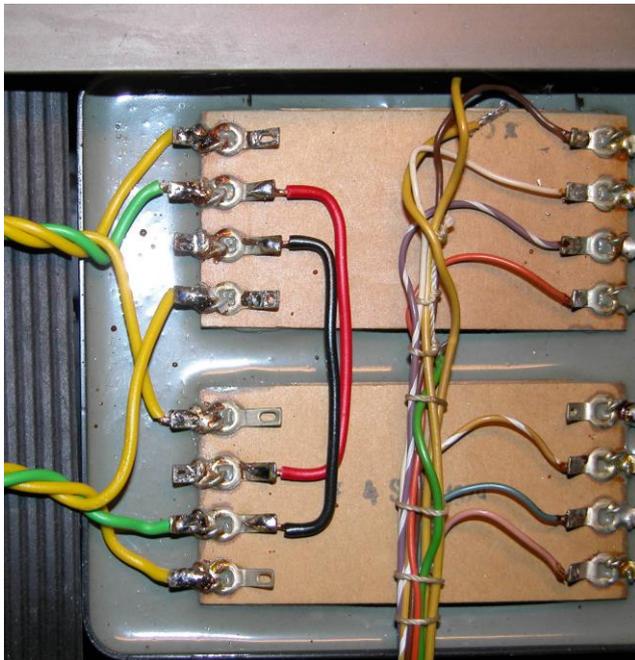


## Installation instructions for the 405 Dual Psu version 17,19 and 22

### Introduction

This document explains the installation of the Dada dual mono power supply version 17,19 and current version 22D for the Quad 405 and 405-2, all models. Although it is developed for the Quad 405 range, it is a general double Psu and can be used in other applications. The PSU is available in the DaDa Electronics Webshop. One reason for this new version of the manual is the discovery of magnetic unbalance in the C core transformer as a result of splitting the secondary windings in the usual way. Keith Snook find a novel way to connect the Psu to the secondary windings which prevents excess noise and 100Hz spikes. In a standard 405 the secondary windings of the transformer are combined to form a single supply. This dual mono power supply is a fully functional replacement of the original power supply, but it has a lower crosstalk figure and the elco capacity is minimal being doubled, or even tripled or four folded, giving a more stable power supply voltage, which will increase the peak power output.



The new connection in one picture!

### Preparation and beware!

Start with a clean bench and the necessary tools. Although the Psu board is not very sensitive for static electricity, discharge yourself by placing your hands on the bare metal of the chassis before you touch the electronics. Or wear a special bracelet connected to the chassis. Read this instruction before you start working on the amplifier. If you power up the PSU without the amplifier modules, the voltage on the capacitors will be there for a long time! On the module a standard 22K bleeder resistor is present. For a quick discharge use a 2W bleeder resistor with a value of 1K.

### Parts of the kit

- One Psu, with 4 10.000, 15.000 ALC or 22.000uF ALF Kemet elco's
- 0.75 m Red wire
- 0.75 m Black wire
- 0.75 m Yellow wire
- 0.75 m Green wire
- Two 3 way solder eyelets
- 10 - 6.8mm female Faston connectors with insulation jackets
- 4 - 2.2mm female Faston connectors for connection to the amplifier modules
- 10 - female 1.3 mm connectors for the led and delay modules
- 4 self-adhesive nylon feet
- 30 cm shrink tube

### Wires for the delay modules are packed with the delay modules

### Tools

- Philips no 2 screwdriver
- Soldering iron, 25W, a soldering station with temperature control is the best
- Wire cutters and clippers
- A DC multimeter

The tools are available in the DaDa Electronics [Webshop](#) .

### Removing parts

For easy access: remove the top, bottom and side plates of the amplifier. Remove the wiring from the capacitors and the rectifier bridge. Also remove the Ht+ and Ht-wires. Cut the wires where they are entering the cable beam. Remove the capacitors and the clips. Remove the Rectifier Bridge. Remove all wires and links from the secondary windings of the transformer. Also remove the wires connected to the negative (black) speaker terminals. Keep the output wires connected to the red speaker terminals and the coax input cabling connected to the DIN or RCA input connector(s) in place, we not going to replace those with this kit!

### Placement of the Psu in the chassis

**Before final installation, test the placement procedure with the protective tape on the nylon feet still in place.**

Place the plastic self adhesive feet in the corresponding holes. Clean the area where the feet are to be placed with a solvent. Place the board, after the wires are connected to the connecting pins, by removing the protective tape and push the board firmly in position. You can always remove the board from the pins.

### Installation

In this setup we implement the power supply as a dual supply. The Din connector and the earth connection at that point will stay in place. For Quad 405-2's with factory fitted RCA connectors: read one of the following paragraphs. If you use additional RCA connectors, connect the signal ground to the earth point of the Din chassis part. Also use the earth connecting point at the location of the old rectifier bridge to install the two solder eyelets. Start with the wires on the Psu, place the Psu in the chassis and connect the other wires. Also connect the two wires leading to the led on the two

led pins on the Psu. If applicable, also connect the wires for the delay modules. In the transformer picture you will recognize two sets of wires, from each set the two yellow wires are connected to the AC left end right connectors. The green wires are connected to the eyelets. For best results, twist the two yellow wires of each set, the green wire goes directly to the eyelet. The picture shows all the wires twisted, but that is only done to show which wires form a set. Best results are obtained if you use a special crimp tool for the Faston connectors, but normal soldering will also do the job properly. Use pliers to close the top of the connector round the wire to form a strain relief.

