

DURITC 1kW 230V Inverter/UPS

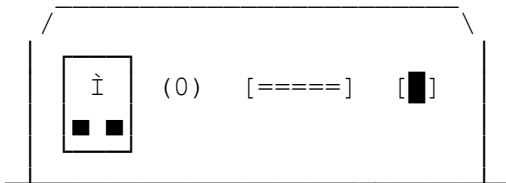
By G8MNY

(Updated Jan 13)

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

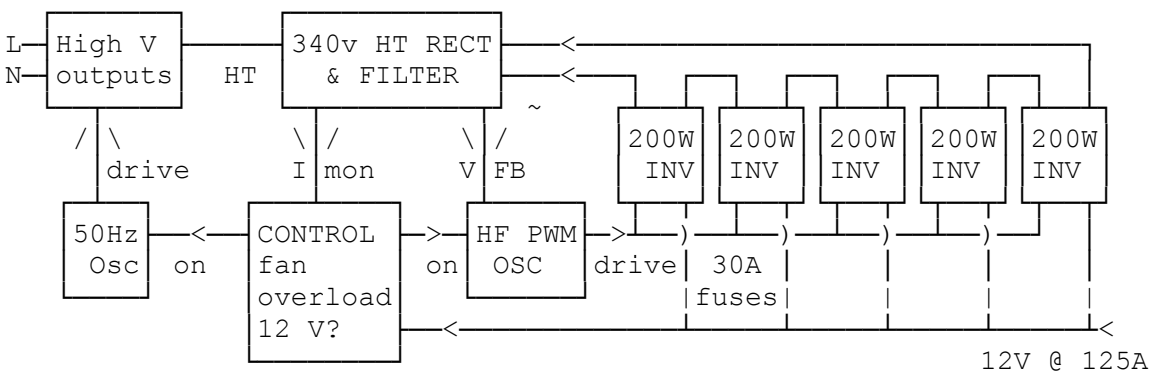
Not a UPS really but a high power, stepped square wave mains inverter from 12V. It was blow up when I got hold of it it. I now have it working with new output high voltage MOSFETS.

Having made this sort of thing before with heavy conventional transformer etc., I was amased at this modern HF version, just how small & light weight it is.



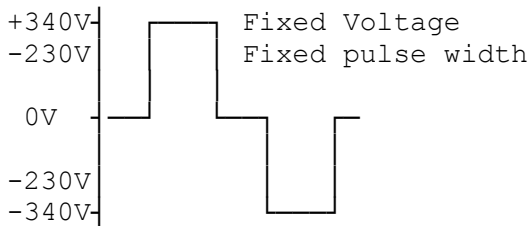
DESCRIPTION

It has 5 pot core HF pulse width inverters with 2 TIP MOSFETS each handling 200W. The 5 floating secondaries are connected in series to feed a fast high voltage bridge rectifier to a HF choke, into large 400V smoothing cap.



The pulse width feedback controls that voltage to 340V. This powers 2 high voltage MOSFET amps (blown up) that switch the L & N to +340V for 2/3 for the time giving the 340V peak & 230V RMS 50Hz stepped waveform output.

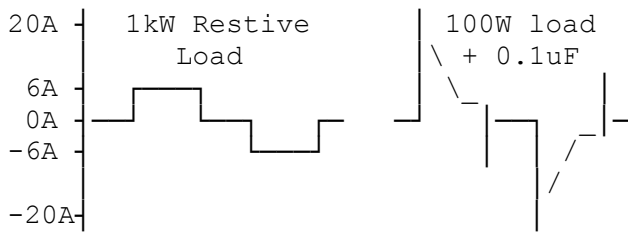
OUTPUT WAVEFORM



The control for this lot is not simple, there is monitoring of temperature, output current, supply Volts, etc. So working without the diagram is not easy. Still I have it going now, & done some worth while modifications....

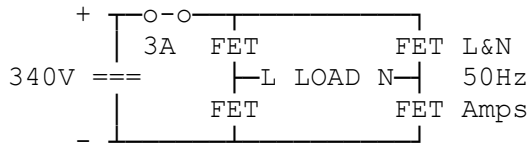
PULSE CURRENT

If a capacitive load from say a good mains filter is put across the output, then the high voltage Power MOFETs can easily be blown up again, as very high pulse edge currents can flow.

