

SOLARTRON A211 - Schlumberger



This beautiful voltmeter was made by Schlumberger company in 1972 in reference to its serial number. I bought it from my friend for a symbolic price to my depositary of history measure devices. He brought it from closed laboratory in his home-city. Further discovering of this one seems to be impossible. It's a pity, because there is nearly no reference available on the Internet about the company.

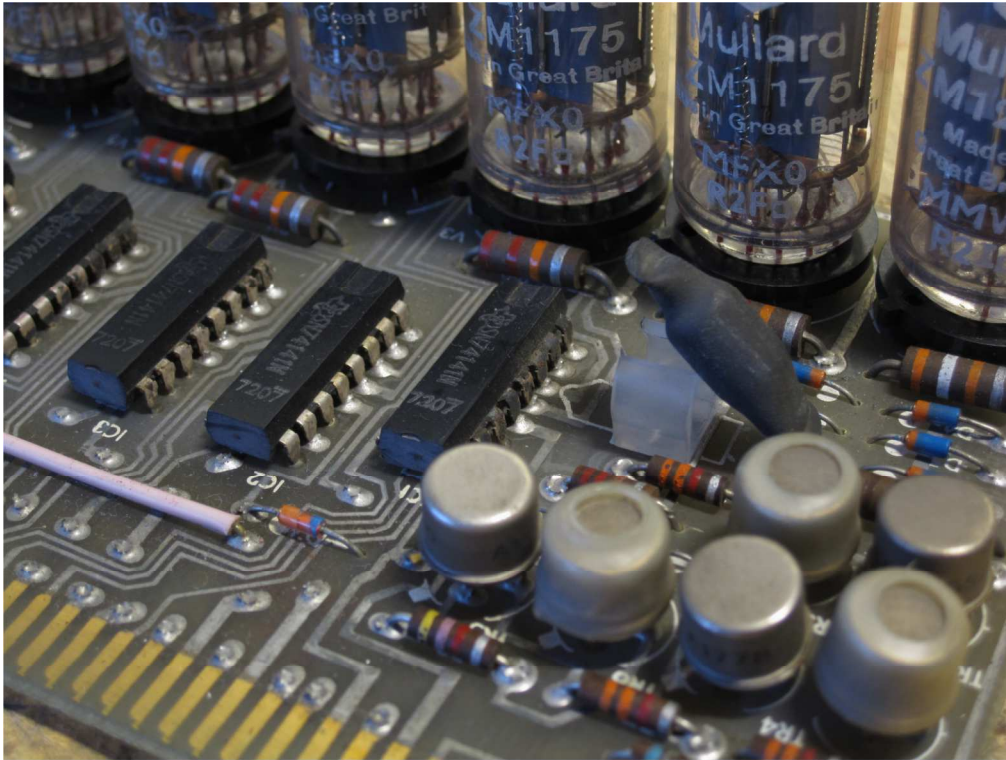
- It is a DC/AC voltmeter in range of 100mV – 1000V.
- Range is auto or manual.
- Fast or slow integration time.
- Remote control is available
- There are some other holes behind the front panel, probably Resistance measuring according to $k\Omega$ control bulb, but this option is not used in this voltmeter revision.

My friend told me that there were some issues about this device. Well, I can expect it, this device is 40 years old. There are some replaced parts on the boards inside. He has some issues about bad contact of the boards to the connectors but he managed to fix it.

When I obtained the voltmeter I had an issue with the nixie display. One of the digit was permanently on:



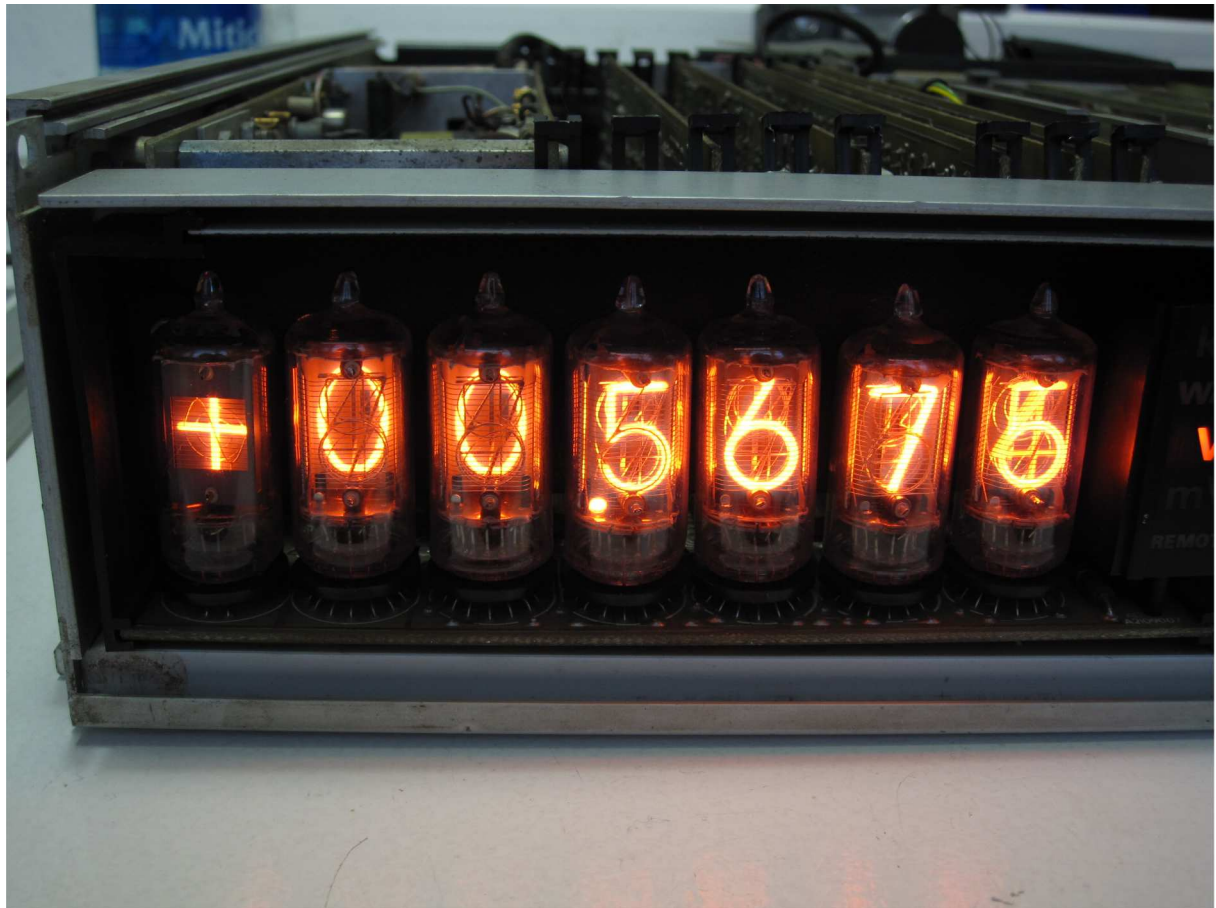
I was really excited about the voltmeter, especially what can I find inside. I was suprised. Only hi-end components and parts according to its age.



