

DC Power Conversions

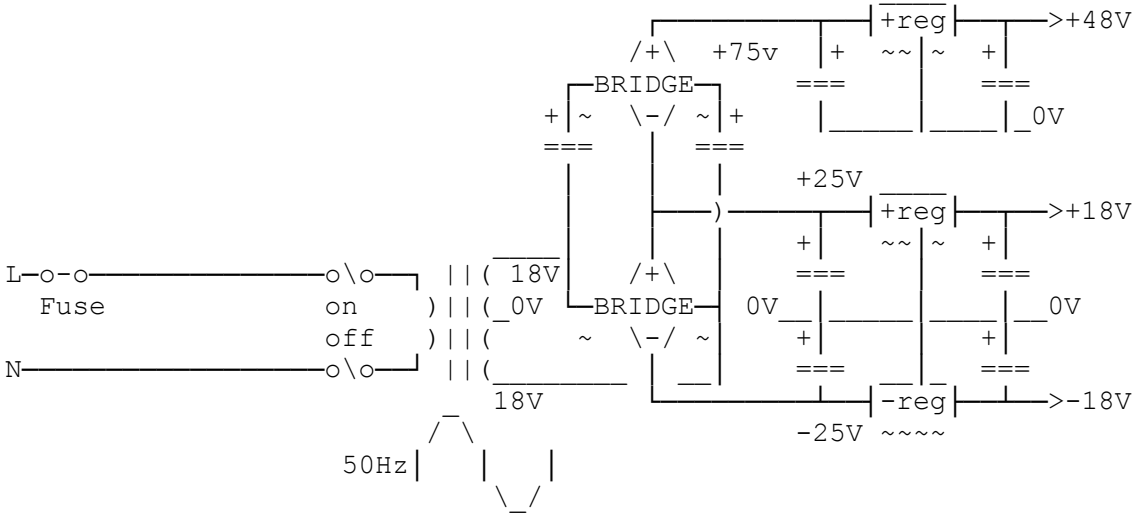
By G8MNY

(Corrected Mar 13)

(8 Bit ASCII graphics use code page 437 or 850, Terminal Font)

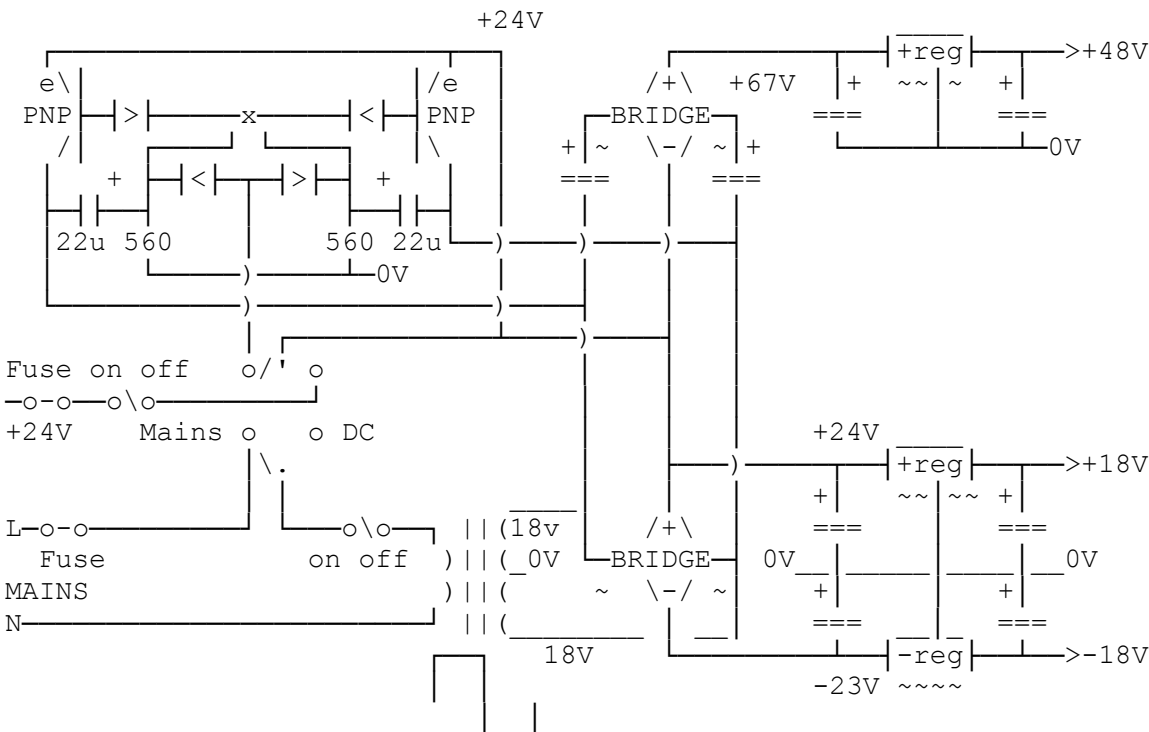
Here is a circuit I designed for 24V powering of mains audio kit (large mixing desk). It may be suitable for 12V as well on some kit with suitable transformer windings.

ORIGINAL MAINS ONLY CIRCUIT



This used an 18-0-18 transformer to provide full wave +/- 25V raw rails & a voltage tripled rail. The ±25V rails feed the ± regulators (6V uplifted) for the ±18V, the +48V was a simple discreet design.

MODIFIED CIRCUIT



In this design the +18V regulator is fed directly from the external DC, leaving the added inverter to run just the -18V & +48V rails.

The DC inverter needs just 2 high power PNP transistors TIP2955 bolted to the case with insulated kits. The transistors are not on when the opposite one is, with this conventional upside down astable design, that has series diodes to the bases. (I did try just putting the 2 Rs where the caps are, it works, but both transistors are on for a few uS which I did not like, & the efficiency is not quiet as good, but quite a bit smaller).

The other 2 diodes stop the inverter when in mains mode. The max inverter current (& output power) is determined by the 2W 560 Rs & the transistor gain.

#### MODE SWITCHING

A recessed double pole changeover slide action mode power switch (e.g.115-230V) is marked up DC/230V, & the original double pole on off is reused for the DC as well. Of course both switches have to be rated for the DC current & good mains isolation!

On DC operation there is no isolation from the source power! Care must be taken in the layout to ensure the inverter pulse currents are kept away from the sensitive regulated output rails & their ground paths.

With a low battery voltage e.g. 22V there may not be enough voltage for proper regulation, look for battery cable losses & also possibly the use of low voltage drop out regulators if needed.

Why Don't U send an interesting bul?

73 De John, G8MNY @ GB7CIP