Installation-Instruction B-DAB-760 in Revox B760

Version 1.2

This document explains step by step the installation of the B-DAB-760 DAB+/FM conversion kit for the Revox B760. Please also note the prerequisites and optional work.

Principle

The installation of the B-DAB-760 conversion kit is completely reversible and can therefore be reversed / removed later if desired without permanent changes to the device. This means that no holes are drilled or other changes made to the housing.

Time requirement

For an experienced electronics technician you can expect about 50-60 minutes of time for the installation of all components including opening and closing of the device, cleaning of dust and cleaning of the front and operating parts, and the final test.

Prerequisites

When the Revox B760 is converted to DAB+/FM, only a few sub-assemblies of the B760 are used, therefore it is also possible to convert a slightly defective B760. The defect must not relate to the following assemblies:

- Powersupply with transformer und Voltage of 5.6V/6V, 15V and -22V
  - 1.166.201 Transformer
  - 1.166.210(-81) Power Supply
  - 1.166.375 Fuses on power supply PCB
- Audio Section
  - 1.166.170 Audio Section
- Front Controls
  - 1.166.350 Wheel Diode Matrix
  - 1.166.355 Wheel Diode Matrix
  - 1.166.320 Station Selector
  - 1.166.360 Station Memory

If one of these assemblies is defective, it must be repaired first.

The battery compartment and the battery voltage are no longer required. Remove any batteries that may be inside.

The small fuse F1 can be removed, the 32V voltage is not needed.

At least the two toggle levers on the left side are important for the function of the unit. Of course, it would be better if all toggle levers work. If toggle levers can no longer be moved, they can be carefully re-oiled.

The signal display must work from 0 to 10, because this is used again, the tuning display is not used.

Optional

Basically, the conversion kit can be installed in the device without revising the device. However, so that you can enjoy your device again for many years, it is worthwhile to subject the power supply to a thorough revision and to replace some other components.

You can order the optionally available revision kit B-DAB-760-REV, which contains various electrolytic capacitors, and many more.

Important !

This product may only be installed by specialists who have in-depth knowledge of electronics. For laymen, the installation can usually not be accomplished in a compliant manner. In addition, the B760 will only function correctly with the technically correct procedure.

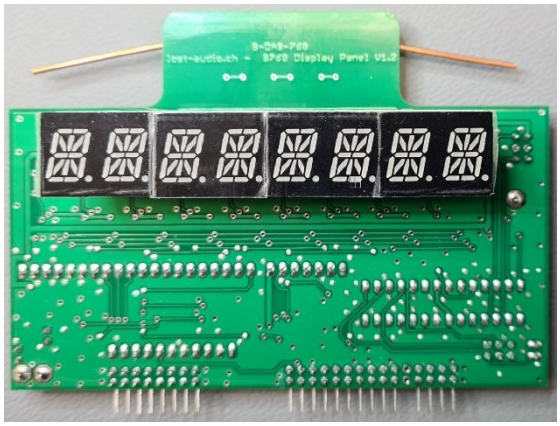
If you cannot fulfill the requirements below or you do not want to install the module yourself for other reasons, please contact Sumatronic AG or Lost Audio GmbH. You will receive a recommendation who can perform the installation for you.

Prerequisites:

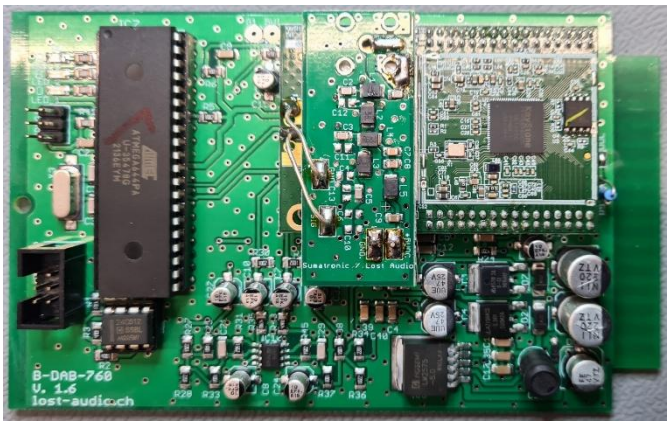
- You are familiar with the handling of electronic components and assemblies and are particularly well versed in the subject of ESD (Electro Static Discharge).
- You have an appropriately equipped workplace and can thus ensure that the ESD specifications remain complied with.
- Among other things, they have the following tools at their disposal:
    - Soldering iron for electronic soldering work on printed circuit boards with ESD connection.
    - ESD work pad and wrist strap

Basic safety instructions

- Unplug the power cord and wait at least 10 minutes before starting your work.
- NEVER leave the opened device alone with the power cord plugged in, otherwise another person, or even yourself, could suffer life-threatening injuries.
- Read this manual and the safety instructions completely and do not connect the unit to the power supply until the manual tells you to do so.
- Any liability is excluded.
- Any warranty claim that may still exist for the device (e.g. after an overhaul or repair) may be voided by the installation. Because these devices have not been manufactured for many years, there is usually no longer any factory warranty.
- Do not touch any components on the circuit boards. Touch the circuit boards only at the edges.



