



Home Theatre System Service Manual

MODEL: HTS-696AS

CONTENTS

SPECIFICATION	4
TYPICAL PROBLEMS & PROBLEM SHOOTINGS.....	5
CIRCUIT DIAGRAM	11
EXPLODED VIEW & PART LIST.....	19

SPECIFICATION

- TV Optional
- Auto power On /Off
- Intelligent Multi-language operation system
- Karaoke system
- Multiple Measures of protection & anti-interference
- 20 kinds of DSP
- Modes optional
- Large VFC window
- (Amplifier) 515 (W) x 486 (D) x 230 (H) mm
(Front speakers) 1200 (W) x 388 (D) x 285 (H) mm
(Centre & surrounds) 808 (W) x 468 (D) x 223 (H) mm
Output power: [2 x 80W] + [1 x 30W] + [2 x 20W]

TYPICAL PROBLEMS AND PROBLEM SHOOTINGS

No Power Supply

Phenomenon:

The power supply indicator does not go on and on display on VFD, the unit can not detect input signals and not output in each channel.

Analysis:

As the unit is controlled and coordinated by CPU, either the power supply indicator, VFD, the signal detection process or signal output are all controlled by CPU. In other words, this kind of problems not only refers to power supply section, but also include malfunction on CPU or on sub-circuit of CPU.

Problem Shooting:

Turn on the power supply switch and first check the +5V operating voltage is normal or not, as the +5V voltage is the core power supply for the whole circuit. If +5V voltage fails to maintain, several parts including CPU, display drive IC can not operate normally and the corresponding phenomenon is NO POWER SUPPLY. Check U203 (7085) pin (3) to see if the +5V voltage is stable (refer to Figure 8-4), if +5V voltage is stable then basically the problem is not caused by the power supply and CPU together with its sub-circuit should be checked. If the +5V voltage can not be detected, pin (1) of U203 should be checked. There should be an about 10V voltage is the pin is normally working, otherwise it is probably the safety resistor R206 (2R2/0.5W) is blowout or burndown of the transformer. If pin (1) of U203 is good and pin (3) no voltage, IC 7085 itself may be damaged or short-circuit occurred in back output. The method to ascertain is that use a multimeter measure the resistance of pin (3), the normal value can not under 500ohms.

If there is not problem with the power supply section, then check the CPU. Three aspects should be stressed to judge whether the CPU is good or not. First, whether the working frequency of CPU U901 (89C52A) pin (18), (19) is 12M Hz (refer to Figure 8-2); Second, whether the +5V voltage is stable from pin (40); Third, whether the initial reset voltage of pin (9) is added. If there are no problems from three issues mentioned above, most probably the program or CPU is stoke off. Try to replace with a new CPU.

No Display

Phenomenon:

No display on the VFD with the power supply indicator normally working.

Analysis:

Three possible reasons for the problem: A, abnormal power supply in display circuit(-30V cathode drive voltage

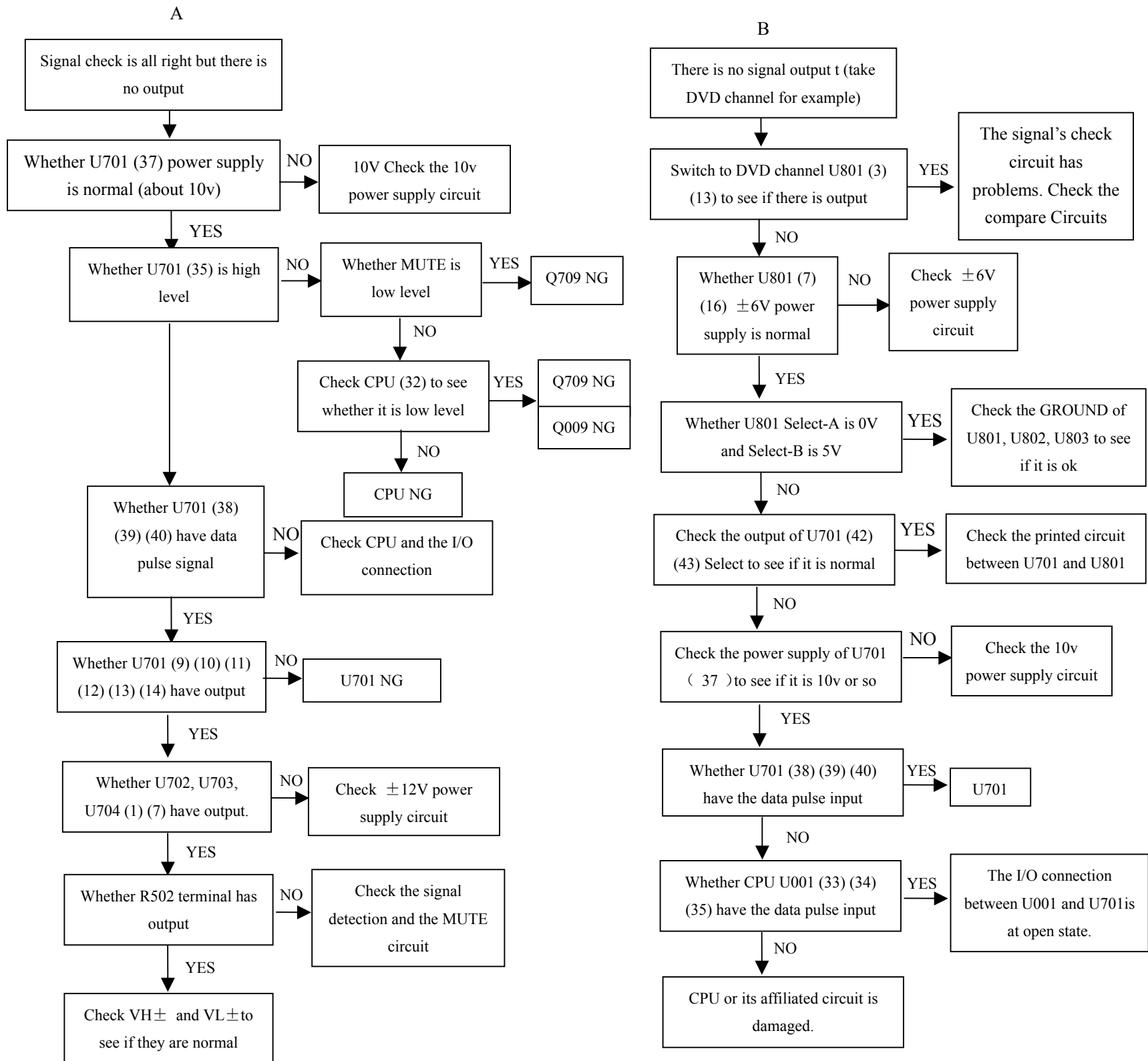
Problem Shooting:

First, measure whether the -30V voltage between two ends of ZD201 is OK or not. If it is OK, then there is no problem in the power supply for cathode of the display. If the voltage is NOT OK, ZD201 should be checked if it is blown up and R207 should be checked if it is burn down, also, transformer T201 or F201 is damaged or not.

When the -30V voltage is confirmed, next the power supply for filament should be checked. In normal working condition, the voltage between two ends of the filament should be AC5V, and there is a relative DC -25 V voltage to GND. If the tolerance is too large or no voltage could be detected in the circuit, the power supply circuit should be mainly checked. All the matters concerning power supply are all OK, then CPU and its drive circuit should be considered. The fragile parts of the display drive circuit are VFD901 (HL-D005A) and IC U901 (UPD16311).

If the problem remains after the confirmation of the power supply and display drive circuit, then I/O port of CPU should be next considered. Measure STB, DATA and CLK by a oscillograph to see if there are pulse signals while operating the functional keys on front panel. If pulse signals could be detected, then the I/O port is fine; If no pulse signals could be detected, that means CPU or its circuit burn down. This is just a basic method, besides this, there is also the probability of program disorder of CPU.

For this unit cannot detect the signal and there is no output if you choose one channel manually, so we can confirm that the problem is before electron volume including control circuit. Please refer to the following diagram chart:



Trouble shooting for amplifier channel's burning and scorch.**Phenomenon:**

Directly examine the channel. The amplifier tube Q513/Q514 has cracked and the emitter output resistance R528/R530 has burned and been in the open state.

Analysis:

It may be the over current or voltage or the short circuit of back speaker lines when there is a big volume output or the quality problem of circuit apparatus to cause the burning of the amplifier.

Trouble shooting way and steps:

First take away the burned amplifier tube Q513 and Q514 to change R528 and R530. Then check the amplifier output through electricity test to see whether it is 0v. If far from 0v too much, normally it is the driving or the voltage amplifying or the differential amplifying tube that has been punctured. After confirming the output is 0v, we need to test whether the base jointing point of Q513 and Q514 is between 0.4 to 0.6v. If so, then we can install the amplifier tubes again. Otherwise we cannot install until the problem is solved.

Trouble shooting way for turning on protection trouble.**Phenomenon:**

The machine's display is normal after turning on but automatically turns off when initialization is finished.

Analysis:

It approves that the turning on and turning off circuit is normal if this unit powers off after working normally for several seconds. The problem maybe exist in the amplifier or the protection circuit.

Trouble shooting way and steps:**Over voltage protection check:**

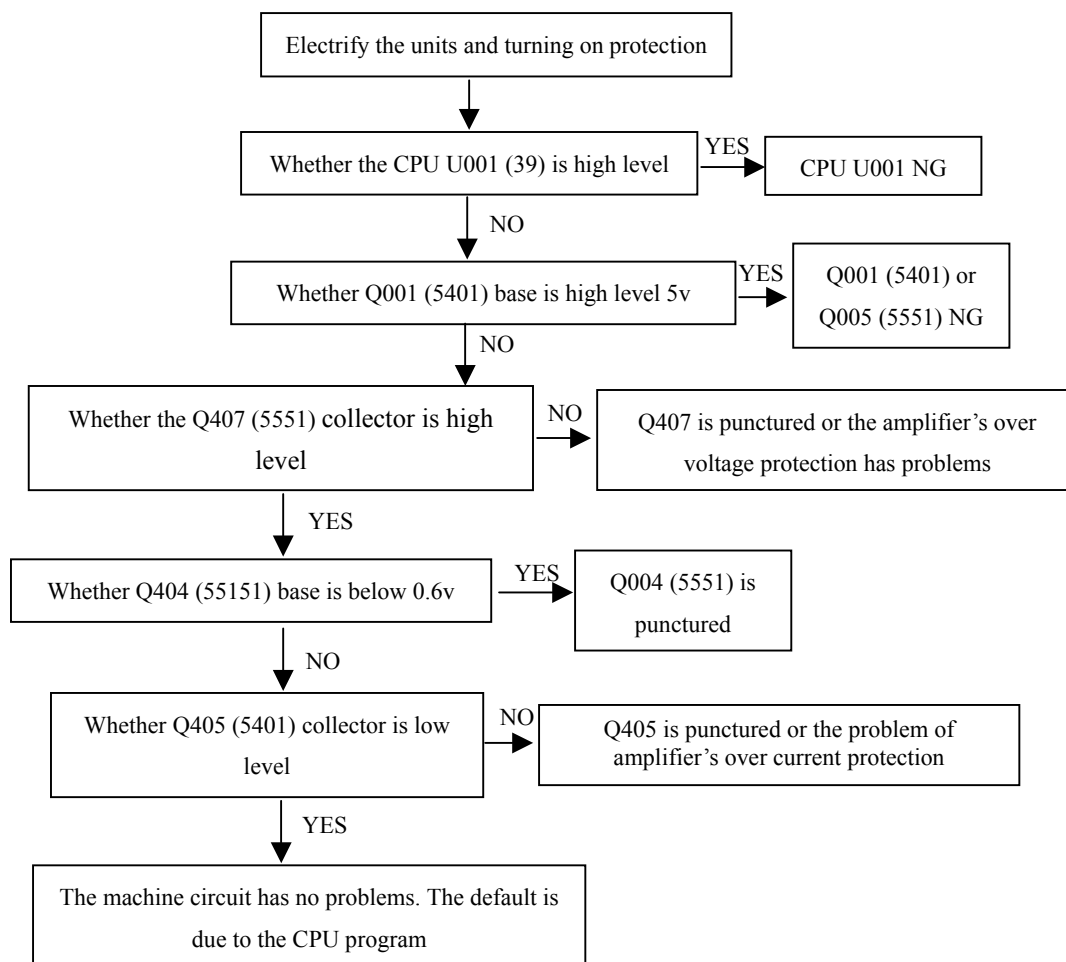
In the moment of being electrified and before this unit enters the protection mode, use the volts DC of multi meter to test the output of each channel, which cannot exceed $\pm 0.5v$. If one certain channel's voltage is obviously over its range, it approves that there exists problem with this channel's amplifier circuit. So you should place emphasis on checking if there is some apparatus in this channel, which has been punctured.