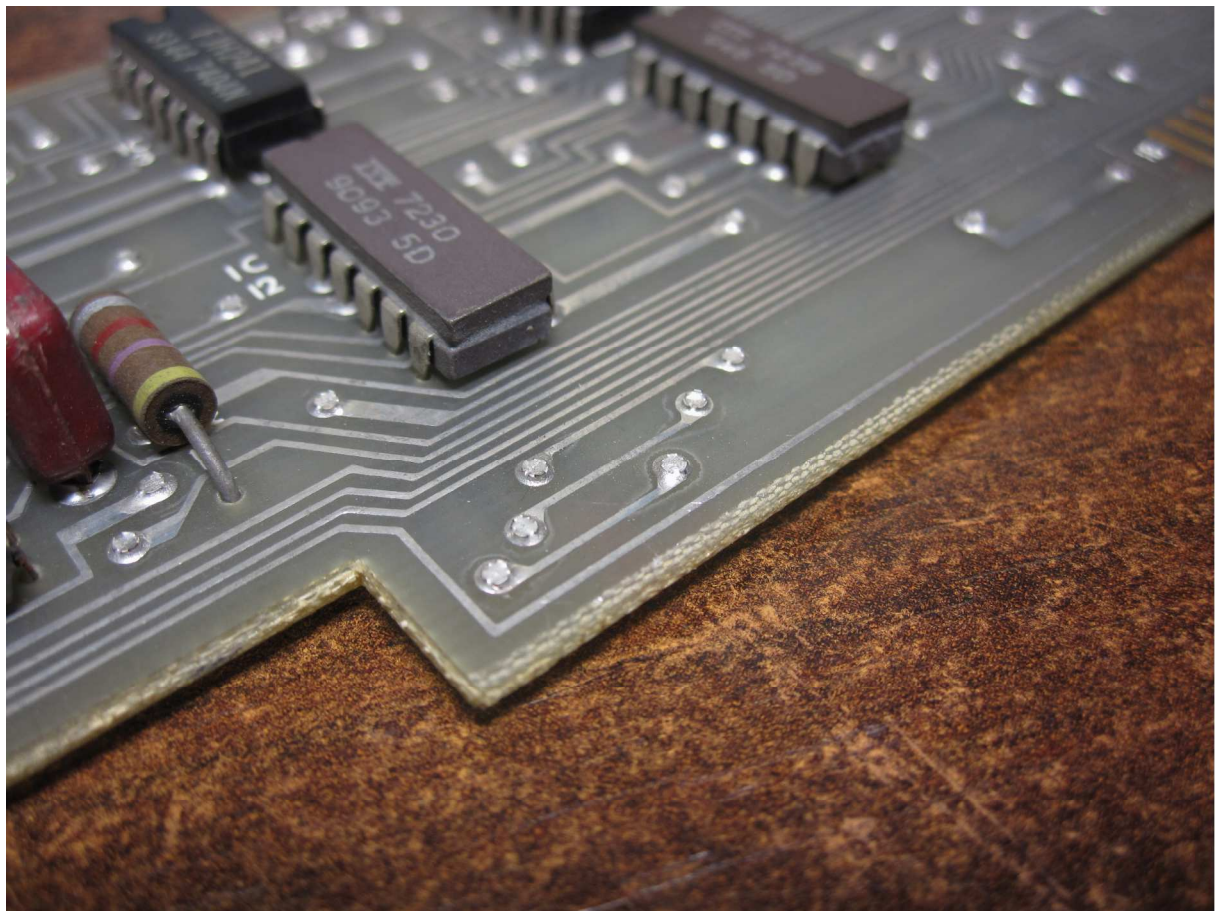
This is the suspicious IC. The nixie driver 74141. There was already one replaced on the last digit by MH74141 which was made by Tesla company. Despite the poor quality of many components made in Tesla, these nixie drivers were made in really good quality and there are no known issues about these MHs.



However, replacing the IC was pain. Schlumberger company made PCB boards using rivets, no plated through holes ! I was impressed. Well, I cracked the old IC and desoldered remains pin by pin. By the way, notice Mullard nixies. This is exotic for me ☺ in Eastern Europe.

