



PTT Driver board for Kenwood TL922

Installation guide

(Last revision: 25/12/2022)

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Introduction

The PTT driver board for Kenwood TL922 power amplifier it's a retrofit module to obtain a low voltage PTT input from the original higher open circuit voltage of about 90V. This high voltage can be a problem and cause damage on the PTT output of some modern transceivers, so this module convert the original PTT input (RL CONT) to a low voltage (about 12V of open circuit voltage) solid state PTT input.

Warnings - Disclaimer

This module is made exclusively for radioamateur and educational-experimental use. As a result, it should be assembled and used by an expert with experience in the assembly of electronic circuits.

We do not accept any responsibility for bodily or material damage caused by the installation and use of this board. As a result, installation and use this board at your own risk.

The operation may not be guaranteed, and even less so its eligibility for use of certain applications. The user should verify its applicability for their own applications and is responsible for the latter.

Errors of access and use are factors that are beyond our control, we are therefore not responsible for bodily or material harm caused by these errors or inexperience.

The guarantee applies exclusively to the individual components (on the condition that these are installed correctly). The aforementioned RF-SYSTEM reserves the right to make modifications and/or improvements to the module at any time, without updating this manual.



**The Kenwood TL922 contains lethal high voltages !
Any of these high voltages inside this amplifier can kill you!
This board must be installed only from a qualified technician and able to work on high voltage devices.**

- It is advised that you have to understand all potential hazards, the parts are kept out of reach of children and away from pets, as they are a choking hazard.
- Do not inhale the fumes from the welding. Use a filter or device to remove these from the work station.

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- Aerate the room after the welding activity.
- When using a soldering iron, place it down only once the rod has cooled down properly.
- Do not solder on powered live circuits.
- Carefully follow the instructions provided in this manual.
- In case of any doubt concerning the procedures to be followed, seek technical assistance.
- Do not try to modify the parts of the circuit that have already been assembled.

Before beginning

The installation procedure of this module may be facilitated by certain small steps:

- Organise the work space for the procedure.
- Preferably use a wooden table with a sheet of antistatic map placed on top to prevent any parts that may fall from bouncing to the ground.
- Keep the necessary tools within arm's reach.
- Use a soldering iron whose tip is in good condition. Eventually change it as a preventative measure.
- Use a free solder alloy for electronics possibly without lead.
- Preferably use a rigorously earthed antistatic bracelet connected to through a resistor of 1 MegaOhm.
- Rushing is bad practice! Proceed with the most calm approach possible!!!

Soldering advice

For the assembly of the kit, no particularly sophisticated soldering equipment is necessary. Even with a good pen soldering tool (at least 30 watts of power) you can obtain optimum results. The key point for successful soldering is certainly the state of the tip. Damaged tips or tips which have lost the silver surface layer should be replaced. The tip, once heated, may be effectively cleaned by melting a small amount of solder alloy on it and then passing it repeatedly on a damp sponge (not soaking). The operation of cleaning with the sponge should be repeated regularly, in order to eliminate residues of fluxing and oxidising agents that may build up on it.

Preferably use lead-free solder alloys, even if the soldering in this case will not have a very shiny appearance and may as a result be more difficult to complete. The diameter of the alloy to be used simply depends on habit. Taking into account the "step" of the parts to be soldered, a soldering alloy with maximum diameter of 1mm should be entirely sufficient. Larger diameters may be difficult to manage, and smaller diameters may require more wire feeding during the fusion operations. One should not use fluxing agents or soldering pastes since modern soldering irons have a core that, upon melting, carries out the same function as the soldering paste.

Soldering operations should be carried out in a fast and decisive manner. Certain components (such as crystal) do not increase in size such that their leading wires must be insisted upon with the soldering iron. The same is true of the transformers. The soldering alloy should never be liquefied on the tip of the soldering iron, but on the leading wire of the part that is being soldered, following the heating of the same. After the fusion has begun it is necessary to apply the heat for several moments (1 or 2 seconds) so as to complete the fusion of the deoxidising agent and to guarantee optimal electrical contact. Do not exaggerate the quantity of tin that is melted on the leading wires, excesses tin may result in aesthetically awkward soldering or in short-circuits with the adjacent feet.

Once the soldering phase is complete, one should never blow on the soldering alloy. The cooling should take place slowly by convection.