Over current protection check:

In the moment of being electrified and before this unit enters the protection mode, use the volts DC of multi meter to test the collector voltage of L/R over current protection tubes Q515 or Q530. The normal volt should be approximately equal to the one of the amplifier positive power supply. If it declines heavily to cause the Q405 through and this unit will enter the over currency protection mode. At this mode we can further check whether the problem is in the right or the left channel. The way is to check the transmitter voltage of the over currency protection tube. It shows that the channel has entered the over currency protection mode if the voltage is over 0.6v. Then you should place emphasis on checking if there is some apparatus in this channel that has been punctured and whether the output resistance of the amplifier tube transmitter is at the open state.

Trouble shooting way of the protection circuit itself having problems:

After confirming the over current and voltage circuit both work normally but the problem cannot solved, this time we need to consider the protection circuit may have problems. The checking steps can be conducted as the following pane chart.



Cannot turn on

Strictly speaking, there are two types for the problems that this unit cannot be turned on. One is this unit has no any reaction when you press STANDBY after the main power supply is on. The other is there is display but no output and the relay cannot clutch when you press STANDBY after the main power supply is on. Because the former type is similar with NO DISPLAY problem so please refer to the checking way for that. Here we put emphasis on discussing the latter.

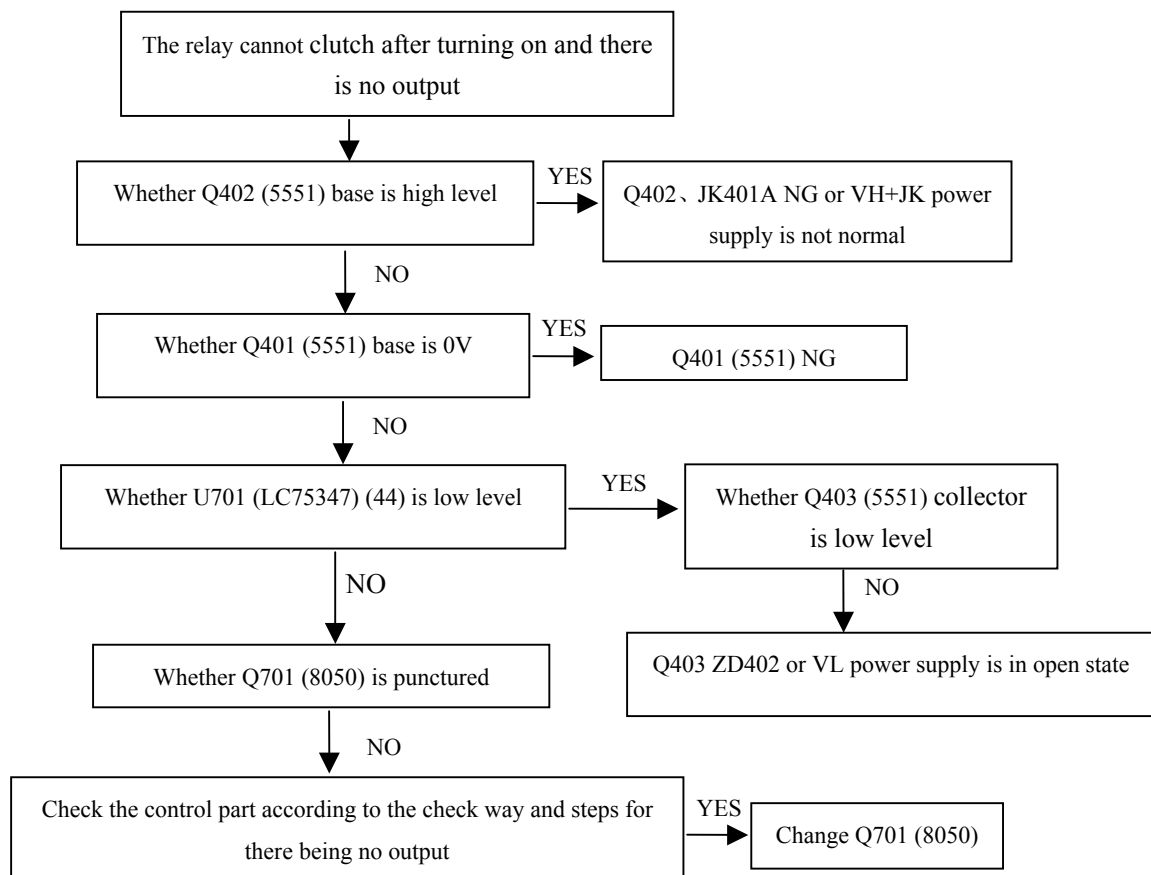
Phenomenon:

Turn on the main power and the power display light works normally. Press the STANDBY and this unit displays normally but the sound of the relay's clutching cannot be heard and there is no output either.