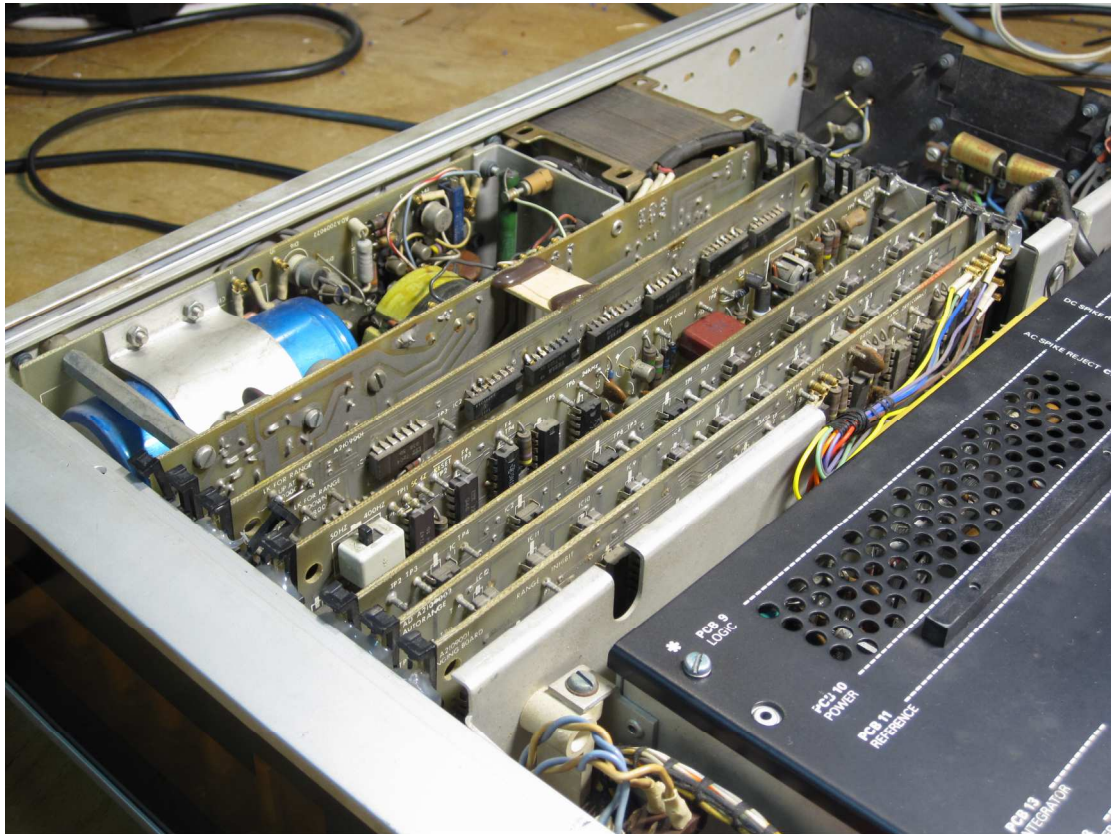


It works well now !

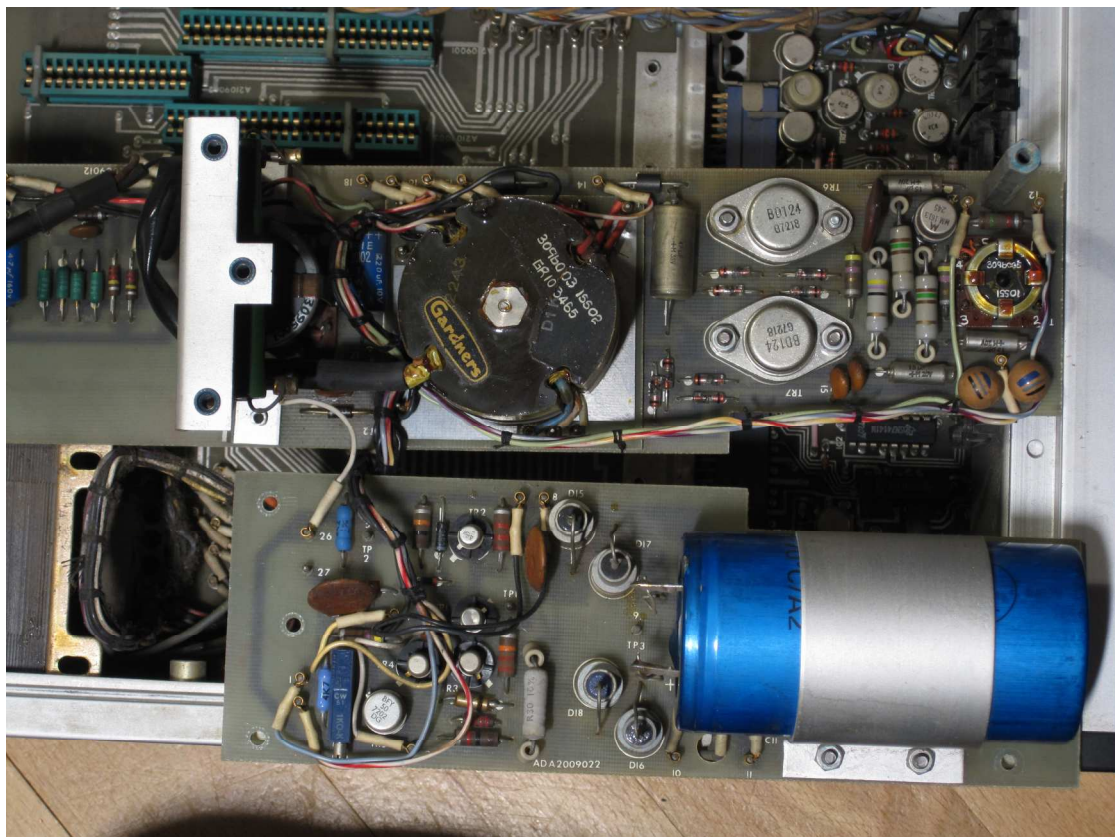


Look at this. No through plating. Rivets. A lot of rivets.

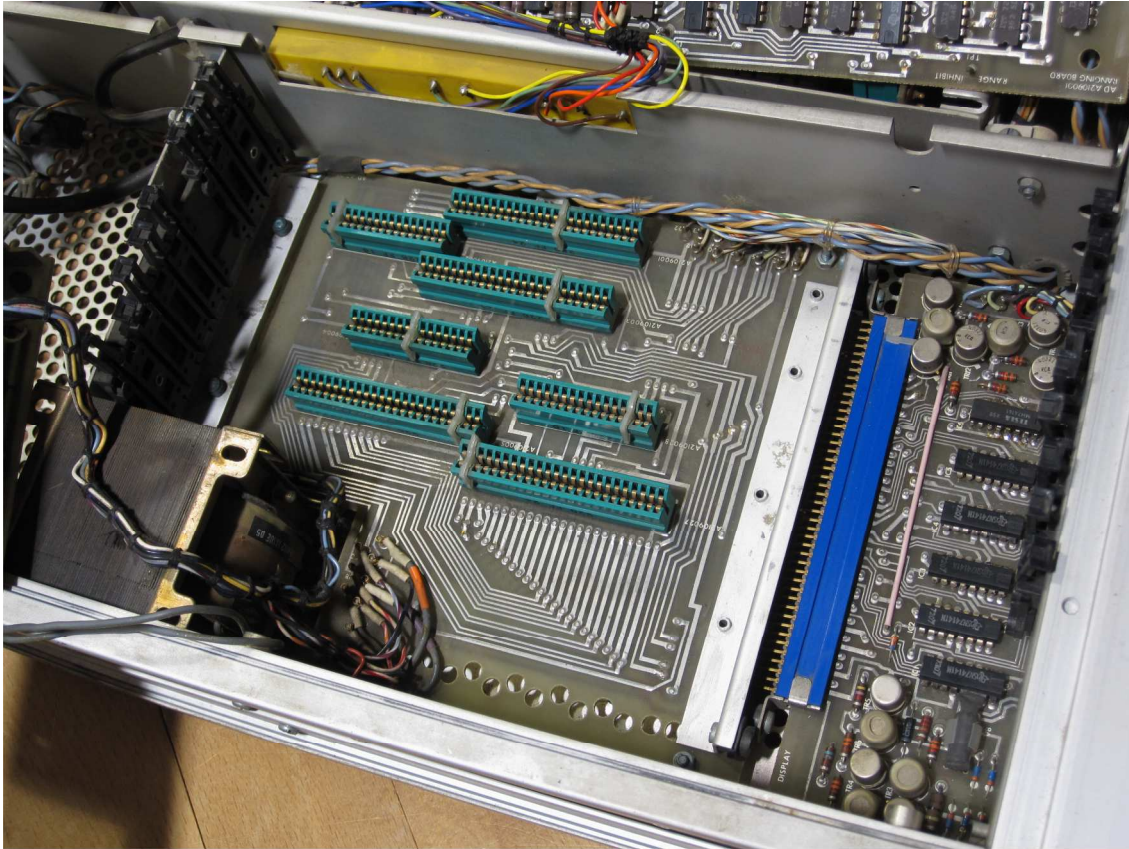
But now in order. At first I took the cover off. It is a precious aluminium skelet, but cover plates were a little bit deformed. Perhaps a lot of heavy equipments put on it during laboratory years.