### **Quad 405-2 with standard factory fitted RCA connectors. Serial 85000 and higher**

There are reports of high values of the DC offset on the speaker output terminals with late versions of the 405-2 with the standard isolated RCA connectors. This problem is the result of the mixed use of signal earth and chassis earth to connect components on the Pcb. Between those two "earth" connections a resistor R2 with a value of 10 Ohm is placed. In the Quads with a Din connector those resistors are effectively short circuited by connecting the signal ground to the chassis. In the Quads with the RCA connectors R2 is not short circuited anymore, in real life, the problem is smaller when you use a preamp with a common signal ground (as most of us do), the two R2 resistors of both channels are now in parallel, so the value is halved. The second action to be taken to minimize the problem: use a power cord to the 405 with an earth connection from the preamp. The voltage difference across R2 should be very low, only depending on the resistance of the wires of the cables. But if you want top performance, every detail counts! The lowest DC offset will be achieved with the mass of the input connectors connected to the chassis. Why Quad did change the layout? In an all Quad system (34 or 44 connected to a 405), a hum loop can be introduced, depending on length, type and routing of the cables, because of the use of RCA cables and an earth connection, via the power cord from the preamp to the chassis of the 405. In the early only DIN days the Power Amp was earthed via the signal cable, see also the connection between a 33 and a 303.

### **Checks before and after switching on the amplifier**

Before switching on the amplifier: check the wiring and Psu connections. Connect the amplifier to the mains socket. On the red wire there should be 50V referring to the chassis. On the black wire there should be -50V. If you power up the PSU without the amplifier modules for testing, the voltage on the capacitors will be there for a long time! On the module a standard 22K bleeder resistor is present. For a quick discharge use a 2W bleeder resistor with a value of 1K.

### **Appendices**

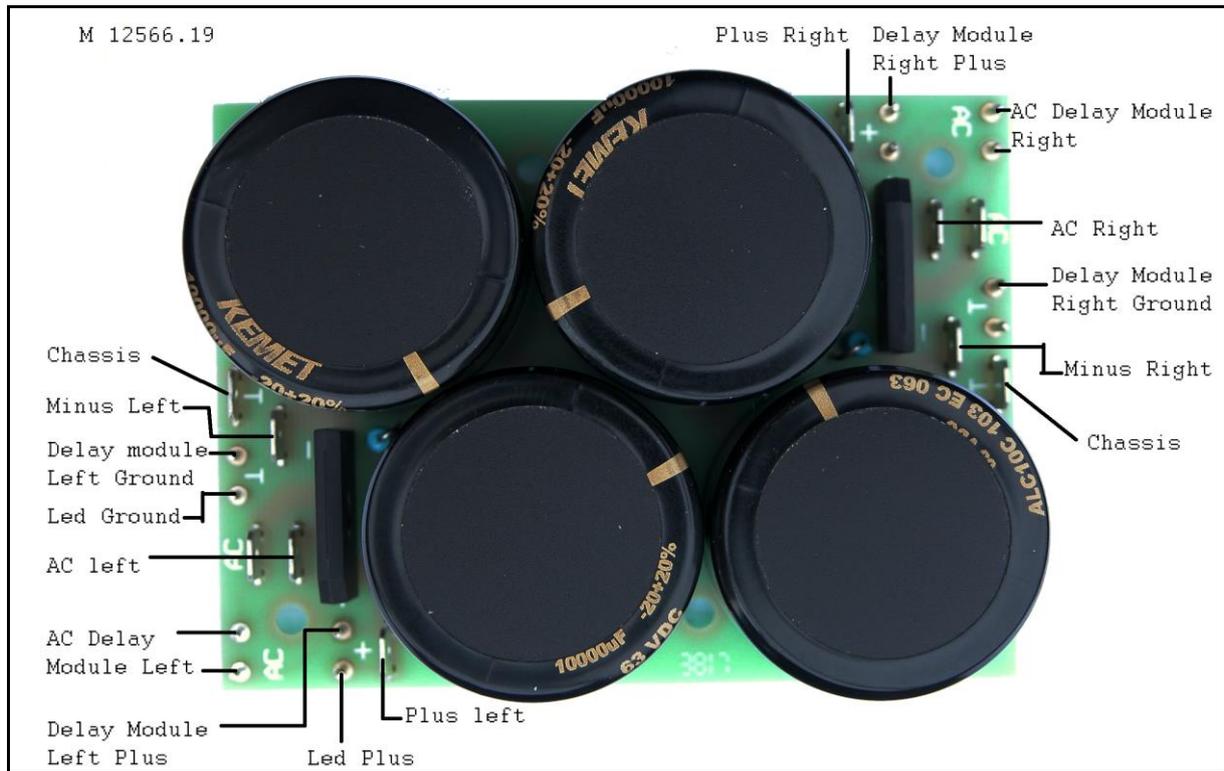
There is a diagram concerning the connection of the primary taps regarding different AC main voltages.

