

PRC 320 Power supply module faults – v1.1 – © M. Ehrenfried – G8JNJ – 19/04/2011

I've now obtained a batch of faulty power supplies and I'm gradually working my way through them. They seem to have one or two common faults.

First check you have 12v on unit 5a.

If you have no 12v on Unit 5a and one of the transistors has gone. It's more than likely to have also taken out ML1, in which case you are stuffed !

On Unit 5b. If you can't obtain an unregulated 120v rail on the test bench, try loading the 6v rail with a 50ohm load. If the 6v rail is good either TR3 or D2 is likely to be faulty.

ZTX857 (300v 1A) seem to be a good substitute for TR6 & TR7 FRB700

2N5551 (120v 600mA) for TR3 CV7644

BCY71 works for TR1 & TR2

I originally mistakenly thought that the ML2 IC was a complementary npn / pnp pair, but I now realise that both devices are npn, and that TR7 and 1/2 of ML2 form some weird type of long tailed pair.

If you substitute some MPS2222A transistors (or something similar - generic high gain npn) they don't quite have the same conduction point as the original transistors in ML2. But you can fiddle this by adjusting the value of R10 (680k is a good starting point) so that the mid-point voltage on R11 (set 110v) is approx. 0.6v higher than the voltage measured on the emitter of Tr7.

It's possible to replace ML2 with a 5.6v zener and normal silicon diode. Whilst it does provide some degree of regulation, the 110v output voltage is not as regulated as it should be, as it tracks variations in the 12v input voltage to the board.

If you are not worried about the PSU being as the original design. Rip out all the bits of the 110V regulator circuit apart from TR6 and R8 22K. Connect all the pads of TR5 together so that R8 22K biases the base of TR6. Replace R7 470K with two 1w 56v zener diodes connected in series. Connect C8 1.7uF previously removed from the board across the series connected zeners, to provide a short duration 110v start-up delay.

Total current consumption @ 24v

RX 0.14A
 TX HP (CW) 3.4A
 TX LP (CW) 1.9A

RX 140mA
 TX 220mA

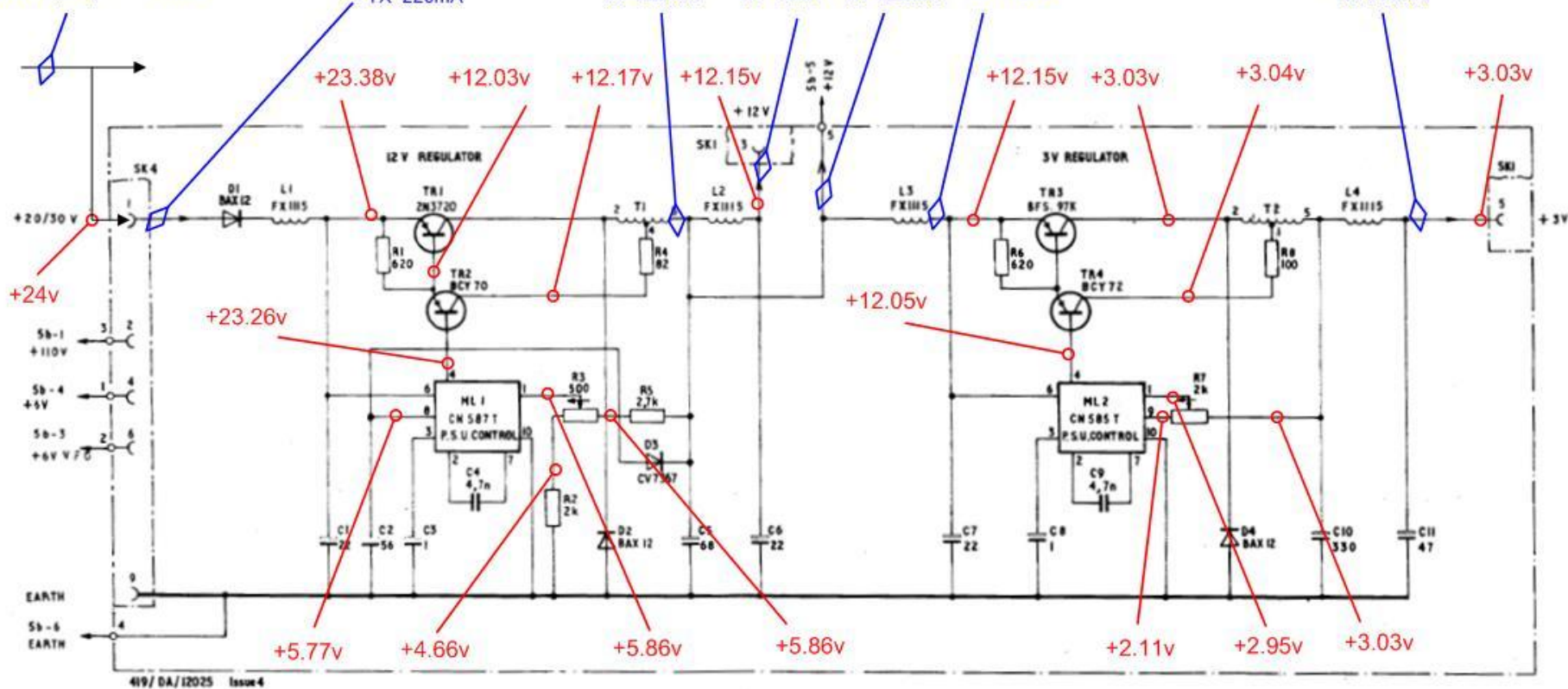
RX 252mA
 TX 393mA

RX 10mA
 TX 10mA

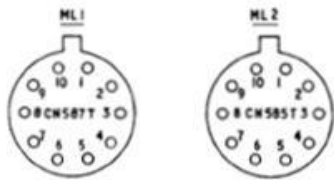
RX 124mA
 TX 265mA

RX 118mA
 TX 118mA

RX 292mA
 TX 292mA



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VIEWS ON PIN ENDS

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