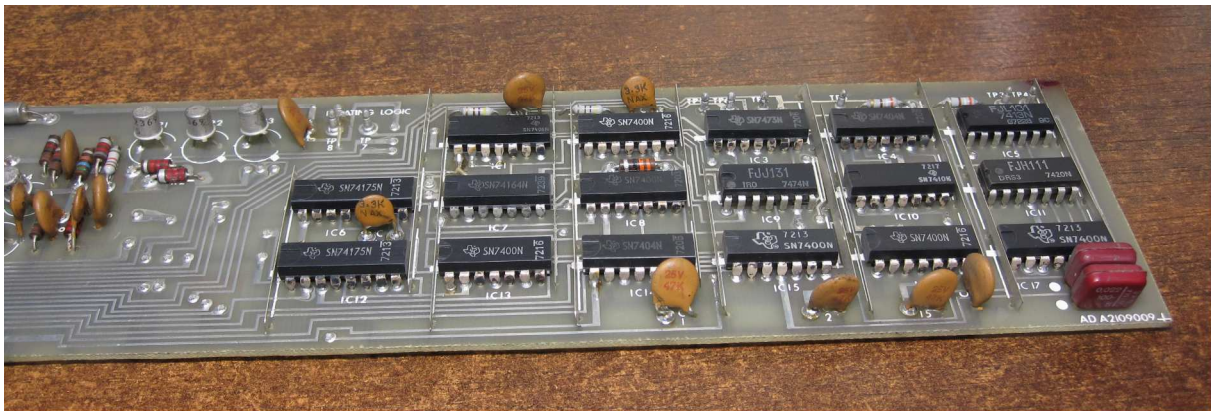
The digital section. We can find here range switching board, autorange, oscillator and control board. On the left there is a switched power supply.



Switched power supply. I really don't think this is a filter coil.



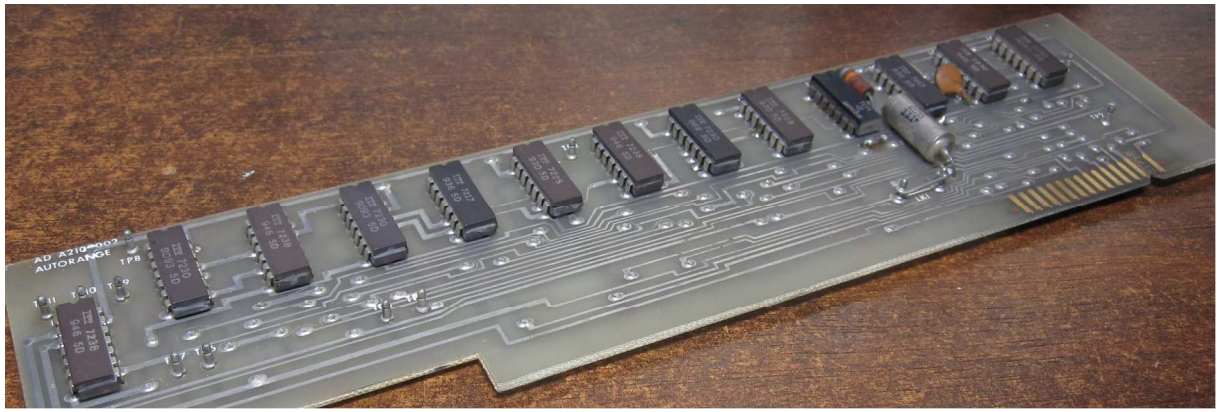
Empty motherboard after cleaning. There was a lot of dust.



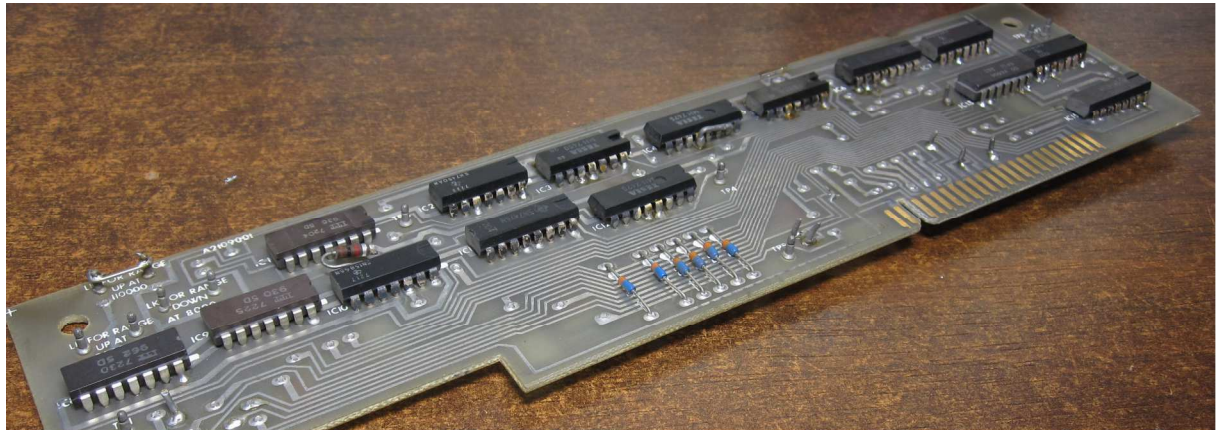
Control logic board.