Analysis:

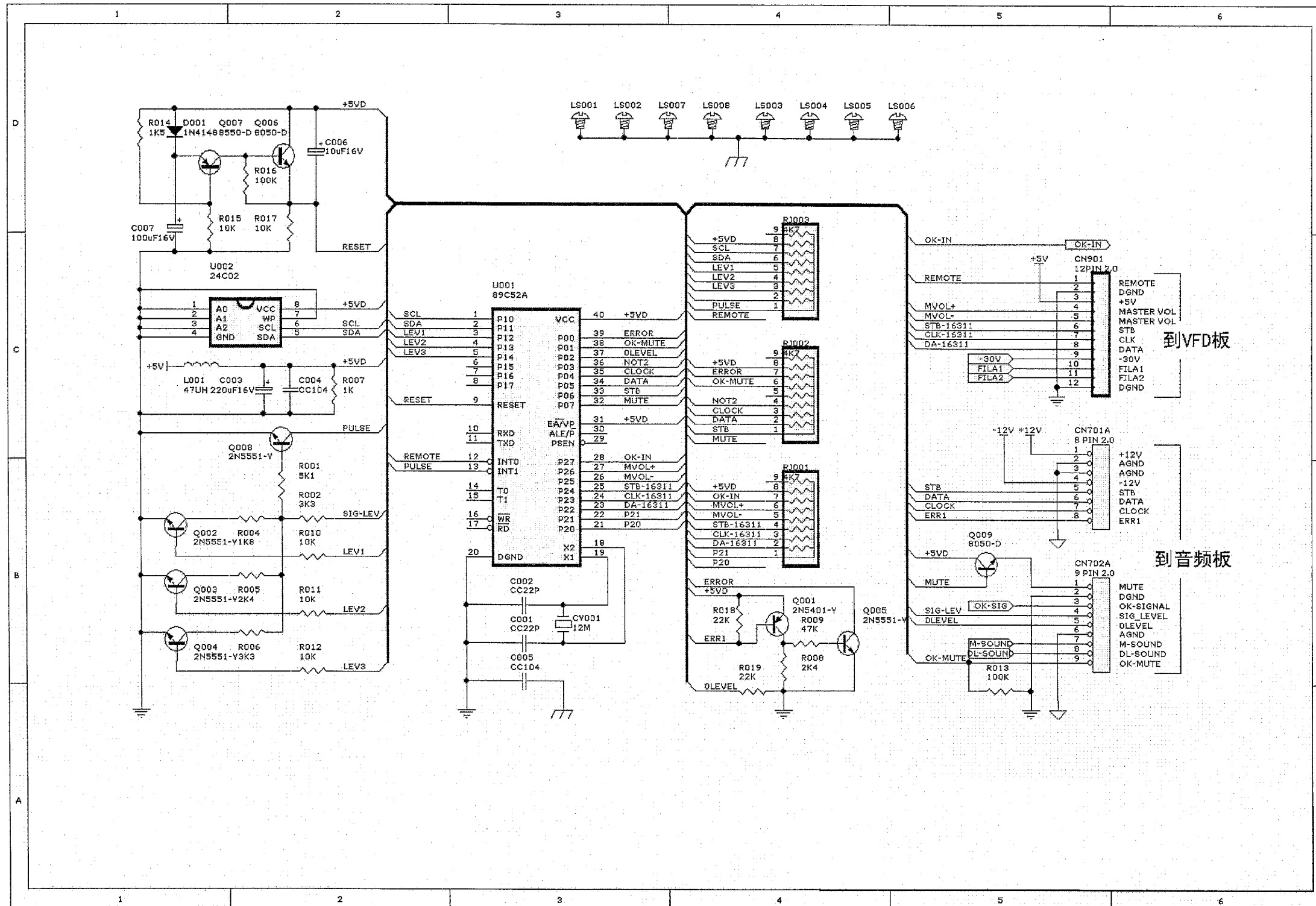
Because this unit only has one main transformer to supply the power so after it is turned on, the power which display part and CPU's work need has been added. That is the display has no realation with the circuit of the main power relay. What is affected is the amplifier's power supply is lacking so there is no output or the output is very small.

Trouble shooting way and steps:

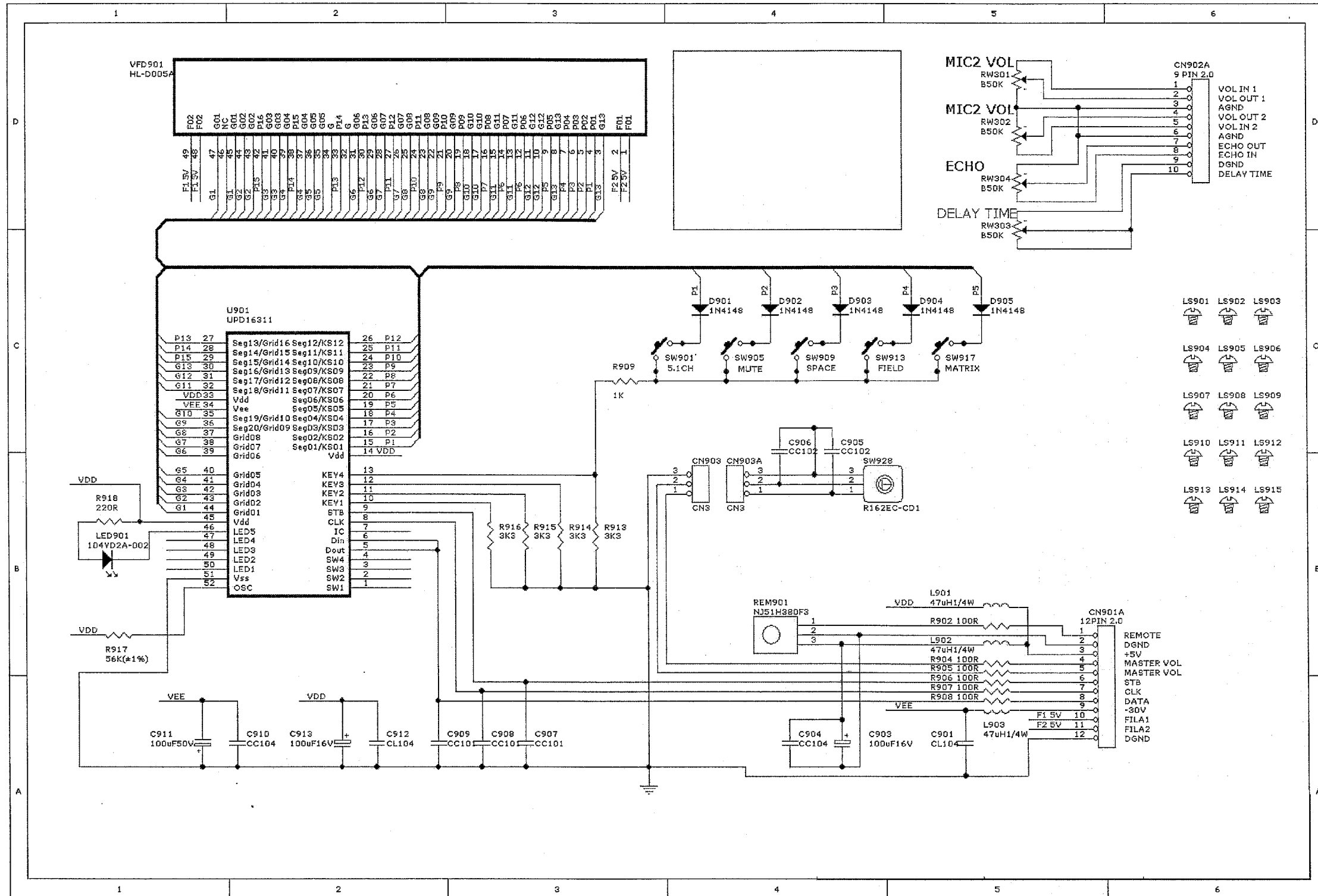


CIRCUIT DIAGRAM

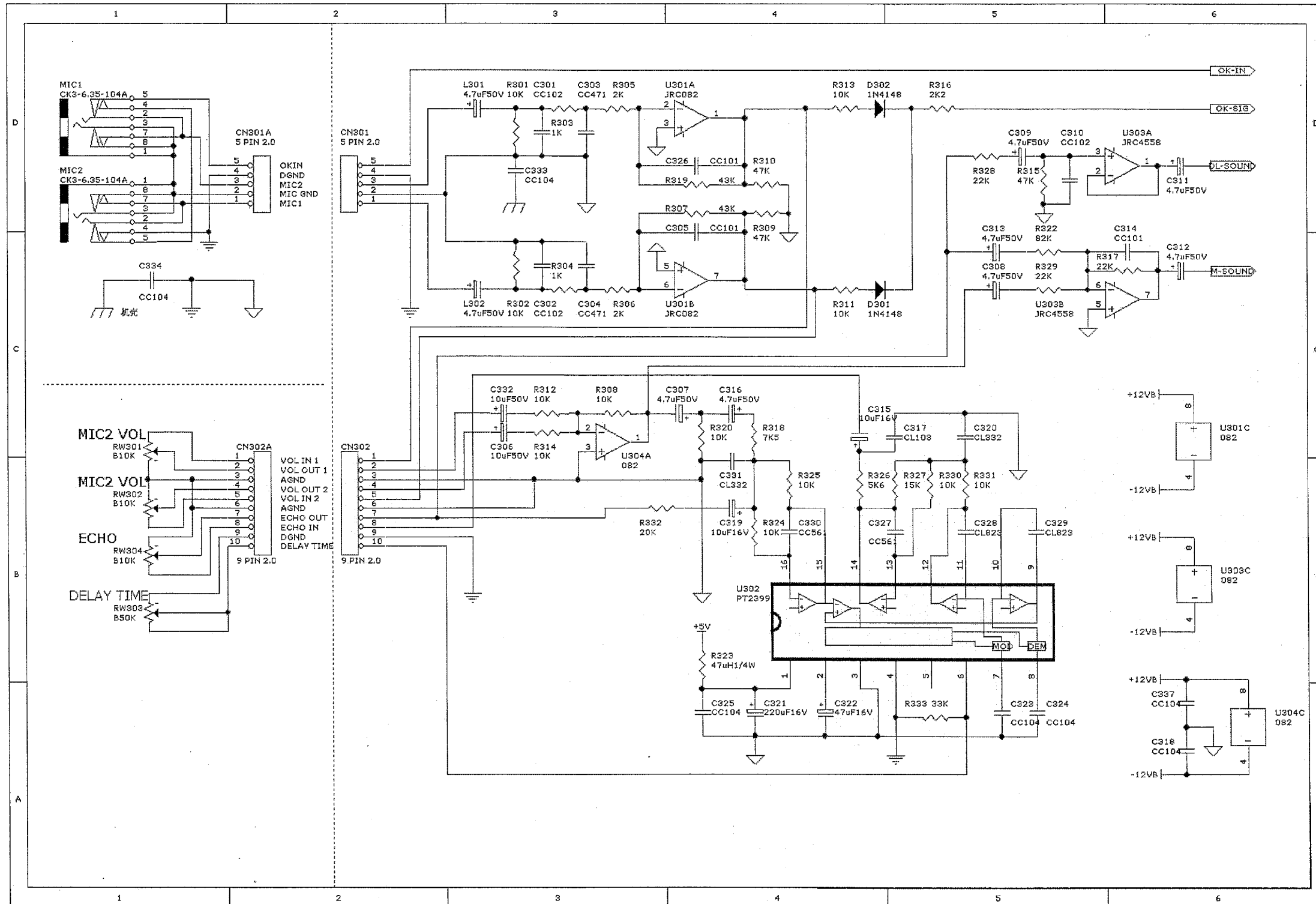
CPU control part



