ALLEN&HEATH

Service document

iDR-32
iDR-48

iDR-32 / iDR-48 PSU repair guide

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Tools required:
No.1 pozi screwdriver.
T10 torx driver

Remove the 10x screws as shown.
Remove rear panel & base to gain access to power supply circuit board.

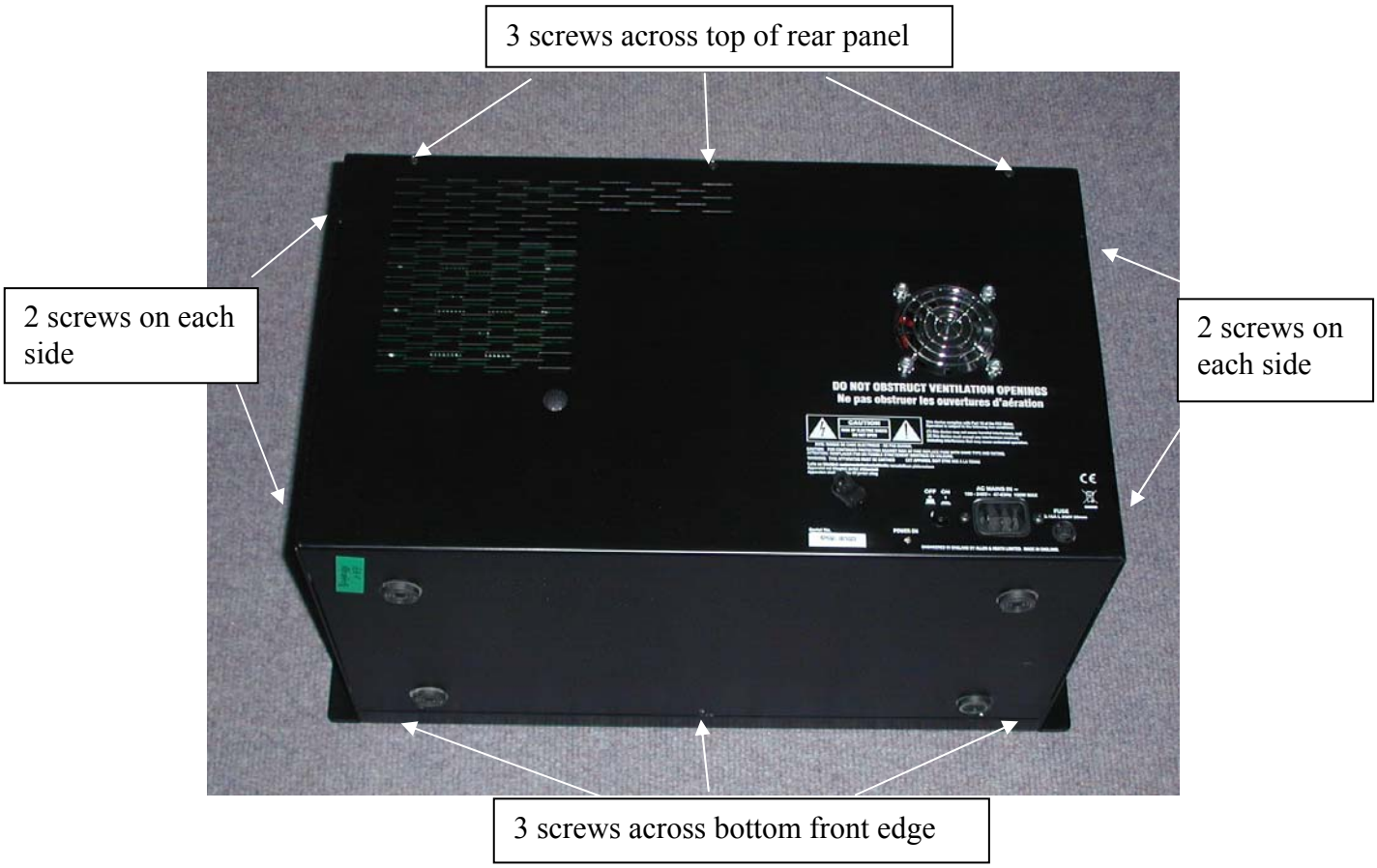

Fig.1

The power supply circuit board can be removed by removing 7x T10 screws (5x circuit board screws), 2 screws fixing mains inlet socket on the rear panel.