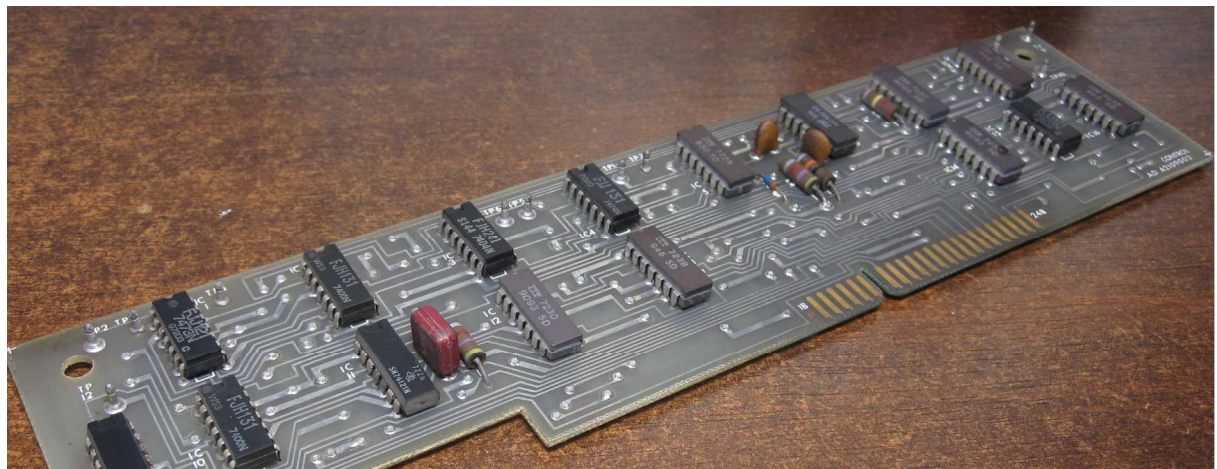
Oscillator board. There is some switch for 50Hz/400Hz. Perhaps an option for 400Hz board voltage (vehicles, aircraft ?). According to integration period synchronization.



Autorange board.

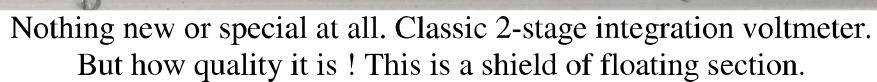


Up range and down range board.

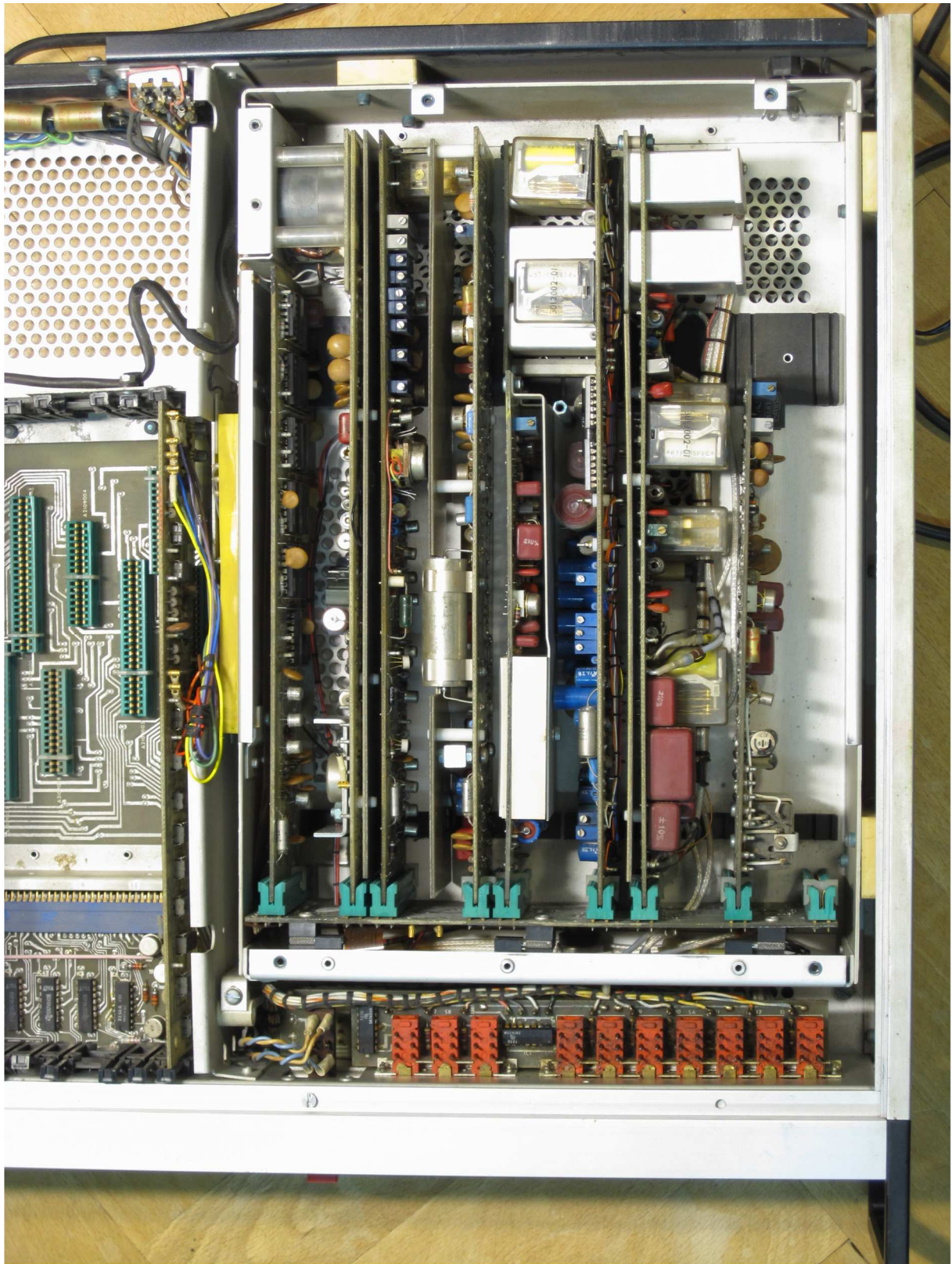


Control unit.