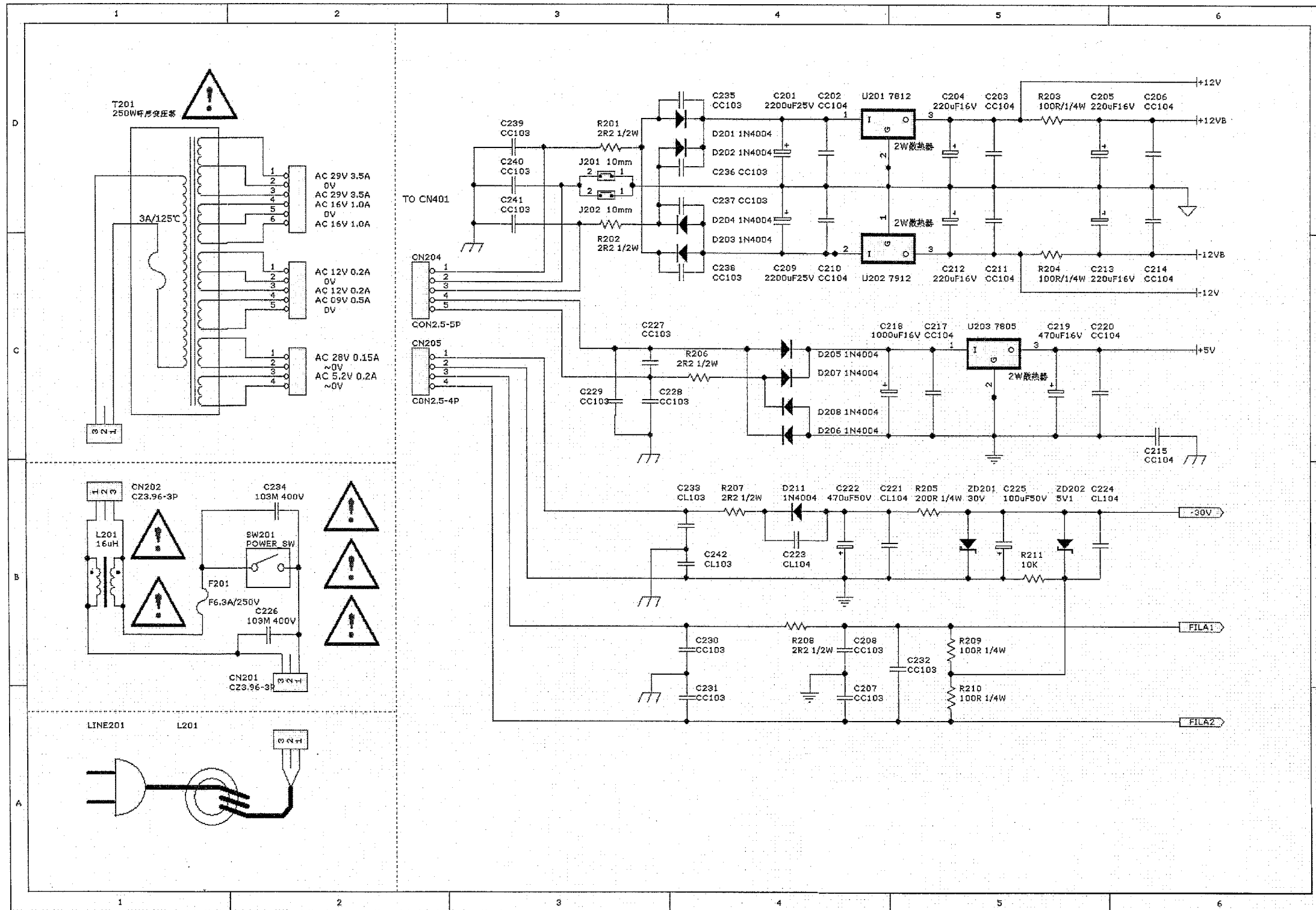
VFD control part

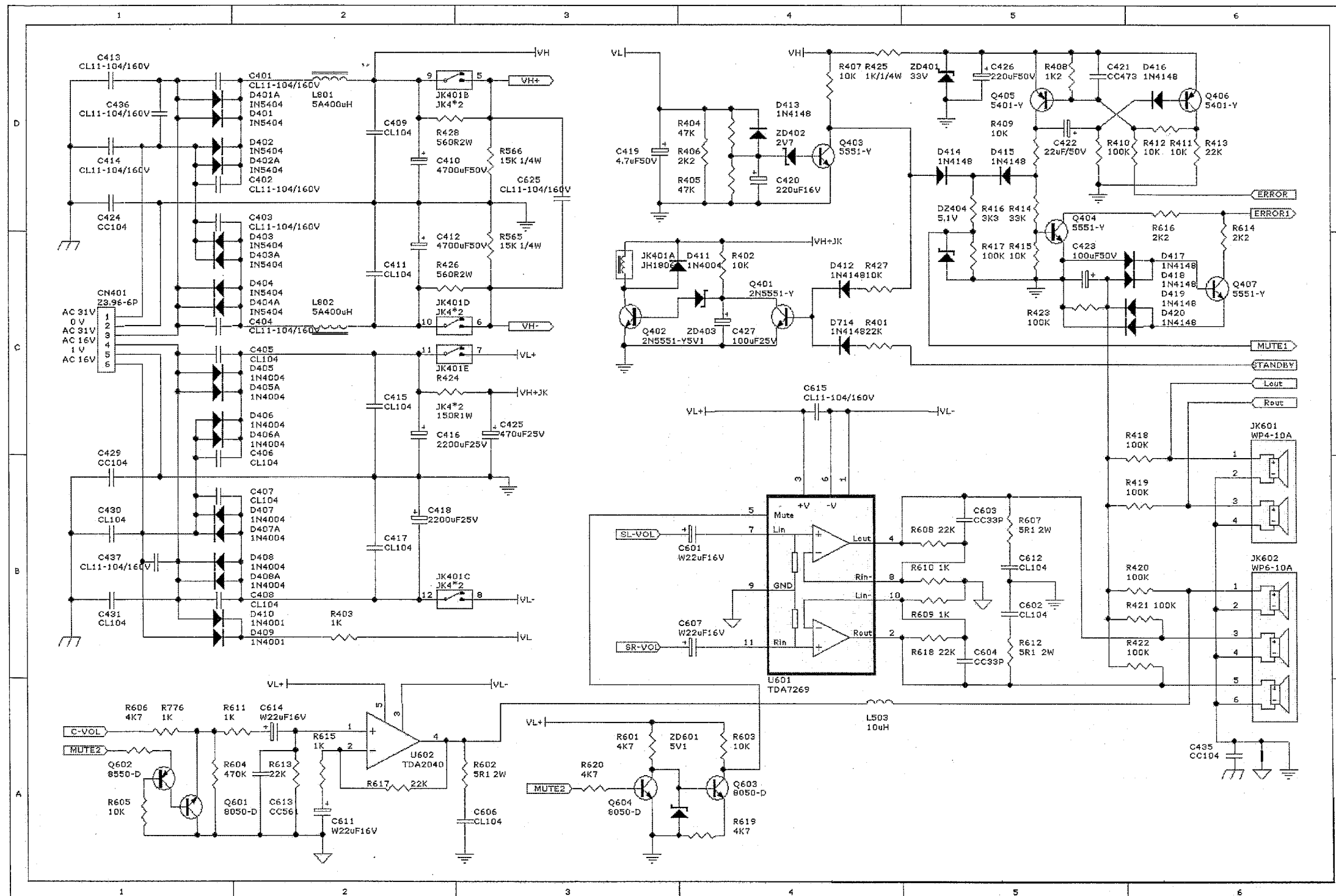


Karaoke signal conduction part

