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POWER SUPPLY FOR THE CASSETTE SYSTEM

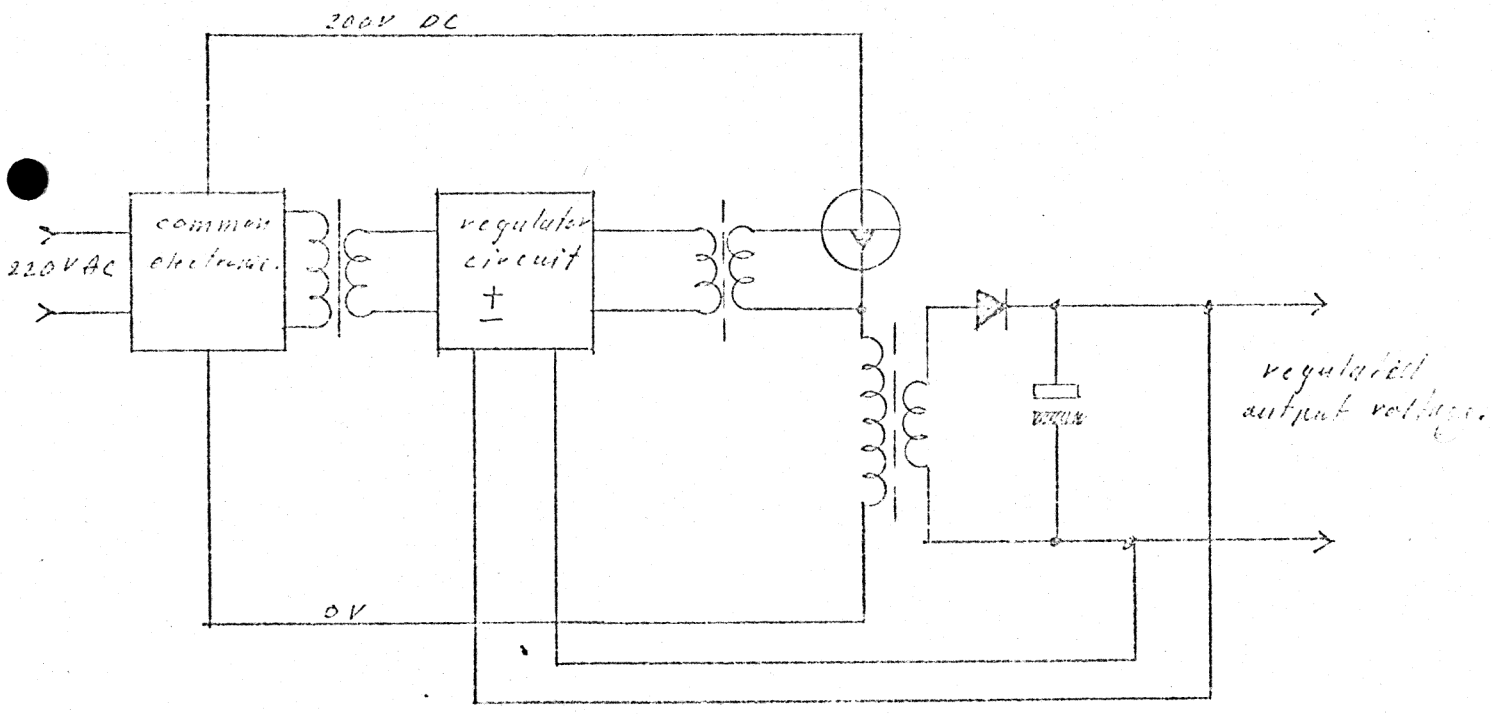
(Preliminary)

Keywords: Power supply, cassette
Abstract : Preliminary working specification

Target specification:

1. GENERAL INFORMATION

Switching regulator where galvanic separation to the main takes place with potcores working at 20 kHz and a small iron core to give the regulators a help voltage.



The power system is based on 3 modules:

1.1 Common electronic for the regulator modules.
1.2 A positive regulator module.
1.3 A negative " "

This give 3 different circuit boards.

The power supply modules are coupled together with a printed circuit mother-board. It is necessary to use forced air cooling to remove the heating from the power component.

The advantage of this principle is higher power efficiency (about 70 per cent against traditional switching regulator 50 per cent and serial regulator 25 per cent) lesser volume consumption and component price per watt.

The motherboard technology should give lower production cost and a more uniform product.

The disadvantage of the system is a larger development period than a traditional power system.

2. FUNCTIONAL SPECIFICATION OF THE POWER SUPPLY

2.1 Max. voltage range $\pm$ 250 volts.

2.2 Max. current range for a power module is 15 amp's.

2.3 Max. available power from one module is 75 watt.

2.4 Max. available power from one cassette is 300 watt.

2.5 Output voltage adjustment range min. $\pm$ 10 per cent.

2.6 If the main voltage decrease more than 15 per cent a power interrupt is given. Minimum 15 msec is available.

2.7 When any of the regulated voltaged decrease more than 10 per cent a power shut down signal is available.

2.8 All power modules have current limit protection. If too much current is drawned from the power module the output voltage will decrease and the output voltage sensing network will give a power shut down signal. Max. 50 usec is available, depending of used current.

2.9 All power modules have upper voltage limit protection. The output will be shortened immediately and there are no time for power shut down signal.

2.10 At power start up a reset signal is available when the voltaged are ok.

2.11 There is no restriction in positioned of the power modules.

2.12 The power modules output can be parallel coupled. In this case double safety systems are possible. The specifications will not be disturbed.

3. ELECTRICAL SPECIFICATIONS

Output voltage:	max $\pm$ 250 volts
Output current:	max 15 amp.
Regulation for $\pm$ 10 per cent Main variation:	$< \pm$ 0.2 per cent
Regulation min/max output current:	< 0.5 per cent
Output ripple:	$< \pm$ 0.5 per cent
Spikes < 0.5 usec:	$< \pm$ 5 per cent
Temperature drift:	0.04 per cent/° C
Ambient temperature range:	(10 - 45)° C
Relative humidity:	(30 - 70) per cent