The new Display PCB



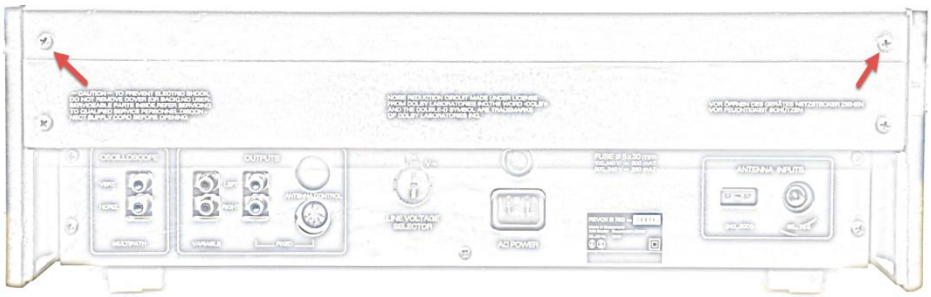
The new Tuner PCB

Installation

1. Before you start working, get a picture of the device, if you do not know it well already. To do this, connect the device to 230V AC and check the basic functions. Basically, no sound has to come out of the device, because the new DAB+ tuner will take care of that, but the controls have to work. If something does not work as desired, this must be "repaired" later.
    a. Switch on the device. Basically, the lamps can also be defective, this is not a big problem. They can be easily replaced.
        i. The red power lamp should be lit
        ii. The display should show a frequency in red
        iii. The two pointer instruments should be illuminated
        iv. Usually the yellow "MUTING" lamp lights up on the outer right.
    b. The toggle levers should move reasonably smoothly. If they do not, be sure to move them carefully 50 times or more. Sometimes these are a bit sluggish. At the end, the power toggle levers should be up, all other toggle levers should be down.
    c. Turn the centered Wheel. It must be possible to rotate the frequency from 87.00 to 107.95.
    d. All 15 preset keys must work, this simply means that the corresponding number in the display on the right must be shown. No frequency must be stored. The frequency memory will be replaced later, but the keys and their logic must work.

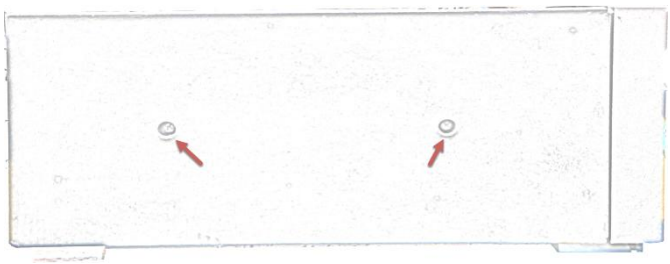
2. The device must now be switched off and completely disconnected from all cables, especially the 230V power cable.

3. Place the B760 in front of you with the back facing forward and the feet down. Now look at the B760 from the back and loosen the two black screws at the top of the device and then lift off the top metal cover. The device is then open at the top.

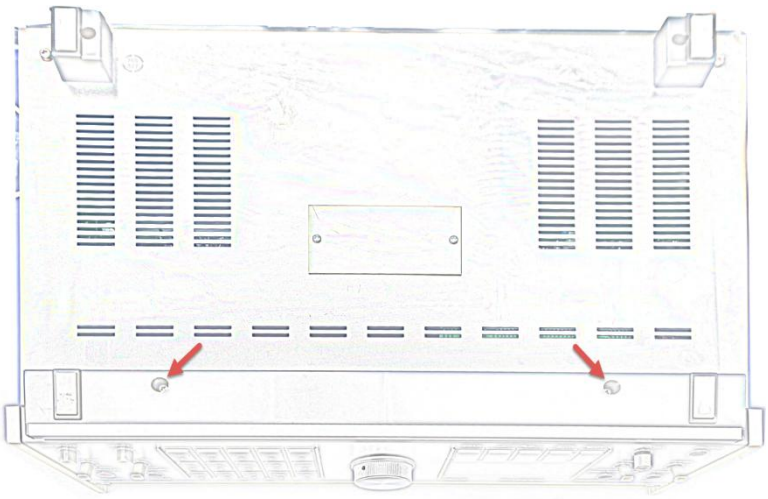


4. Loosen the two black screws on both sides (left and right) and remove the side panels. Gently lay them down so that they do not lie on the Nextel. Nextel is the velvety gray coating, which should not be scratched.

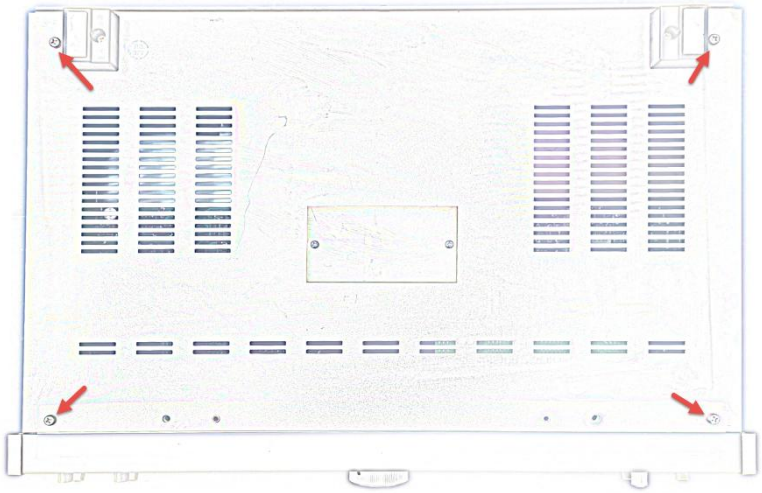
5. Loosen the two black screws on both sides (left and right) and remove the side panels. Set them down carefully so that they do not rest on the Nextel. Nextel is the velvety gray coating that should not be scratched.



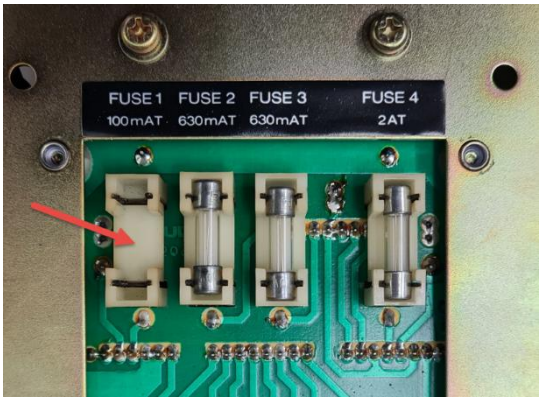
6. Now turn the device upside down and make sure that the front of the device is facing you. Loosen the two screws on the long baseboard at the front of the device and remove this baseboard. The two screws of this baseboard are longer than the other screws, note this when mounting the baseboard.



7. Now loosen the 4 screws of the bottom and also the one black screw that secures the bottom from behind. Once all 5 screws are removed, the bottom can be lifted off.