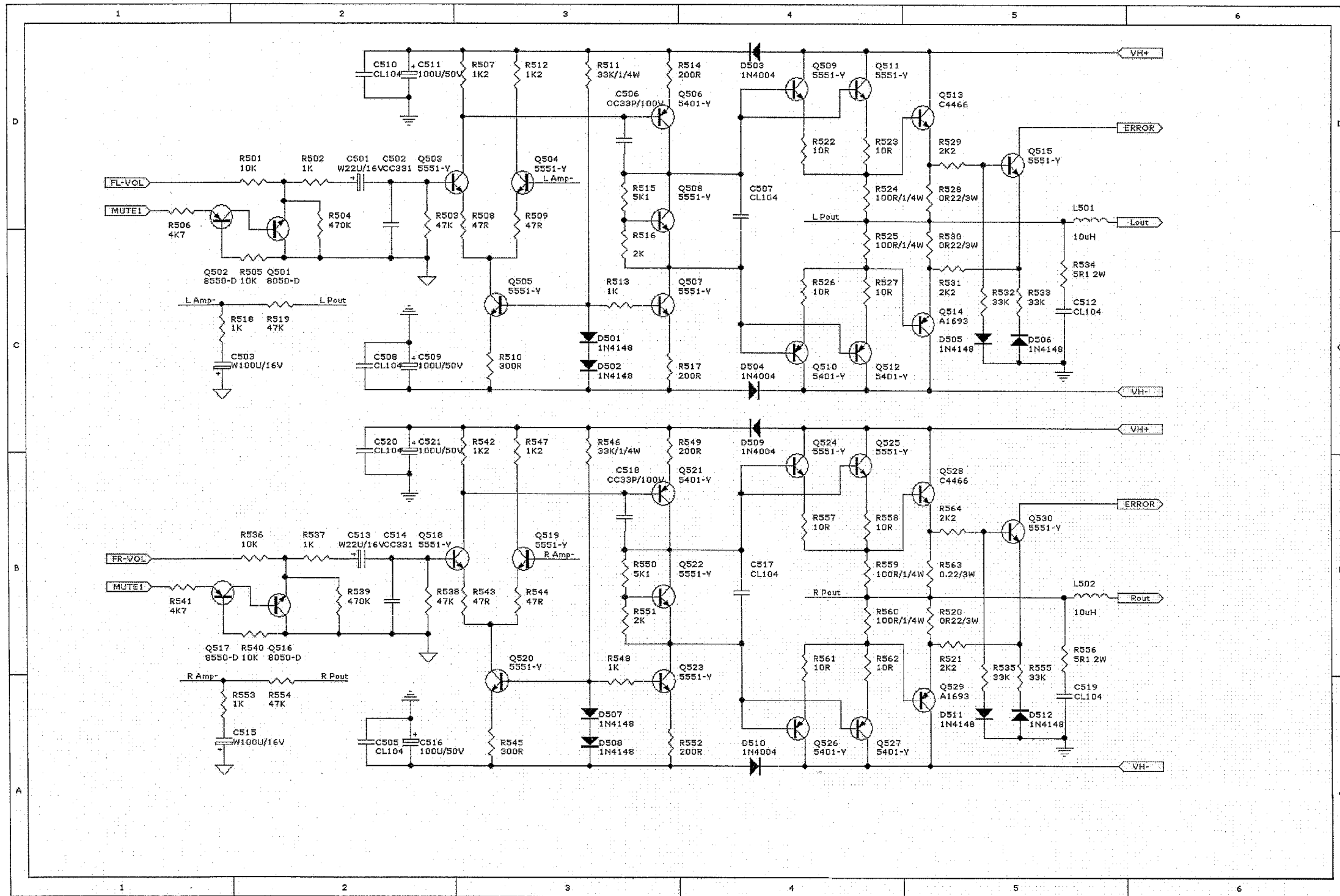


Power supply part

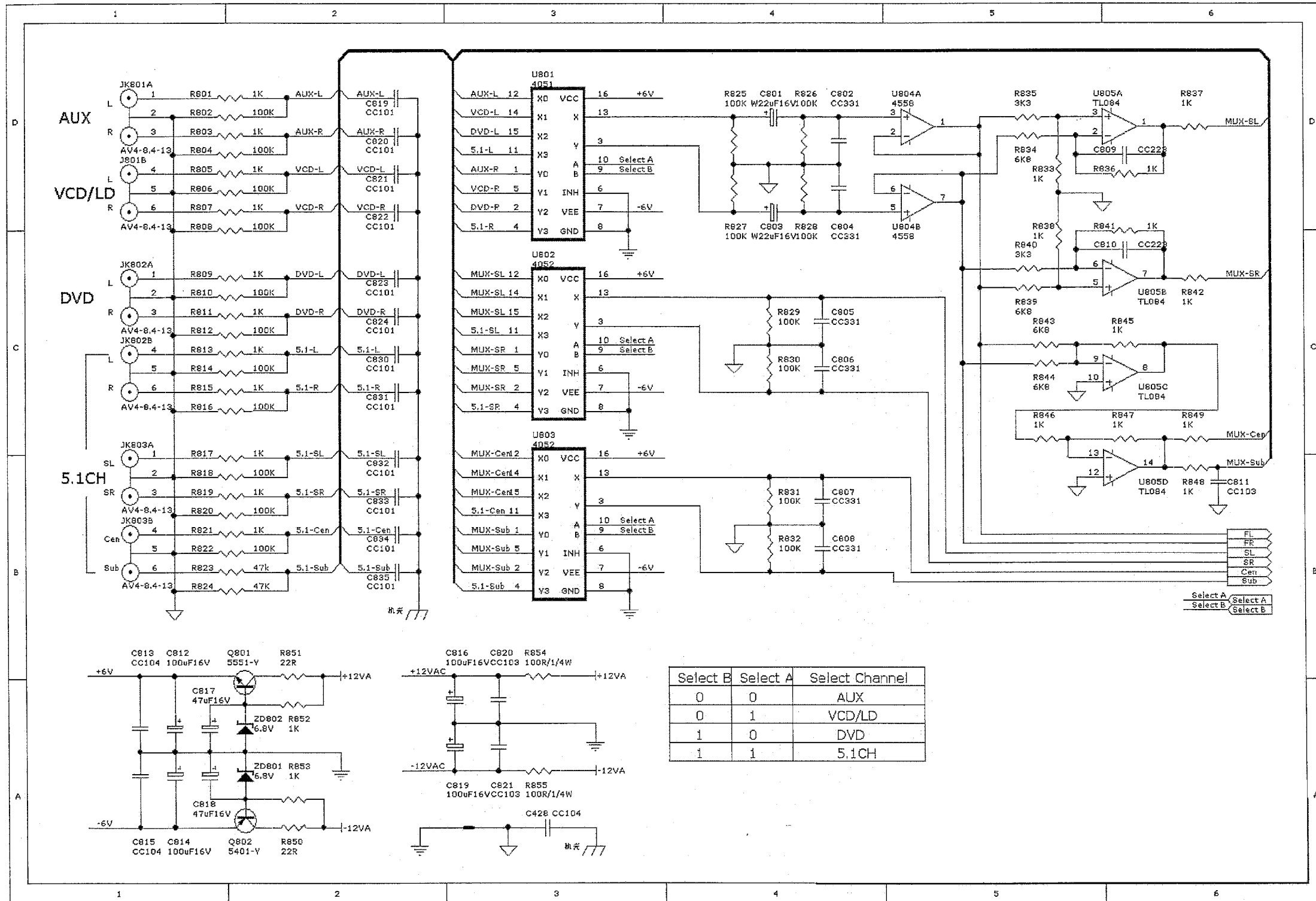




