

STABILISED POWER SUPPLIER PS2/72

General Description

The PS2/72 is a series regulated power supplier delivering a maximum of 250 mA at -24 volts. It has a single output and is provided with a preset voltage adjustment control. It is similar in design to the PS2/13N.

The components of the power supplier, including a heat sink for the power transistor, are mounted on a printed wiring board of standard ISEP size (7 by 4.4 in) and fitted with a 25-way plug for use in a standard ISEP nest. The plug has coding

Circuit Description (Fig. 1)

A 30-volt a.c. supply is fed to the input of this unit which consists of a full-wave bridge rectifier system followed by a miniature anti-surge 500-mA fuse and a 500- μ F reservoir capacitor C1.

A complementary Darlington pair TR1 and TR2 acts as a series stabilising element which is controlled by TR3 in whose emitter circuit is connected a reference Zener diode D5. Voltage adjustment is made in the base circuit of TR3 by means of preset control R5.

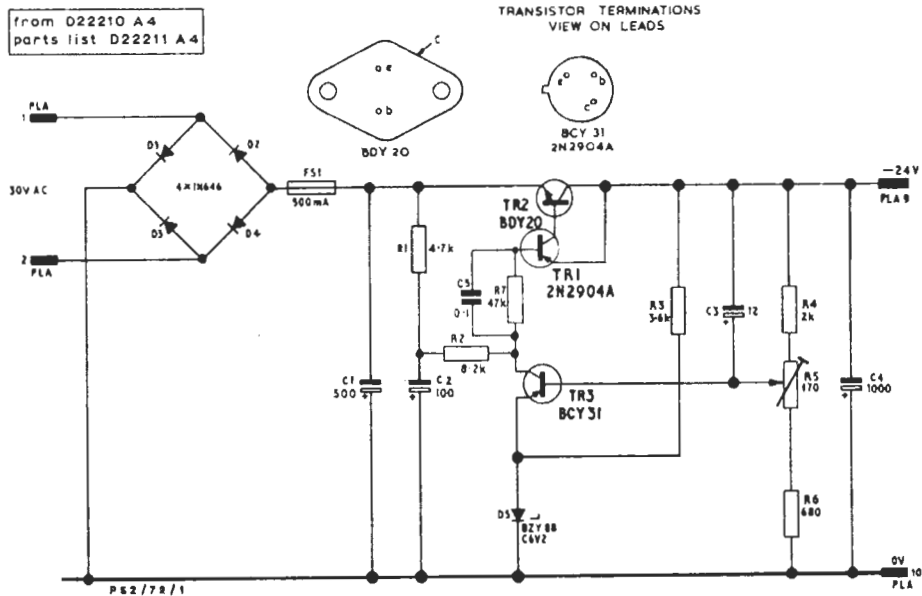


Fig. 1. Circuit of the PS2/72

pins in positions 5 and 7. The mains transformer is mounted external to the board. The preset voltage control and a 500-mA fuse are mounted on the board.

References

- Disk reproducer RP2/6*.
- Power supplier PS2/13N.

* Designs Department Technical Memorandum No. 1.51(70).

The unit is protected against output short-circuits. R7 in TR1 collector circuit (which slightly impairs the voltage regulation) rapidly reduces the output voltage on overload. C5 reduces 100-Hz hum.

Adjustment and Testing

General

All voltage readings quoted in what follows were obtained with an Avometer Model 9 Mark 2.

Regulation Tests and Setting-up Procedure

1. Connect a 100-ohm 9-watt resistor in one connecting lead between a 30-volt a.c. supply and the input PLA 1/2.
2. Across the unloaded output PLA 9/10 connect the Avometer, on its 100-volt range.
3. Switch on the a.c. supply and note the Avometer readings with R5 at minimum and maximum settings. Typical figures are:
R5 at minimum -19.5 volts
R5 at maximum -32 volts
4. Check that the voltage on TR2 collector is as above.
5. Repeat the above tests with the 100-ohm resistor removed. The voltage readings should now be:
R5 at minimum -18.6 volts
R5 at maximum -32 volts
6. Connect the 100-ohm resistor across the output PLA 9/10 and put the Avometer on its 30-volt range. The readings should be:
R5 at minimum -18.6 volts
R5 at maximum -32 volts
7. Adjust R5 to give an output of -24 volts.

Load Tests

1. Connect a 100-ohm 9-watt resistor across PLA 9/10 and adjust R5 to give an output of -24 volts as before.
2. Measure the ripple voltage across PLA 9/10 with an oscilloscope. It should be less than 0.5 mV peak-to-peak.

3. With a Variac, alter the a.c. input voltage by ± 6 per cent. The d.c. output voltage should not change by more than ± 0.1 volt.

D.C. Tests

Using the Avometer on its 30-volt and 100-volt ranges, check the performance of the PS2/72 against the typical figures given in Table 1.

TABLE 1

<i>Test Point</i>	<i>Full Load Volts</i>	<i>No Load Volts</i>
C1	-38.5	-41
Junction R1/R2	-33.5	-35
TR3 C	-25.5	-24.6
TR3 B	-6.9	-6.9
TR3 E	-6.3	-6.3
TR2 B	-38	-40.5
PLA 9	-24	-24

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