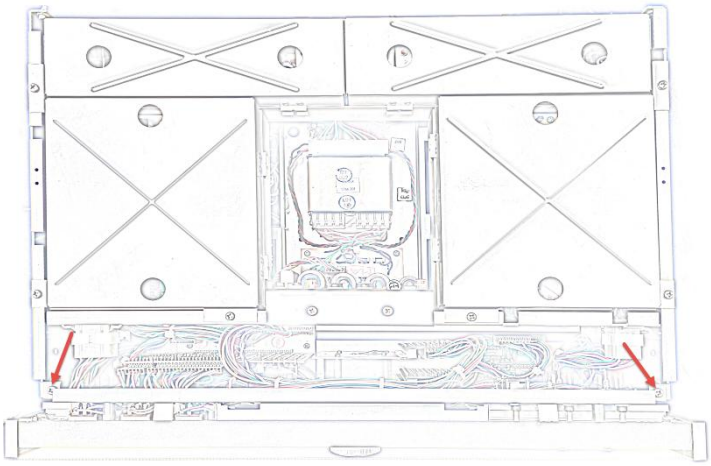


8. Already now you can remove the fine fuse F1, because this voltage supply is no longer used. This means that this one voltage regulation is no longer in operation and you thus save some power.

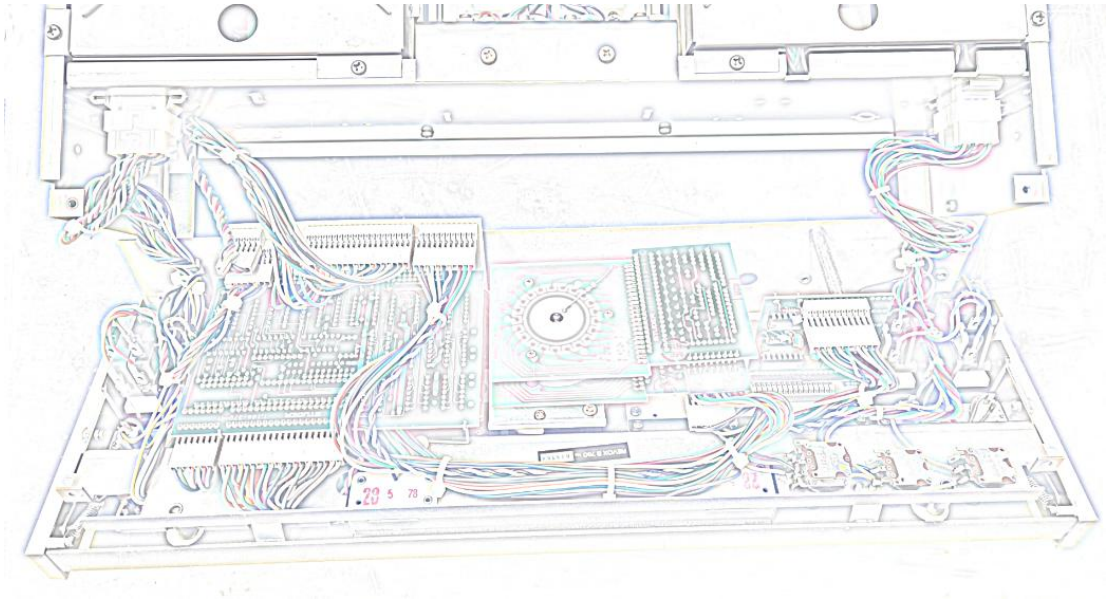


9. Now turn the unit back to the normal position with the feet facing down and the front facing forward. Since the front is already loosened at the bottom, turn the unit over carefully.

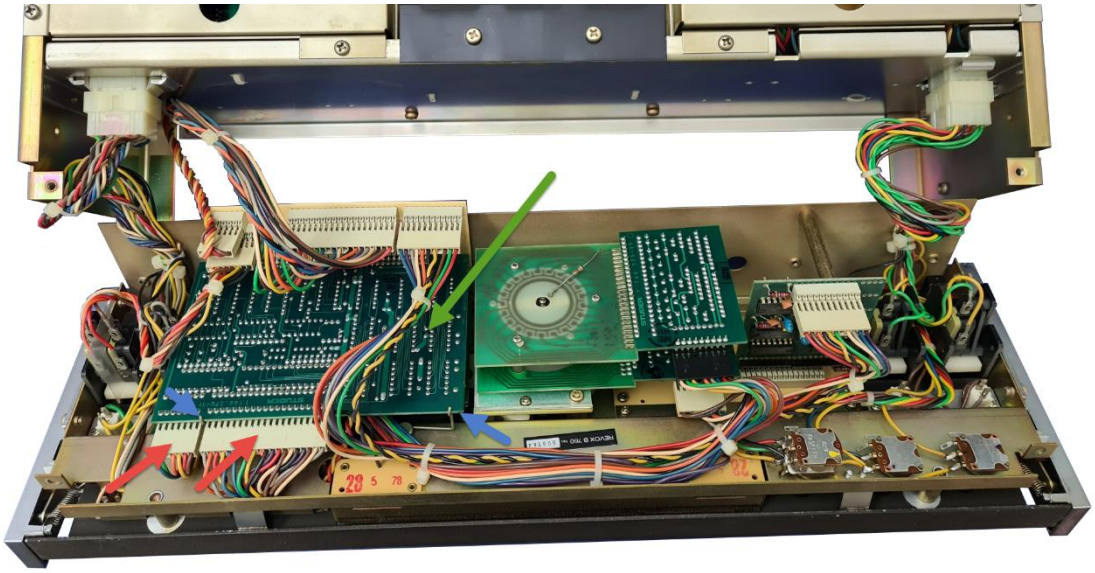
10. Now loosen the front by removing the two screws on the far left and far right outside, from above.



11. Carefully pull the entire front forward a few cm and tilt it forward. Do not disconnect any cables!



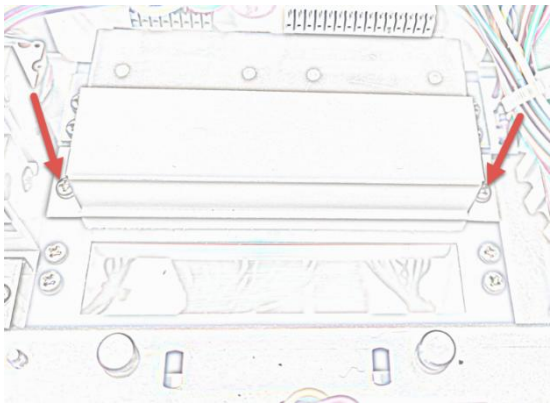
12. The "Frequency Memory" board is the large green board (green arrow) behind the display. This must now be removed. To do this, carefully pull the two connectors, the small and the large one (red arrows), out of the board. After that you will see 2 small metal brackets (blue arrows), which hold the PCB in position. Lift them slightly and tilt the board upwards out from under these brackets. Now this circuit board can also be pulled out.