Voltmeter sometimes froze, shown wrong digits or +00000 value or sometimes just switched range without control command. This issue was caused by bad contact between connectors and boards. Solution was a rubber polishing of golden pins,

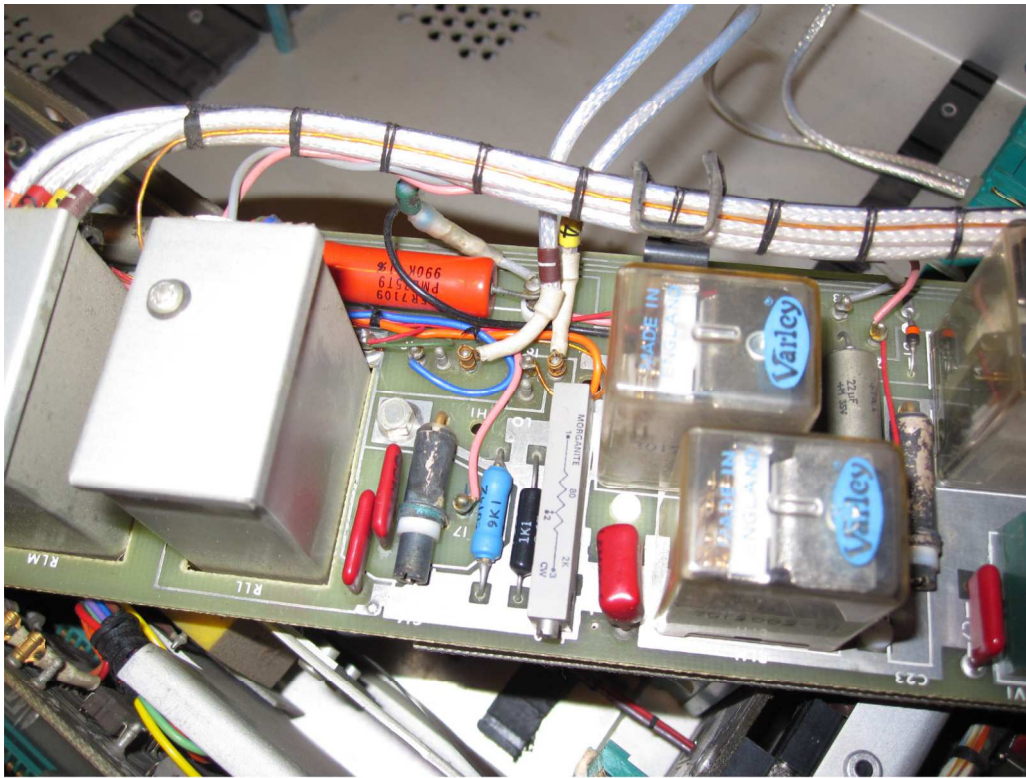


Notice the label on the right. Ohms (option). There is no board after covering it off.

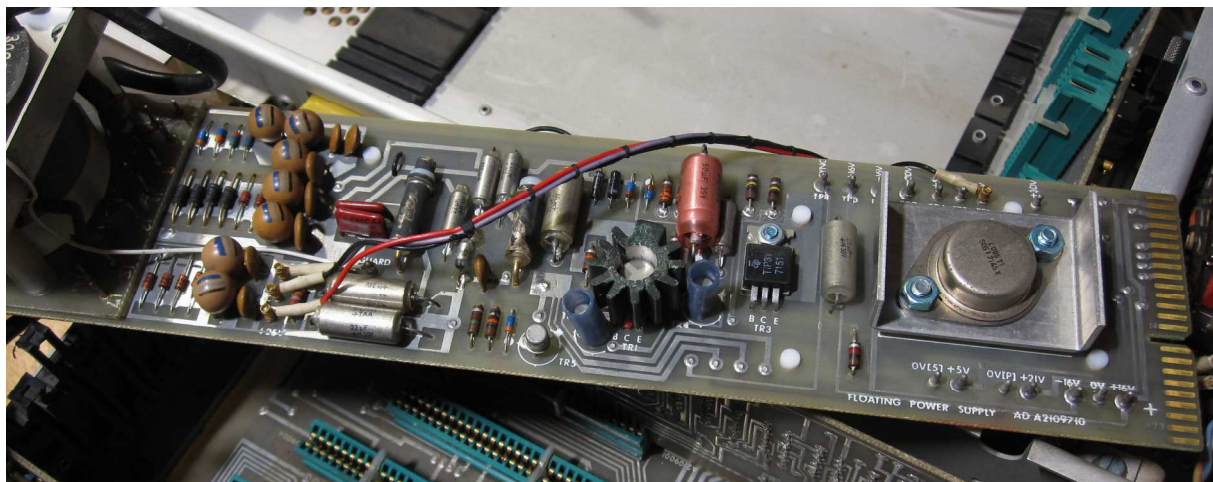


Look at it. All the boards are available to tip out, however, this means that board fall of the movable motherboard.

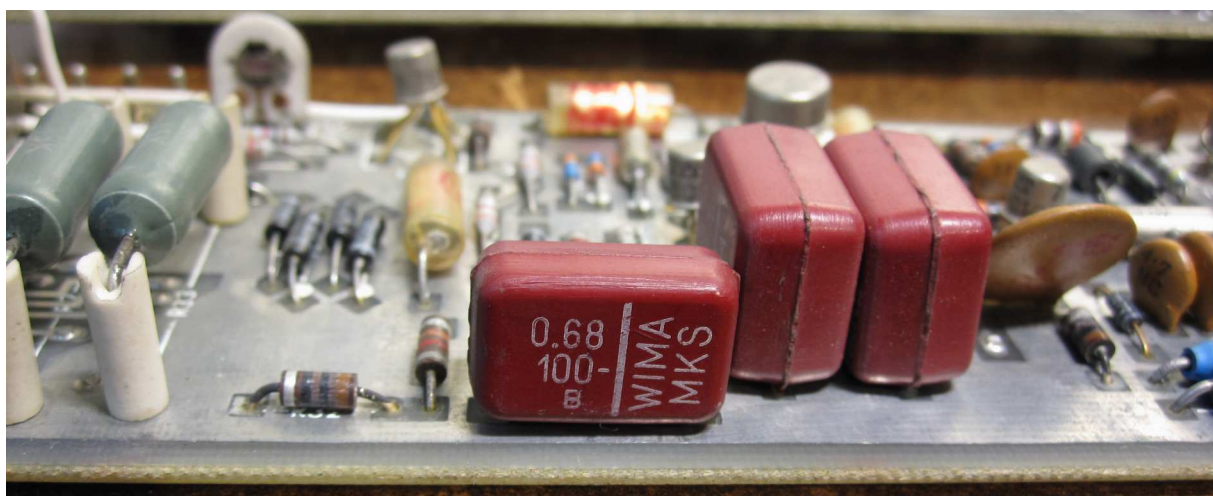
A great pain of the device are control buttons, exactly the isostats inside. After 40 years, they sometimes jam or don't want to fall in. I will not repair them because it is very difficult to unmount them and I would have to desolder them.



