

The parts and tools needed

- LDMOS transistor ART1K6FHU preferred (or BLF188XRU or BLF189XRAU or BLF189XRBU)
 - High performance thermal paste eg Timtronics 710NS (e-conductive) or Boron Nitride CW7250 (non e-conductive). If you are using some other thermal paste, check that it is not corrosive with aluminum.
 - Quite high power (>40W) soldering iron. ESD proof soldering iron is recommended. If a non ESD soldering iron is used connect the soldering iron body to the main board GND bounds with a wire.
 - Solder wick width abt 2-3mm
 - Solder wire Sn/Pb(/Cu) high flux content, diameter abt 0.5mm
 - Compatible screwdrivers
 - A sharp carpet knife
1. Switch OFF PA1000 and disconnect the mains cable. Wait at least 5 minutes to discharge the dangerous voltages inside the amplifier.
 2. Loosen the two handle screws by using a bigger screw driver **but do not fully remove the handle screws**.
 3. Remove the four top cover screws located on the sides and take off the top cover
 4. Take several photos of the LDMOS area.
 5. Put a tape on the T-OFFSET trimmer to avoid accidental turning of it! (If you accidentally turn the T-offset trimmer, it can be adjusted to room temperature LCD indication when PA1000 has cooled down to room temperature. This may take few hours.)
 6. Turn the BIAS trimmer few revolutions counter clockwise.
 7. **Do not yet remove the LDMOS screws** to avoid dirt pass to the heatsink slot.
 8. Use a sharp carpet knife to fully cut the four LDMOS strips between the LDMOS ceramic and the slot.
 9. De-solder the LDMOS disjointed strips and remove the solder remains from the pads with solder wick.
 10. Unscrew the four screws and remove them with the associated hardware (the screws, round and rectangular washers and the two small copper plates). Place the parts on your desk in to the same order to guide the re-installation.
 11. Fold up slightly the TO-220 temperature sensor Q2 and then remove the failed LDMOS.
 12. Clean carefully the heatsink slot surface with several cotton swabs. Check very closely the cleanness of the heatsink surface.
 13. **The LDMOS is human body ESD safe device but in spite of that touch first the bottom GND body. Add a little thermal paste** to the bottom of the new LDMOS and spread it all over with your finger. If you are using an electrically conductive thermal paste take especially care that you are not putting too much thermal paste to allow an electrical connection from the LDMOS strips to ground.
 14. **CHECK THE LDMOS ORIENTATION** and place the new LDMOS into the slot. **Refer to the picture!** Push hardly and rub the LDMOS toward the heatsink with your fingers until it sticks to the heatsink. Finally align the LDMOS to the solder pads and with the screw holes.



15. Reinstall the copper plates, fold down the Q2 temperature sensor and reinstall the washers and the screws. Pre-tighten all the four screws gradually and check especially that the rectangular washers are properly aligned with the LDMOS. The torque of the LDMOS screws are proper when the spring washers bottom. Tighten the other two screws more tightly.
16. Fold the LDMOS strips down by sweeping them eg with a rounded end wooden stick. Solder the terminals to the PCB pads. Use quite a lot of solder and much amount of heat. Longer soldering time is better.
17. Take time to make a very careful visual check. Compare to the taken photos. You can leave the flux remains.
18. Power up and activate PA1000 **with zero drive** to TX state with PTT (Only TX led should be lit). Note, the bias current is zero at the start. **Adjust VERY slowly the BIAS trimmer** clockwise until the LCD is indicating current 1.8A +/-0.2A (with 56V PA voltage).
19. Test the operation on SSB or CW dots with 10W drive and adjust the PA1000 gain (Gx) setting for desired output power (PA1000 will save the gain setting on each band).
20. Install the top cover. Note the cover notches for the handle screws on the right side. Pre-tighten the four top cover screws and align top cover to the bottom cover. The counterpart nuts are sliding in the aluminum side parts. After aligning tighten the top cover screws fully. Align the handle end parts and tighten the two screws fully (use a bigger screwdriver).
21. LDMOS replacement completed.