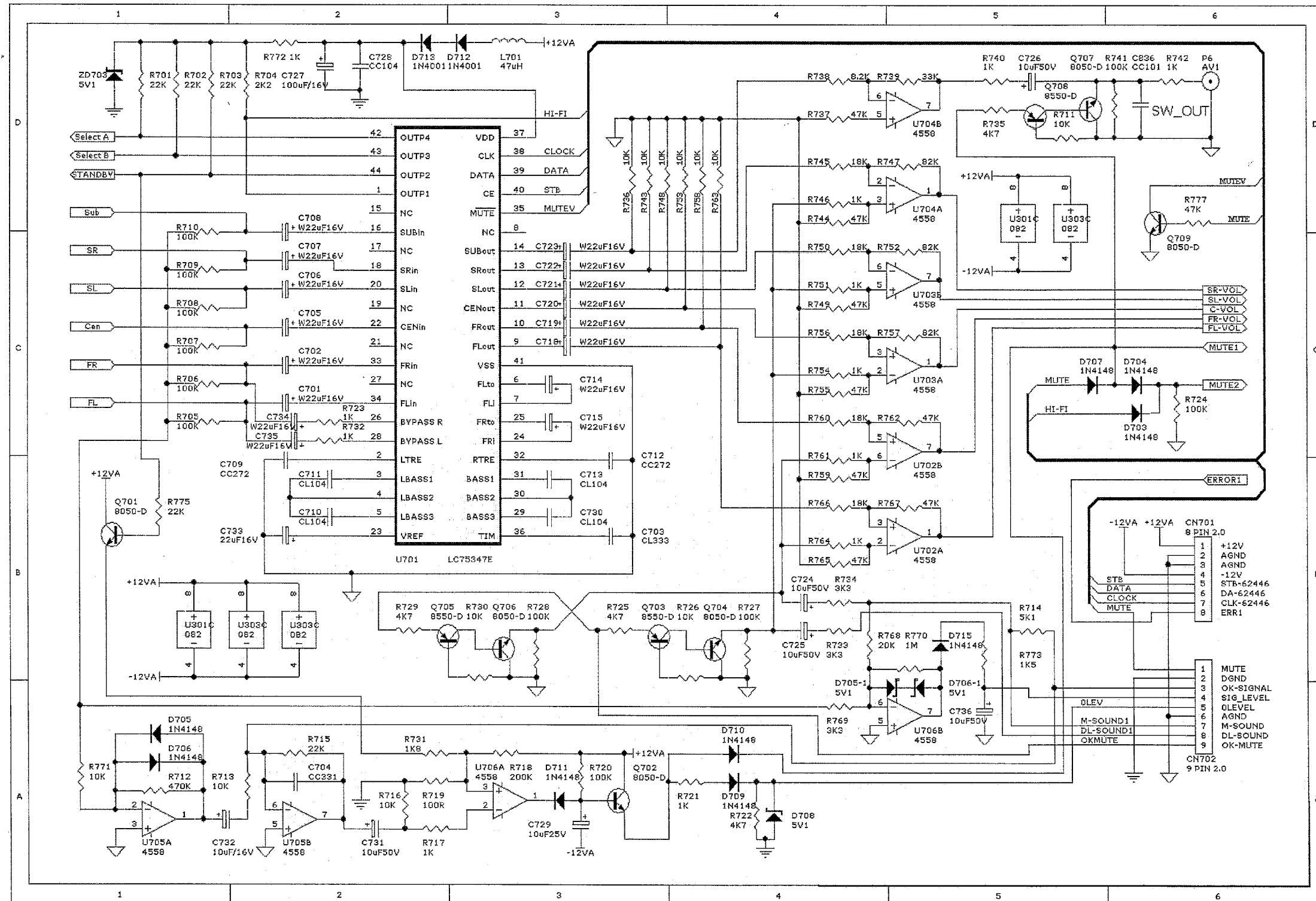
Amplifier part



Channel selection part



Volume adjustment part



EXPLODED VIEW AND PART LIST