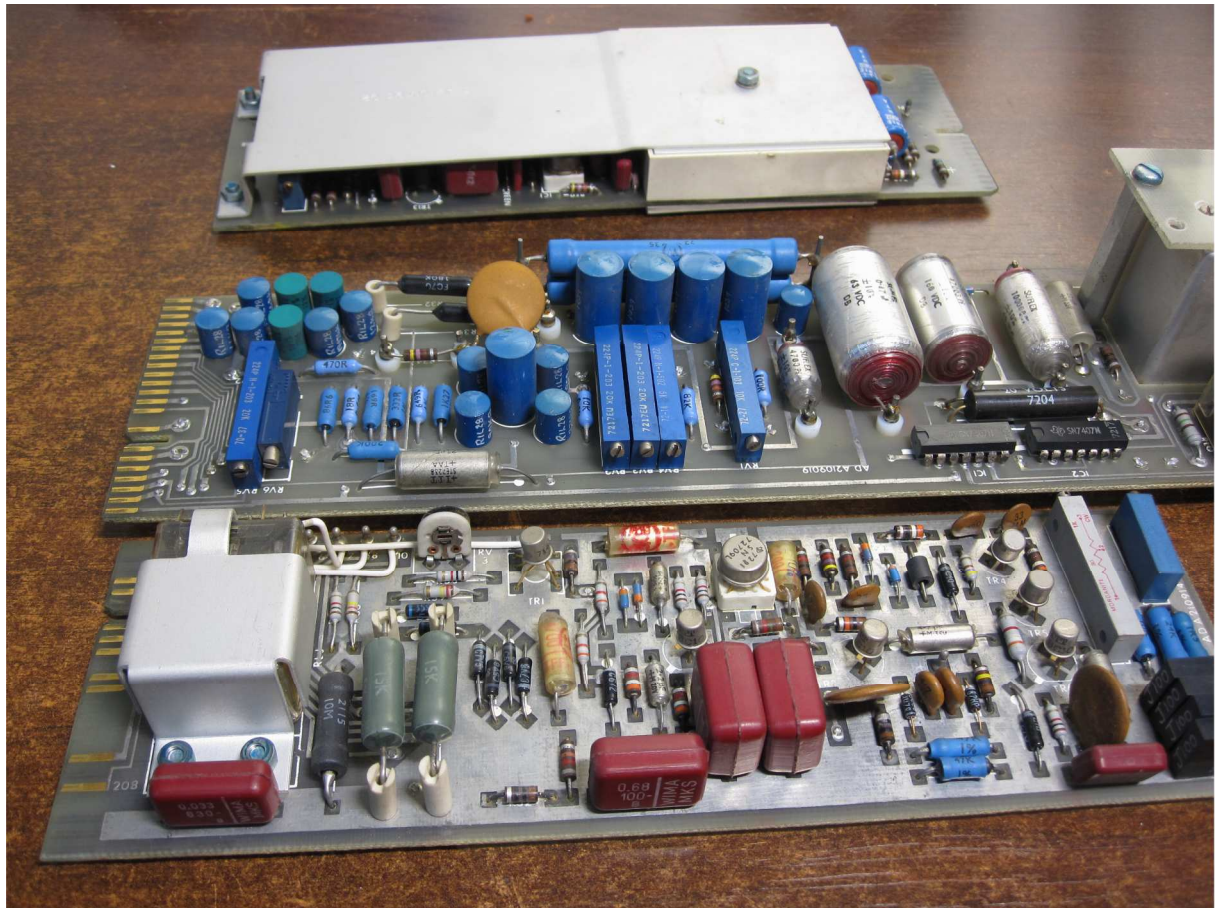
AC Auxiliary board. This board is optional.



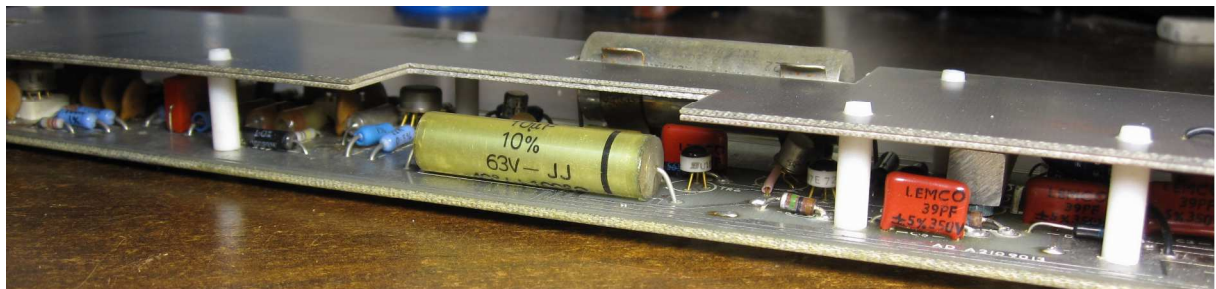
Floating power supply. Notice that pink electrolytic cap. This one was replaced.