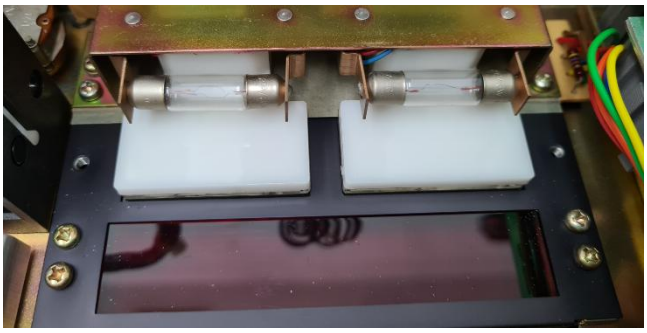


13. This metal bracket can now also be removed by detaching it from the holders.

14. Now the display board is no longer fixed and can also be pulled out. Be careful, the rather high display tends to tilt.

15. If you have purchased the optional revision kit, now is the time to replace the pointer instrument illumination. To do this, loosen the two side screws on the aluminum cover, lift it off and replace the lamps. Then replace the cover and screw the two screws back in.





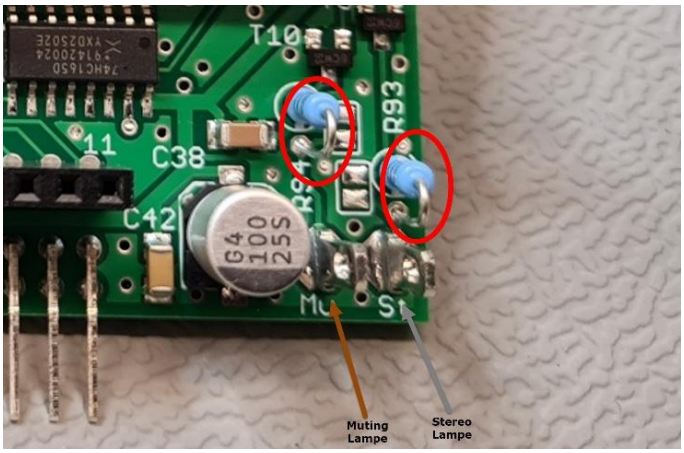
16. The red display foil is often dirty due to the years. Now clean this foil with a damp, non-scratching cloth. A kitchen paper is best, but not microfiber cloths. The foil has to be dried completely again.

17. Now take the new display board. This is in an ESD bag. Remember not to touch any components and only ever hold the board by the edges. Take it out of the ESD bag and place it in front of the device.

18. Revox recommends installing a 100 Ohm resistor for each of the four indicator lights (red, blue, yellow, green) to extend their service life. For the lamps (blue, yellow, and green), this is already prepared on the circuit boards, i.e., the resistor is already installed. Only if you do not want these or if they are already present in the supply lines can they be bypassed using the solder bridges located right next to the resistors. There are two resistors on the display circuit board, for the green and yellow lamps, see red ellipse in the next but one picture. For the blue LED, the resistor is on the tuner circuit board (explained later) and for the red LED, it would have to be soldered separately into the power lamp supply line (not included).

19. Two cables must now be re-routed, which must then be soldered onto the new display board. They are the two cables for the stereo and muting lamp. On both sockets, the cables mentioned later should go on top and directly into the harness. On the other side of each lamp socket is a wire that connects the two sockets. The colors should be correct, but may differ in exceptional cases.
    a. For the stereo lamp on the left in the picture, the upper single gray wire that goes directly into the harness must be unsoldered at the lamp socket. After that, the part that is uninsulated should be cut off and neatly insulated with insulating tape so that it cannot make contact anywhere. Now solder one of the two supplied 40cm long stranded cables to the lamp socket instead of this cable. (strip the cable and tin).

    b. Dieses Kabel wird nun an der neuen Display-Platine in der Ecke auf den Stecker mit dem Namen «St» aufgesteckt.

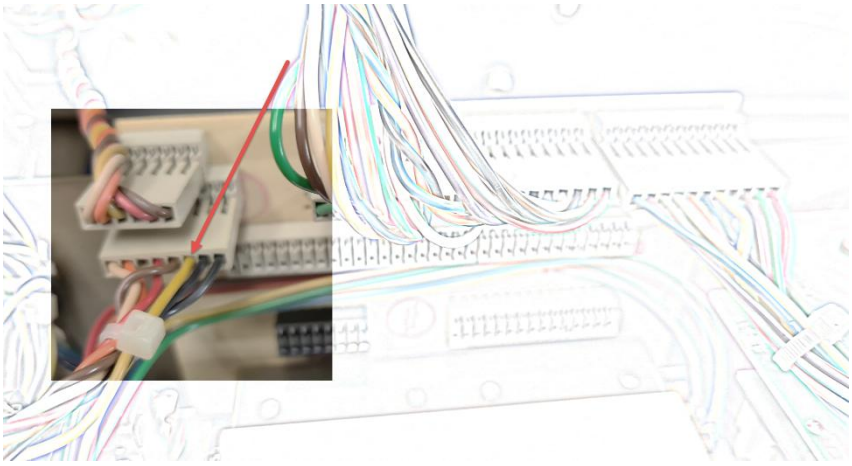


c. Continue in the same way with the muting lamp on the right in the upper picture. Unsolder the single brown cable at the top, cut off the stripped part and stick an insulating tape around the interface. Then solder the other of the two 40cm long stranded cables to the socket there.