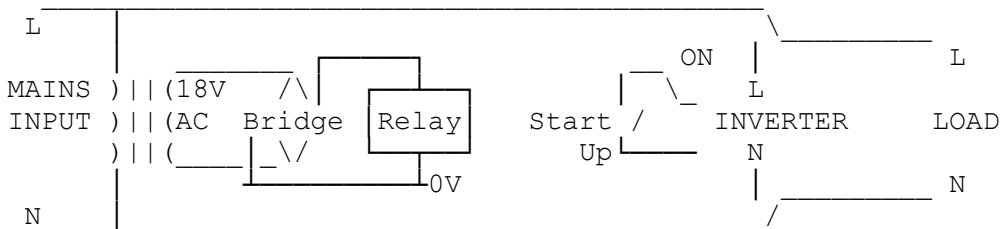


MODS

1/ Added HT fuse after 340V Cap smoothing!

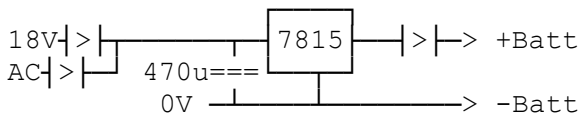


2/ Added a mains IEC in socket small 25W mains transformer & 3 pole changeover relay for bypass (UPS).



With no smoothing on the relay the relay releases quick on mains fail, changes mains over & the inverter then starts up.

3/ Added standby trickle charging, up to 1A Max @ 13.5V regulated.

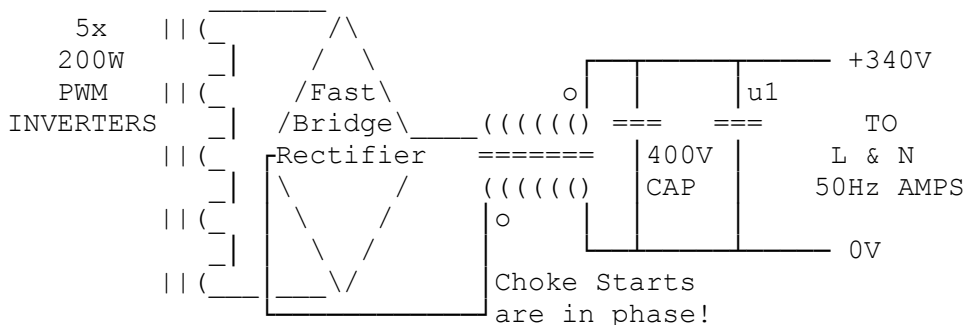


4/ Speeded up the mains fail start up time, but it is too slow for some things.

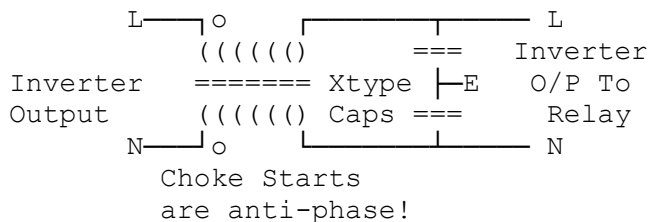
5/ Added 1uF polly across each HF inverter 12V supply rails.

6/ Added 0.1uF @ 600v across the main HT caps.

7/ Bifilar balanced wound bigger swinging HF choke after bridge rectifier, reduced the QRM.

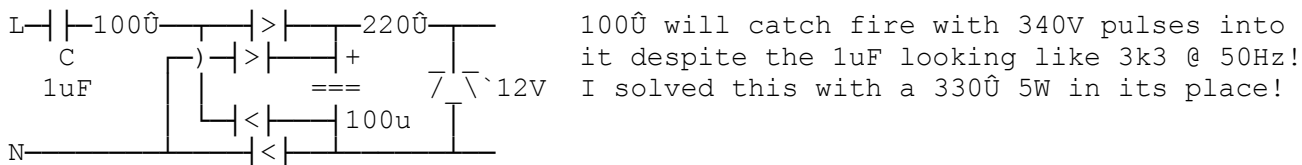


8/ Made balanced L output mains filter (from old HF choke & 2x 6n8 caps to ground).



WARNING

Devices that use the reactance of mains caps to drop the mains voltage can be destroyed on this waveform. e.g. a true RMS digital meter! As the pulse edge puts 100x the voltage into the current limiting R or the circuit...



Why don't U send an interesting bul?

73 De John, G8MNY @ GB7CIP