signal and system menu, display show only the VGA signal

Note: ① BAV99 (Q9) 3 feet high level, only output signal VGA monitor, monitor and output signal and system VOUT menu

② BAV99 (Q9) 3 feet low level, display and VGA output signal and system menu, monitor only output VOUT signal

6.3 Fault Analysis

①. No VGA Output

Step 1: measure 1 K resistance (RL50/51), or replacement (1 K value too large, LVC07A chip PIN 2 VS signal output, PIN4 HS signal output voltage value will be lower, then cause no VGA output)

Step 2: measurement 33Ωresistance (RG30/31), or replacement

Step 3: using a multimeter to measure LVC07A PIN 1 input (VS signal) voltage about 3.3V and PIN 3 input (HS signal) voltage 3V also, and then measure PIN 2 output (VS signal) voltage about 5V, the PIN4 output (HS signal) voltage about 4.3V, otherwise LVC07A ruled out

②. No VOUT Output

Step 1: measurement HK-5 (TVS9) whether short circuit, or replacement
Step 2: measuring 75Ωresistance (RS117) impedence, or replacement
Step 3: monitor's signal lines connected to the probe, directly from SGM9111 (US7) chip PIN 4 draw out the VOUT signal, or replacement
Step 4: measuring 75Ω resistance (RS188), or replacement, and then monitor's signal lines connected to the probe, directly lead CVBS -VOUT signal from 75Ω resistance (RS188) end, or KY2010 ruled out

③. Image Problem

Phenomenon 1: there is no video signal, first exclude HK-5 (TVS1-8) whether short circuit, or replacement; Measuring 75Ω(RV1-8) resistance, or replacement, and then ruled out 100Ωresistance (RU1-8); Finally ruled out TW2866 (can directly introduce video signal into TW2866 chip video input end,PIN13/17/21/25, to rule out the chip is normal or not)

Phenomenon 2: a few channel image black screen, first rule out the software settings, otherwise introduce video signal into TW2866 chip video input end,PIN 13/ 17/21/25, to rule out the chip is normal, or replacement

Phenomenon 3: all black and white images or flower screen, to rule out 27 M (Y4/Y5), then rule out software, or change TW2866

④. Voice Problems

Phenomenon 1: preview no voice, first without software Settings, then measuring 100 resistance (RS46) and capacitance (CS18) impedance, or replacement, finally ruled out TW2866 (US1) (can directly introduce audio signal into TW2866 chip audio input PIN 6, to rule out the chip is normal or not)

Phenomenon 2: voice talkback AOUT no output, measuring 3.9 K resistance (RS60) + 390Ω resistance (RP24) resistance, or replacement, finally ruled out TW2866 (US1) (directly lead AOUT signal from the TW2866 chip PIN2, to exclude the chip is normal or not)

⑤.RS485 Failure

Step 1: the first to exclude thermistors JK250 (RPT1/2)
Step 2: measurement TVS tube B03NC (BA2/7) impedance, or replacement
Step 3: measurement 6L184 6and 7 feet chip difference voltage (normal close to 5 V), or replacement

⑥. Internet Links

- Network light and network data transmission light are flashing

Step 1: first measurement RTL8201 chip PIN 36 input voltage 3.3V is normal, or to measure WCX (FBN1) impedance, or replacement

- Both network light and network data transmission light not bright

Step one: first measurement 25 M (Y3) crystal, or replacement
Step two: replace RTL8201

- Both network light and network data transmission light are nomal

Step one: first replace RTL8201, and then ruled out MS10232, BV03C（TVS32/17）

⑦.SATA Hard Dish Fault

Step one: first measurement BD9329 (U1) PIN 3 power output voltage wheather 5V or short circuit, or replacement

⑧. Clock Fault

Step one: the first to rule out the battery (normal voltage 3.3 V), and then ruled out 8563 T, 32768 HZ, diodes

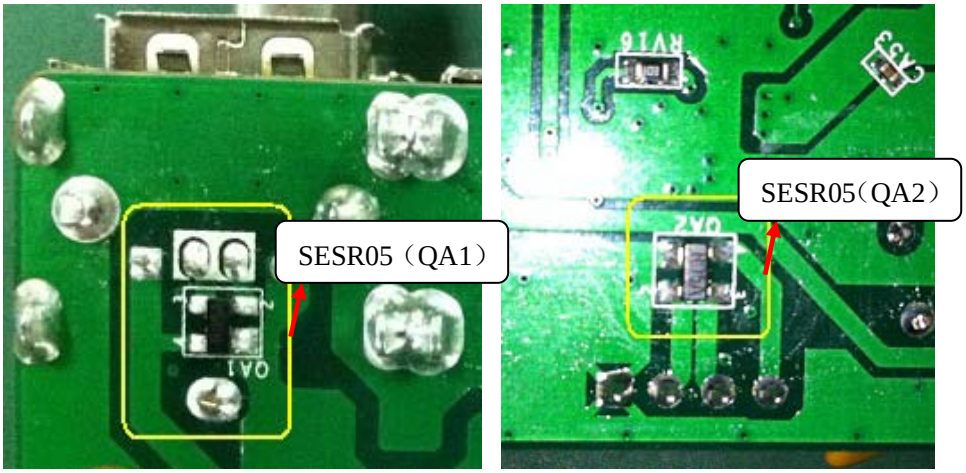
⑨.VGA Output Color Devation

Step 1: measuring 75Ω resistance (RG4/5/6), or replacement
Step 2: measurement BAV99 (Q3/7/8) PIN 3 impendance to GND, or replacement
Step 3: rule out 6303 chip

⑩.USB Fault

Step one: measurement SESR05 (QA1 or QA2) 2, 3 feet voltage difference value (normal voltage difference about 3.05 V), as well as the impedance to the GND, or replacement

Note: SESR05 (QA1 or QA2),front and after USB interface is independent of each other



Schedule: 1 Crystal Effect

Serial number	Crystals	Action (devices work clock)
1	27M（Y4）	TW2866 chips work clock (82 feet input 27 M)
2	25M（Y3）	RTL8201 chips work clock
3	24M（Y1）	KY2010 system startup clock, and integrated USB module clock

Schedule:2 Voltage Effect

The serial number	Power chip	function (devices working voltage)
1	BD9329 (U1)	2 feet enter 12 V, 3 feet output 5 V, mainly for the SATA hard disk normal power
2	BD9328 (U3)	2 feet enter 12 V, 3 feet output 3.3 V, mainly for the power of BD00IC0WE turn 1.8 V output, as well as the other components provide normal work voltage
	BD9328 (U5)	2 feet enter 12 V, 3 feet 1 V, mainly for the KY2010 system starts kernel working voltage
3	BD00IC0WE (U6)	8 feet input 3.3 V, foot 1 output 1.8 V, mainly for the KY2010 system working voltage and DDR2 memory work voltage