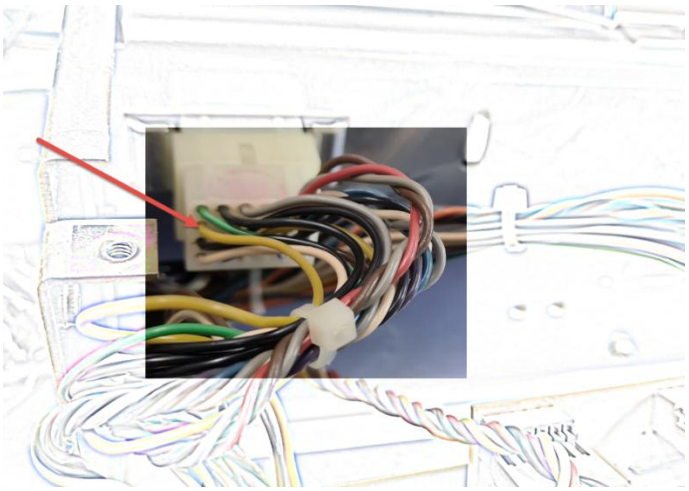
d. This cable is then also plugged into the “Mu” connector on the new display board in the same corner.

e. If you do not want the two 100 Ohm resistors, they can now be bypassed using the two solder bridges located right next to the resistors.

20. Now the third and last cable for the receiving strength pointer instrument must be connected. To do this, find the yellow cable that can be seen on the 8-pin connector on the connection board at the bottom.



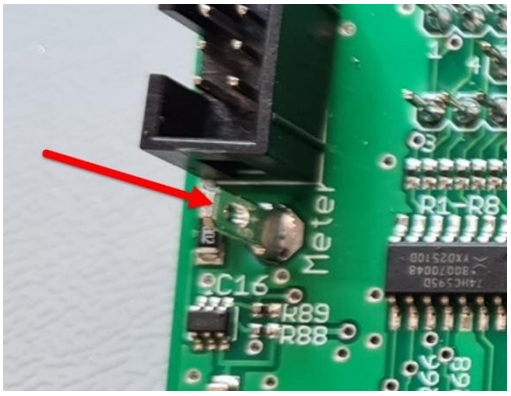
a. This yellow cable, the third from the right, must now be followed to the large rectangular connector. You can see it in the picture here. At the big connector it is in the second row from the top, far left outside.



b. Cut this cable about 2cm away from this large connector above. The 2cm is so that it can later be undone once and thus be reconnected. This would only be necessary if the original FM tuner is rebuilt.

c. If the cable has been cut, insulate the interface at the large connector with electrical tape, and then unthread the cable to the other connector from all fasteners. This can be unthreaded without cutting the cable ties.

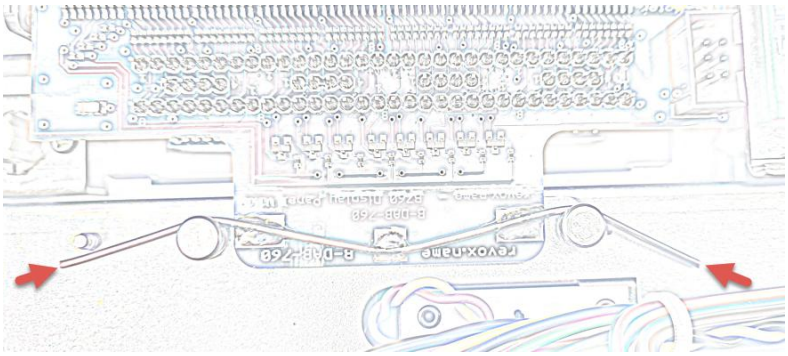
d. Now strip the open, long threaded end of the stranded cable, press or solder the enclosed flat plug onto the cable, and plug it onto the connector at “Meter.”



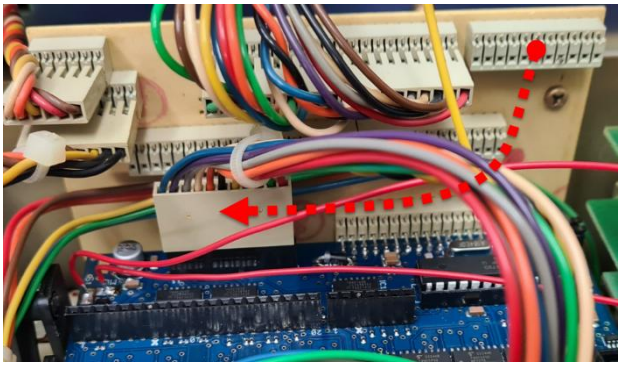
e. During all work, make sure that the cables are not tangled, otherwise the display cannot be used.

21. On the new display board, the protective foils on the 4 red illuminated double-segment displays must now be carefully removed. Do this extremely carefully.

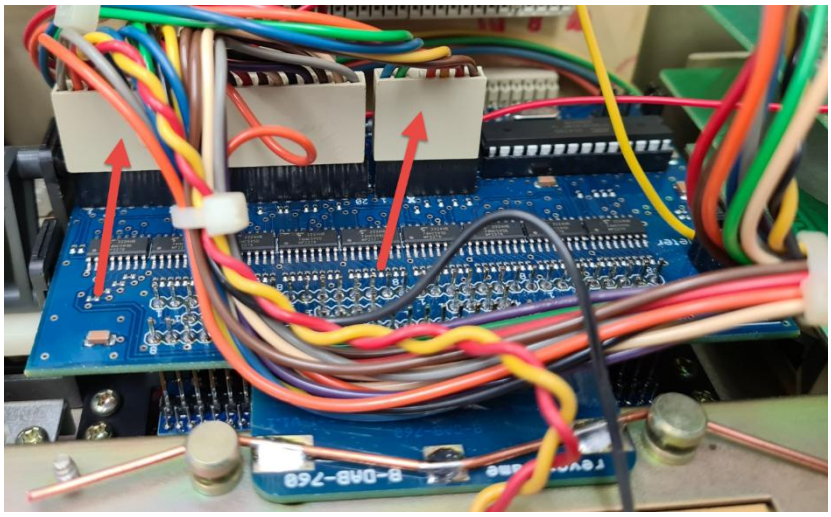
22. Now the new display board is plugged into the connector on the connection board where the old display board was. Make sure that the pins fit into the sockets, it must not be inserted displaced in any case, otherwise the display board would be destroyed immediately. The display has to be inserted carefully and pushed in until fully inserted. The copper wires are then bent slightly "upwards" to fix the display.