Particular attention should be paid to the airtightness of the ground planes. In this case the large metallic surface has an elevated thermal capacity, and it may therefore be difficult (especially if the soldering iron is not overly powerful) to produce good soldering results.

Also in this case it is only a question of time, keeping the tip on the ground plane for a few seconds, such as to lightly heat it and then proceed to the use of the soldering alloy.

If an error is made, the excess tin may be removed with a desoldering braid (make sure it does not touch your fingers too much) or with tin remover (electrical or pump). The parts should be removed only when the soldering alloy has been correctly removed and without exerting too much force in the extraction. If the component is “stuck”, remove the tin more efficiently. Applying force with pliers or wire cutters may lead to insoluble damage to the printed circuit.

Technical specifications

- Operating voltage: 70V-110VDC
- Power requirements: max. 2mA@80V
- Input open circuit voltage: about 12VDC
- PTT Input sink current: about 1mA
- Board size: 55x25mm

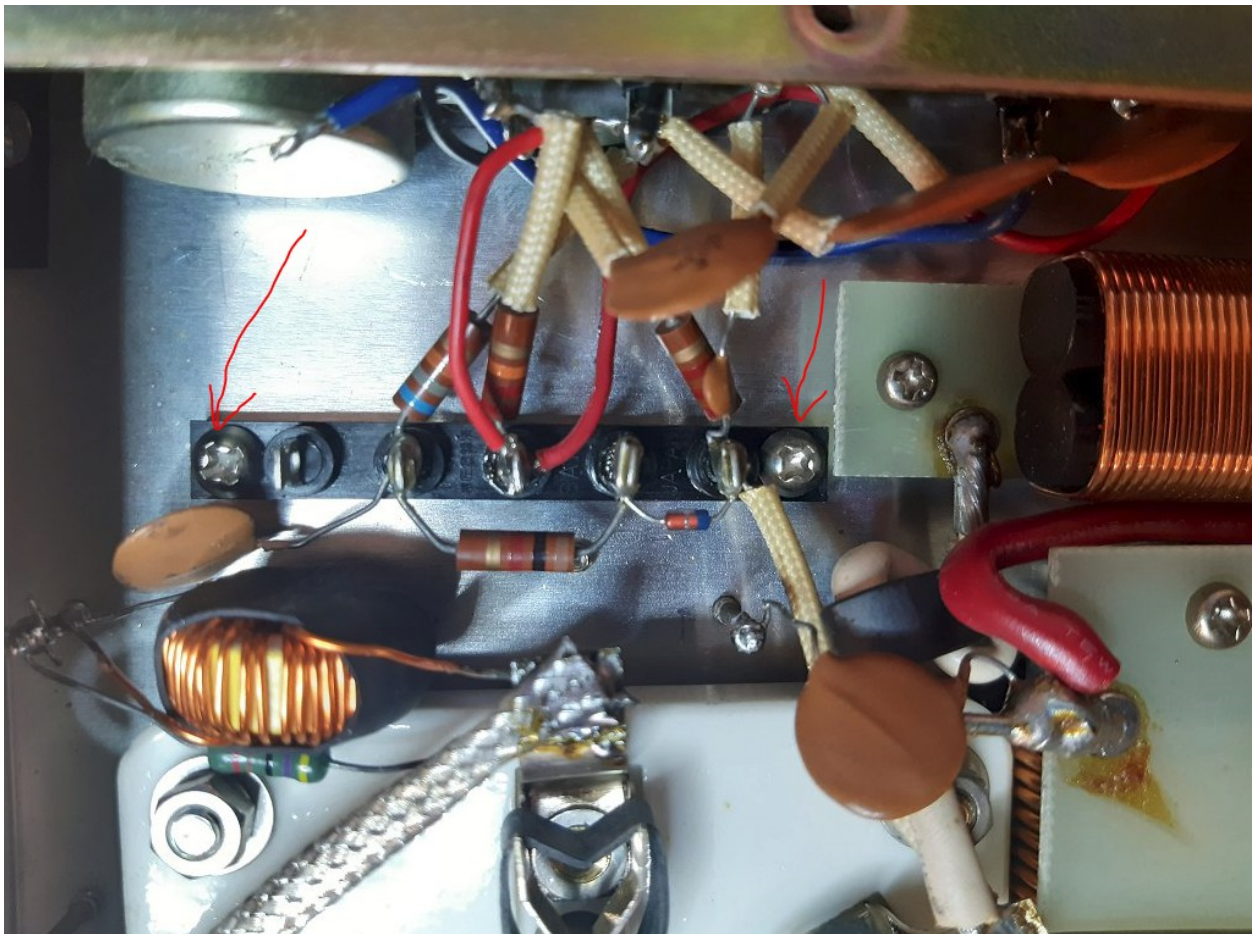
Preparation and setup

The pack containing the PTT board driver module has finally arrived, so, remembering what was said in the first section, the necessity is for a space that allows us to work comfortably and calmly.



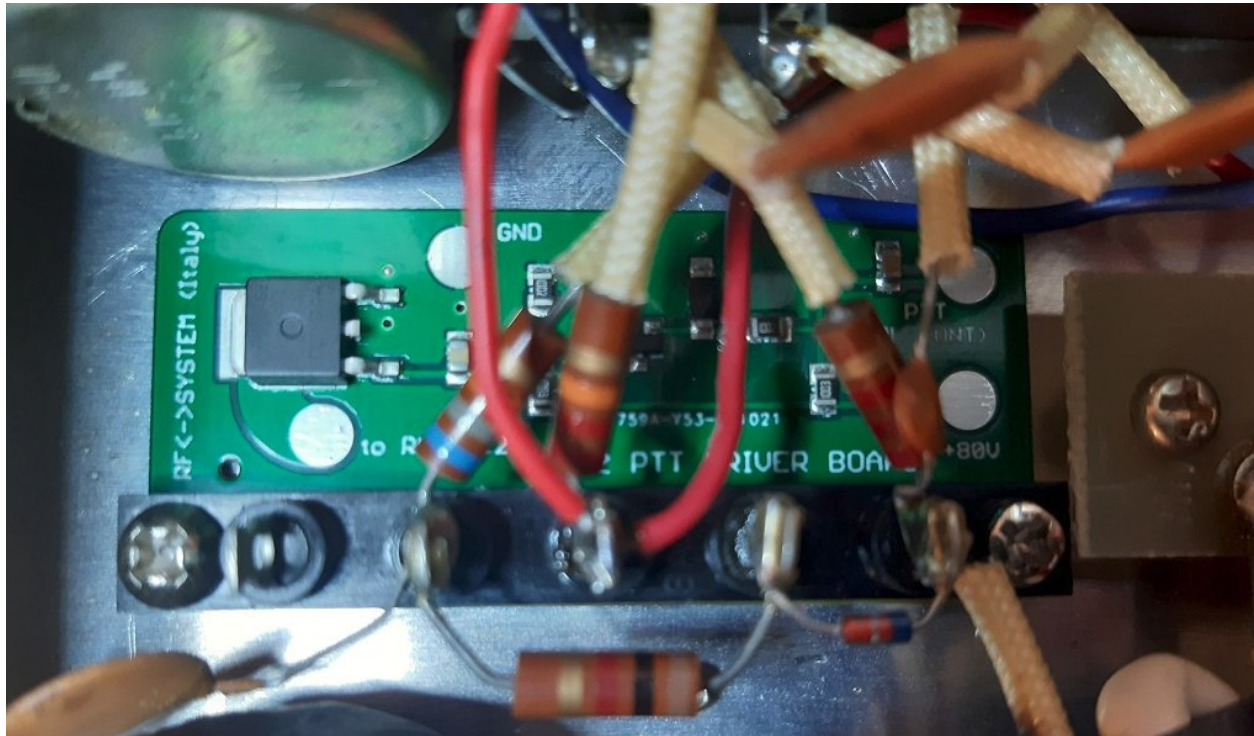
Installation

Remove the bottom cover from the TL922 and locate behind the back panel this black terminal strip:

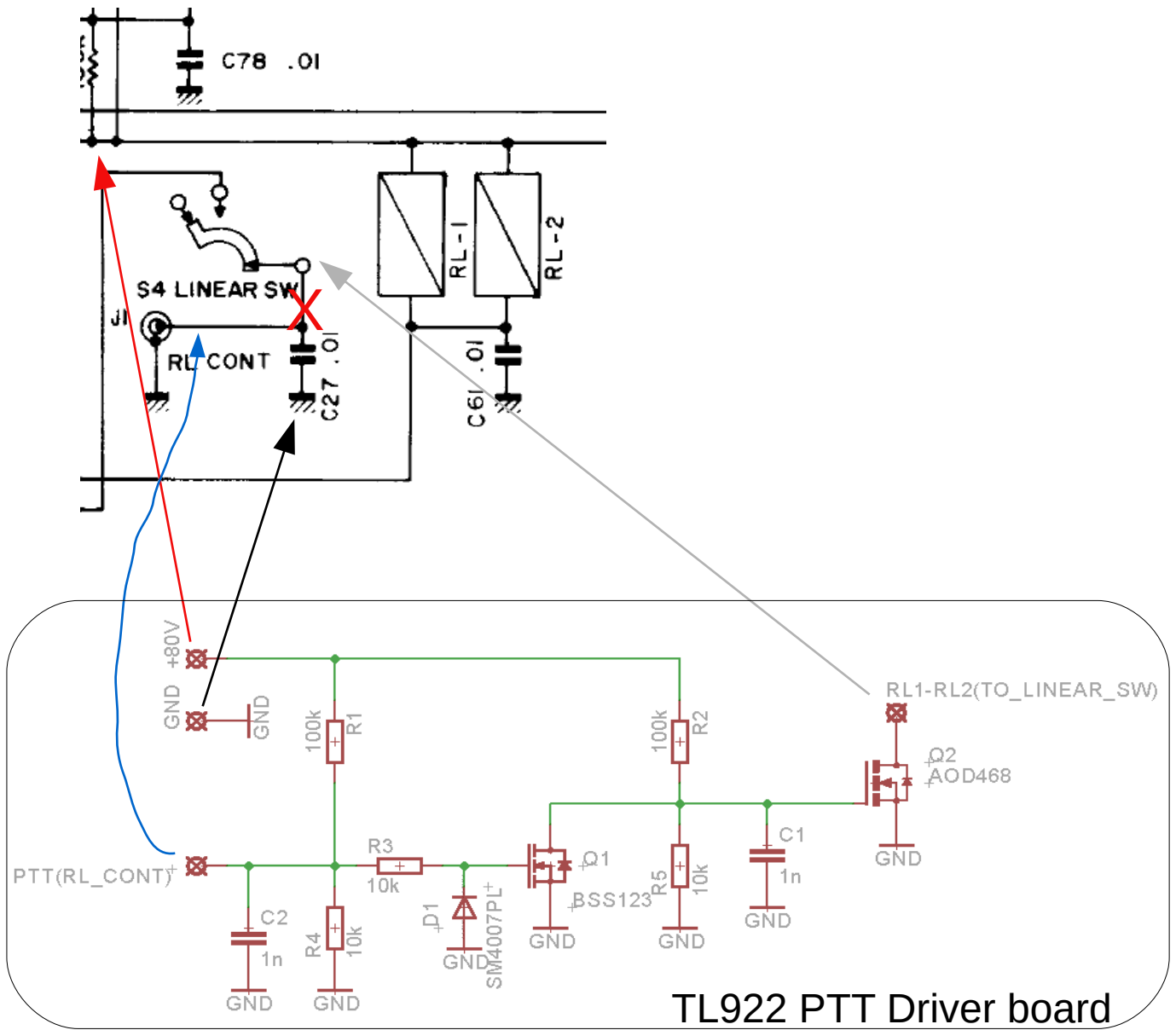


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Remove and retain both screws holding the terminal strip, then insert the PTT driver board between terminal strip and chassis. Both holes on this board coincide exactly with the screw holes on the terminal strip:



Wiring



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Desolder the original wire from the central contact of RL/CONT (rear panel RCA Socket, the gray wire in the example below) and solder this wire through a extension wire to the solder pad named “to RL1-RL2” on the PTT driver board.

Solder a piece of wire to connect the central contact of RL/CONT (RCA Socket, the blue wire in the example below) to the solder pad named “PTT (RL CONT)” on the PTT driver board.

Solder a piece of wire to connect the ground (chassis, the black wire in the example below) to the solder pad named “GND” on the PTT driver board.

Solder a piece of wire to connect the center pin of terminal strip (the red wire in the example below) to the solder pad named “+80V” on the PTT driver board.