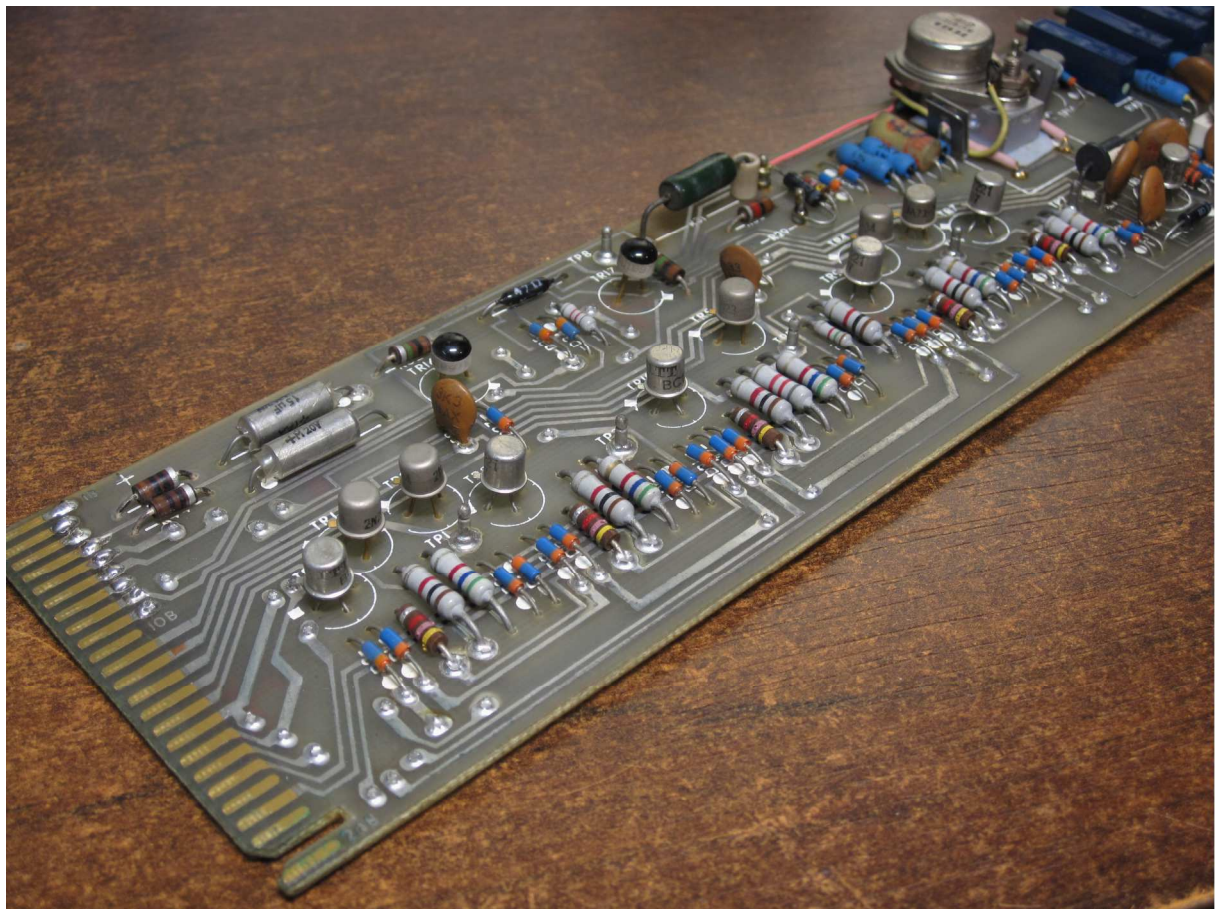
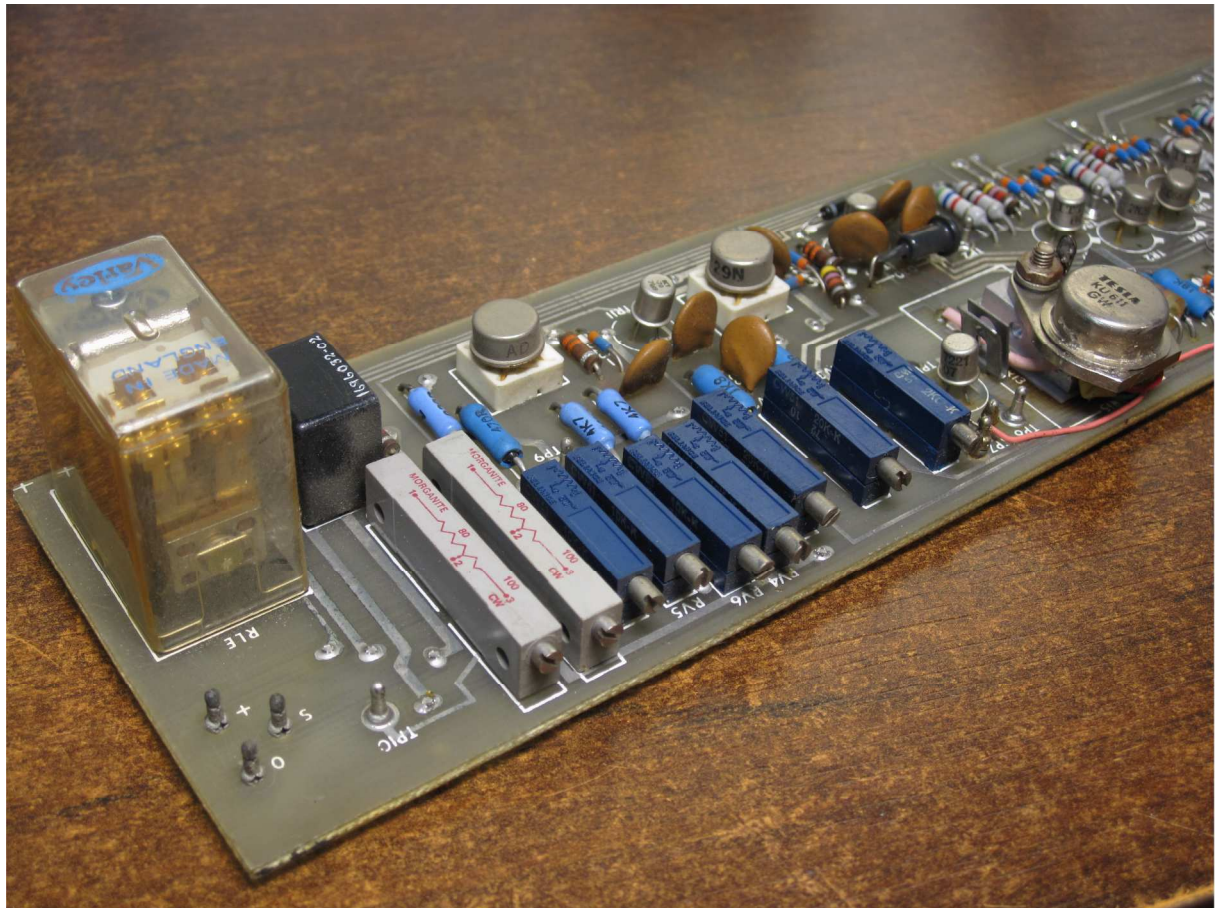
WIMA caps. Early years.



(From up to down)
 Input amplifier with typical shielded unit.
 Range calibration board.
 AC/DC converter.



The integrator.



Reference board.



Replaced NPN power transistor. This KU611 was very succesfull product of Tesla. They made it by themself without copying western technology.