23. Now the connector on the outside right of the connection board is loosened and plugged into the bottom of the new display board. Pay close attention to the direction in which it can be plugged in. The connectors have gaps, which are blocked in the socket by a pin. This helps to correct connection.



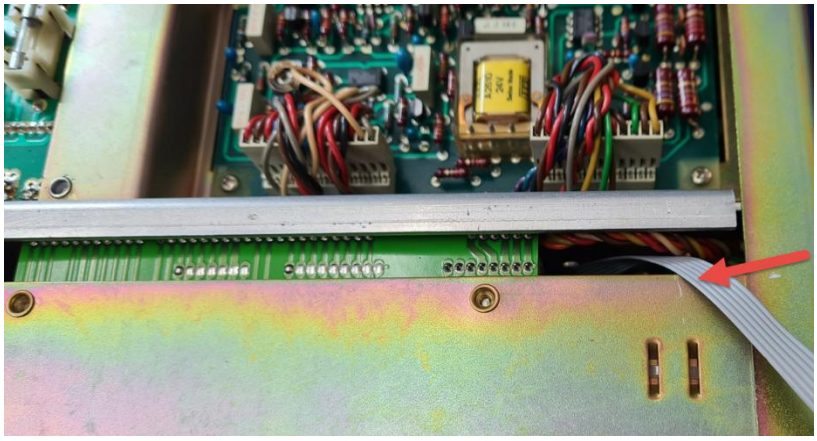
24. Now plug the two open connectors you originally unplugged on the "Frequency Memory" board (the large and the small connector) into the two remaining open sockets on the new display board.



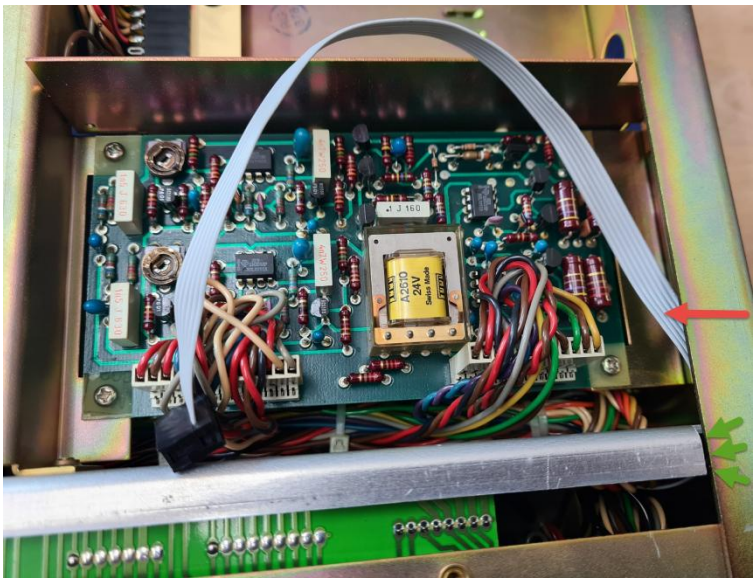
25. Now the supplied ribbon cable is plugged into the black socket (thanks to the lug on the plug, this only works in one direction) and pulled down so that it passes through the open area without being jammed. It is routed correctly right away during assembly.

26. Now the front is correctly inserted again. Make sure that no cables are pinched and that the ribbon cable can hang out freely at the bottom without being crushed. The front is now fastened again with the two screws from above. These are the screws on the far left and far right outside.

27. Now turn the device over again so that the feet are facing up and the front is facing forward. The ribbon cable then looks out like this when viewed from below.



28. The cable can now be pushed through the small slot (green arrows) on the side between the aluminum sheet and the outer shell and still be placed at the relay. Later it will be routed to the DAB+ tuner.

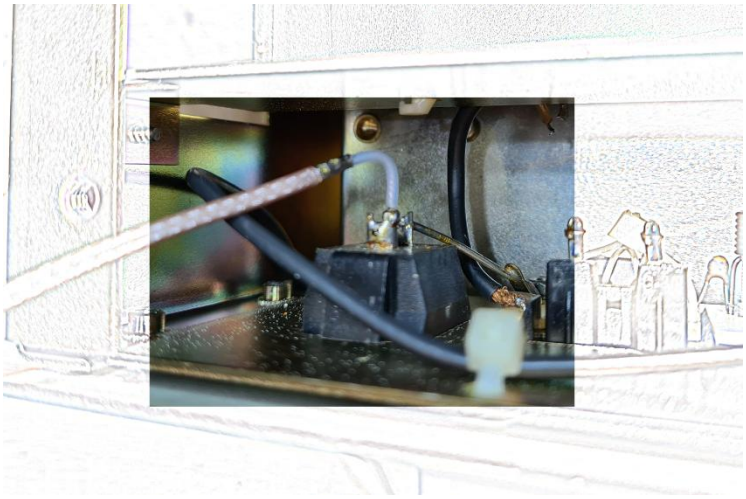


29. Seen from the front on the right side, you can see a slot that is open on the side, but closed by a flap. This is the slot for an intended Dolby card, but it was never used. Loosen the screw on the side and remove the flap.

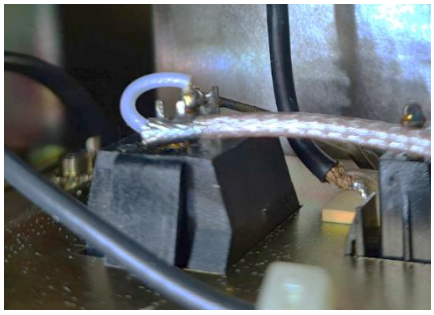
30. Now turn the device so that the back side looks to the front. Then, using the soldering iron and preferably a small pair of needle-nose pliers as an aid, unsolder the antenna cable from the antenna socket on the very outside. Only the two soldering points of the antenna cable (green) must be unsoldered, but not the soldering point (red) of the ground wire (blue).

31. Tin both soldering points on the socket with enough new solder, but do not heat it too long, there should remain enough flux for a good soldering of the new antenna cable.