The layout for the secondary double connection is also in that diagram, see the 230V example.

The connection for the single supply is also incorporated to be complete, see the 240V example.



## Psu M 12566.19



Chassis: Green wire

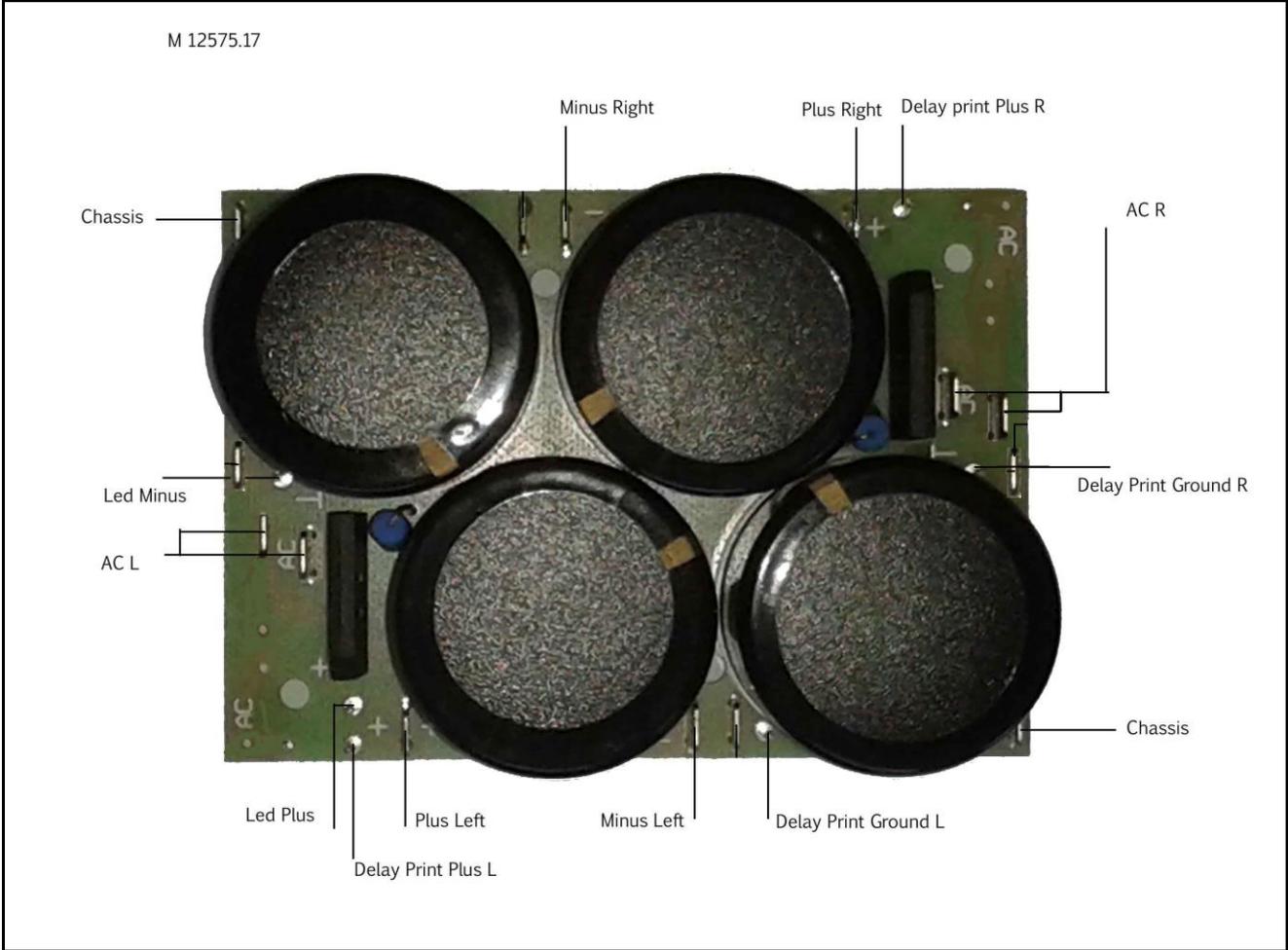
Minus: Black wire

Plus: Red wire

AC: Yellow wire

Left and right as seen from the back (connector side) of the amplifier.

# Psu M 12566.17



We added pins for the delay circuit boards and the Led.

For the connection of the wires to the chassis we use two of these solder eyelet's:



For each channel one. The eyelet's must be connected to the chassis at the point where the rectifier bridge was mounted. Use one M4 screw for installing the two eyelets. There are three green wires from each channel connected:

1. The speaker return wire from the black speaker terminal.
2. The wire marked 'chassis' from the psu.
3. The green wire connected to the transformer 'middle' point.

So in total there are 6 green wires!

Mains voltage selection by primary links