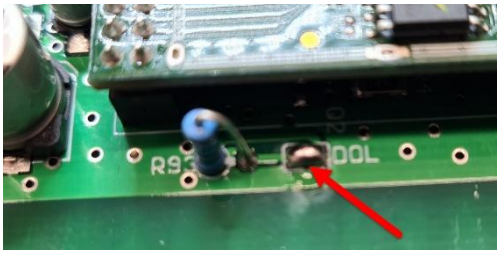
32. Now bend the tip at the open end of the antenna cable at a right angle but not damage it. Do it exactly as shown in the picture. Then heat the middle pin on the socket until the tin is melted and insert the inner wire of the antenna cable into this pin. The pin is like a small tube and thus open inside. Let the solder joint cool down without moving the antenna cable.



33. Now bend the antenna cable so that the outer already tinned shielding braid can be soldered to the outer pin. Hold both together, heat and solder well with some more tin if necessary. A third helping hand holding the cable is very helpful here.

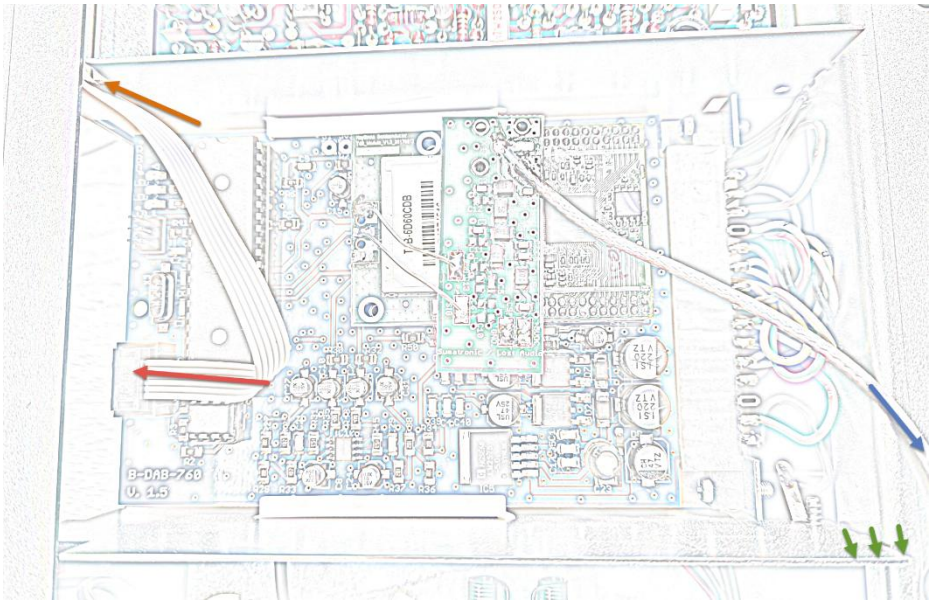


34. Now you must decide whether to deactivate the 100 Ohm resistor for the Dolby lamp if there is already one in the supply line. This 100 Ohm resistor protects the lamp and extends its life. If you want to deactivate the resistor, bridge it with the solder bridge on the Dolby tuner circuit board.



35. Now thread the flat bath cable (red) through the small hole (orange), the plug only goes through in one direction. Once the cable is through, connect it in the black socket. Like the display, it only goes in one direction. The antenna cable (blue) goes around the vertical sheet metal (green arrows) at the back, so it is not crimped.

36. Now thread the flat cable (red) through the small hole (orange); the plug only fits in one direction. Once the cable is through, connect it to the black socket. As with the display, it only fits in one direction. The antenna cable (blue) goes around the back of the vertical metal plate (green arrows) so that it is not squashed.



37. Now close the shaft on the side again with the small plate and screw it tight.

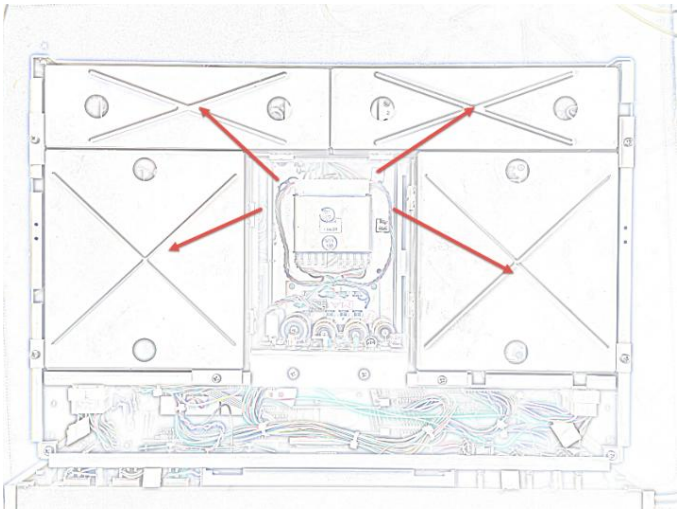
38. Now turn the unit back to the normal position, font towards the front and feet down. Connect the power and switch on the device. When switching on, "DAB 760" must appear and disappear again after about 3 seconds. There are no stations stored yet, so the display goes out again.
    a. If the display does not go out and shows "no RS232" after about one to two minutes, the connection between the two boards with the ribbon cable is not well connected. Then the connection must be checked. Otherwise continue with the next step after 2 minutes.

       NOTE: If there are still defective RF circuit boards inside the unit, the 6V supply voltage may be pulled down, preventing the tuner from working. If this is the case, proceed with the next steps and only test the unit once these boards have been removed.

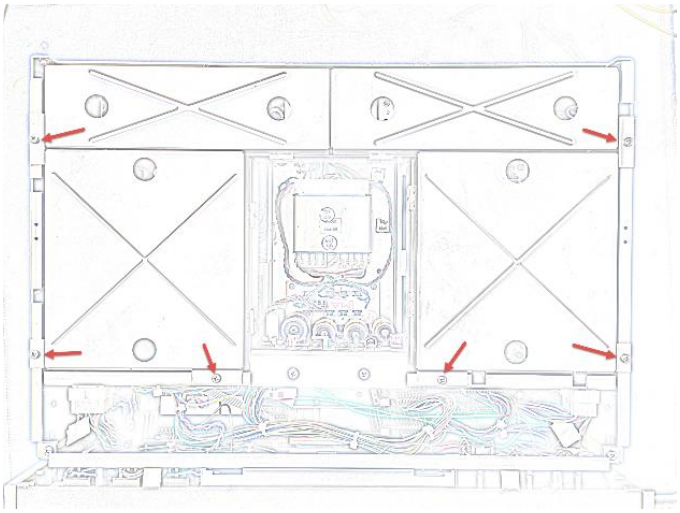
39. Now disconnect the device from the 230 V mains supply again!

40. Now start to remove parts of the device that are no longer used in order to reduce the power consumption.

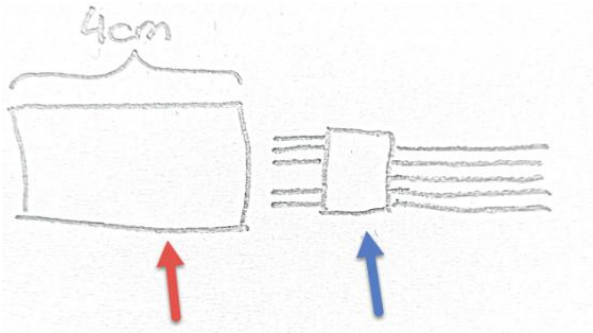
a. Open all 4 shielding plates by pulling them upwards.



b. Disconnect the six connectors and in the left rear corner the antenna cable
c. Loosen the six screws that secure this whole shielded block from the top

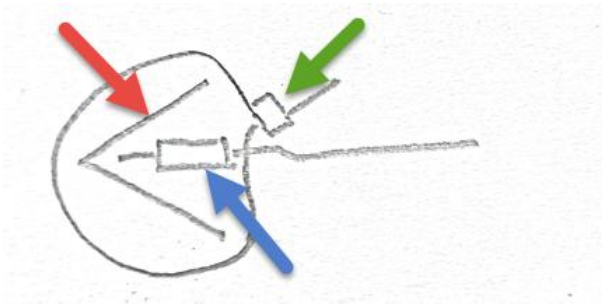


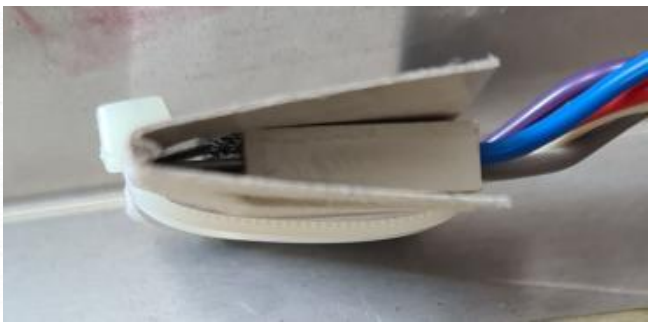
d. Now lift out this metal block completely and put it somewhere, it is no longer needed.
e. Now all 6 plugs must be insulated so that they cannot create a short circuit anywhere. The easiest way to do this is like this:
    i. Cut a strip (red) from a thin cardboard, e.g. from a pizza box or the packaging box of this conversion kit, which is 1cm wider than the connectors (blue). The length of the cardboard should be about 4cm.



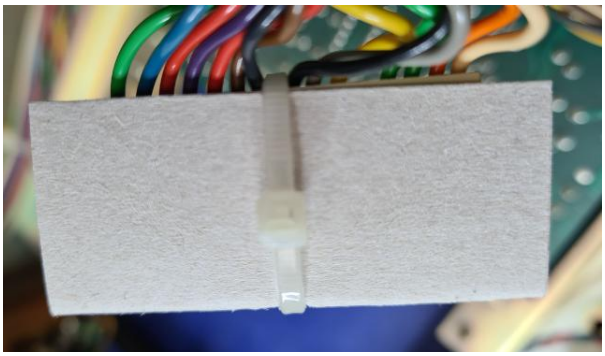
    ii. Fold them in half

iii. Now place this cardboard (red) around the plug (blue) from the front and fasten it with the enclosed cable ties. 1 cable tie (green) is now required per plug. (This way it is possible to disassemble the tuner at any time). Insulating tape leaves a lot of glue after some time, which would be disturbing here.

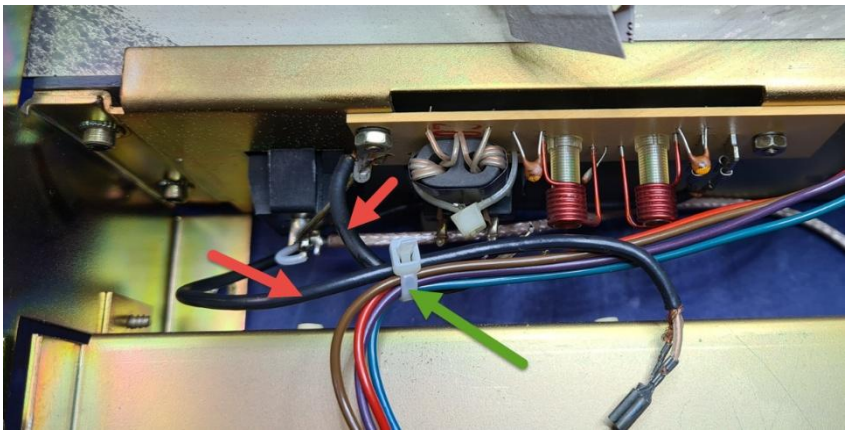




iv. Now do this with all 6 connectors.



v. Finally, connect the two antenna cables (the unsoldered and the unplugged) together with the existing cables and a cable tie so that they cannot touch anywhere.



41. If you have purchased the revision kit, now is the right time to install these components according to the instructions in the revision kit. Otherwise, skip this point and start with the test and then the assembly.

42. Now make a test whether everything works. DAB+ or FM reception is mandatory for this. Connect the 230V power supply, also a suitable passive antenna. Connect small, active and adjustable PC boxes to the audio output for checking. Program either the DAB+ or the FM stations according to the manual and check if the tuner works properly.

43. If everything is good, start to close the device again as follow.
    a. Feet against top, front against front: Place base plate and tighten with four screws from above and the one black screw from the rear.
    b. Place baseboard and screw tight with the two long screws
    c. Turn the unit over, with the feet facing downwards: Put on both side parts and screw tight with the two black screws in each case..
    d. Put on the cover and tighten it from behind with the two black screws.

44. The device is now ready to be converted. Enjoy the new DAB+ and FM reception.