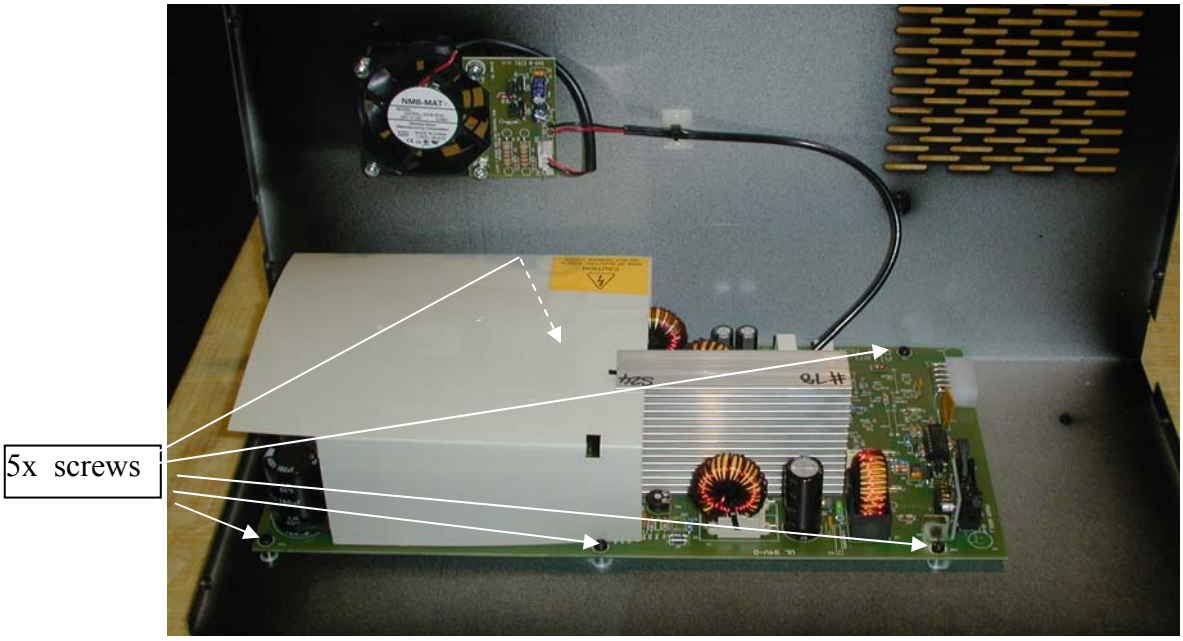

Fig.2

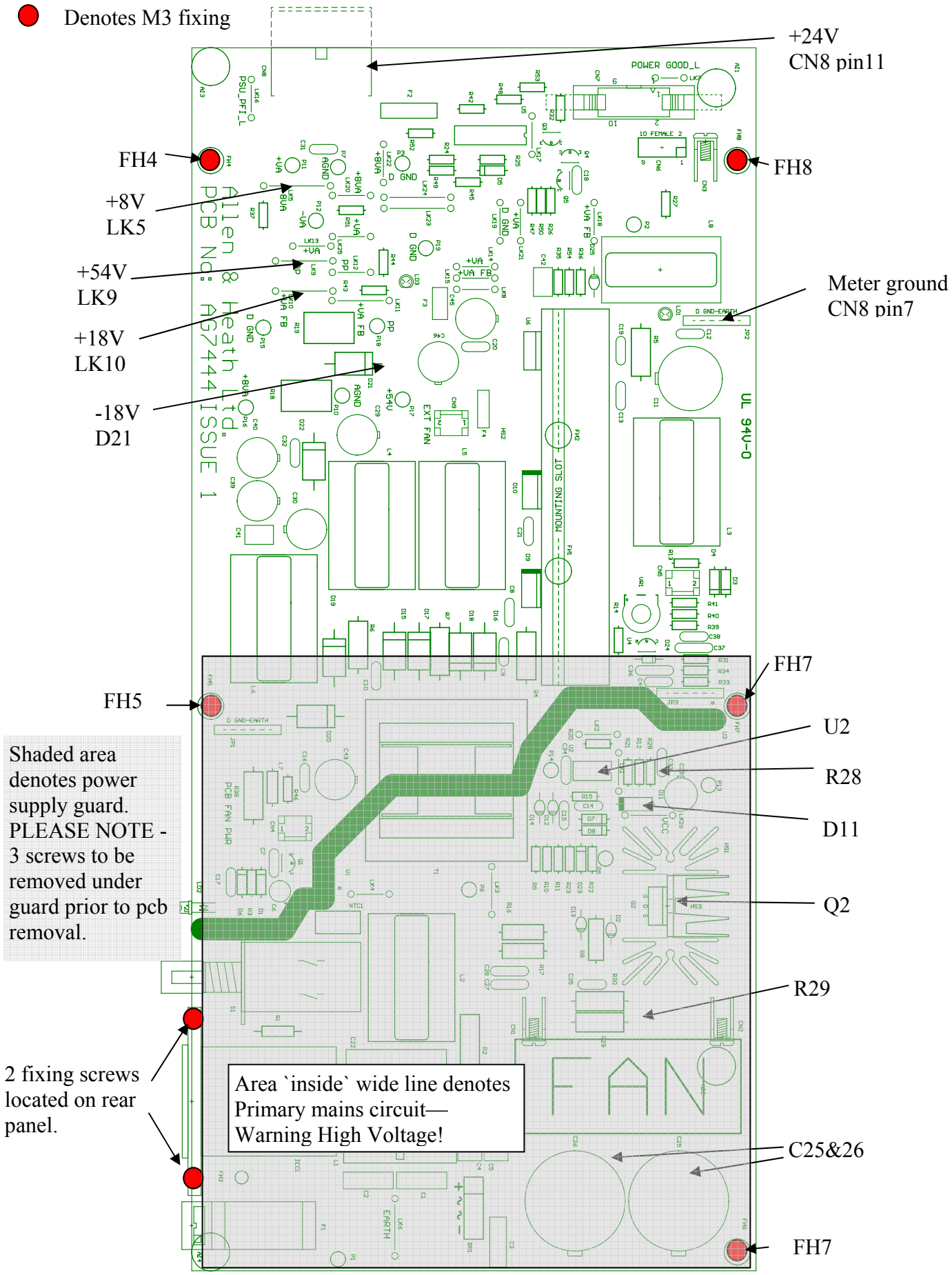

Fig.3 PSU circuit board layout

iDR32&48 PSU repair procedure.

When the power supply is removed from console; firstly, check that C25&26 are fully discharged.
Unfortunately; when switchmode power supplies fail they tend to destroy quite a few components.
For repairing switchmode psu`s, I would recommend you have a 1:1 isolation transformer around 750VA and a variac so that you can slowly increase the ac input voltage after repair.
This should help in case you have missed a failed component and may prevent the PSU failing again as you get nearer to normal mains voltage eg 100V, 120V, 220V or 240V.
You will definitely need an accurate multimeter and preferably an oscilloscope.

With your multimeter set to diode measurement and with CN8 disconnected; check all the diodes in the primary and then the secondary rectification diodes. None should read s/c.

Remove U2 from its socket. With your multimeter set to measure resistance, measure across pin 5 and pin 7 on the legs of the IC (TL3844BP). If they are s/c then the IC has failed.
Now measure across D11 (1N5361 27V zener) in both directions. If it is s/c then D11 has failed.
Measure Q2 MOSFET (STP5NB100P or STF8NK100Z); any s/c reading then the MOSFET will have failed. If the MOSFET has failed then R29 (0.33R 2.5W) resistor will more than likely have failed. Also check R28 resistor.
Also replace any resistor that looks damaged (i.e. burnt).

It is rare for the bridge rectifier BR1 and NTC or any emi filter components to fail but often the mains fuse will rupture F1.

When powering the PSU up after repair, I recommend you connect it the variac which is powered from the isolation transformer.
Set the variac to 120V. **Connect the PSU to the load** i.e. stagebox.
If you have an oscilloscope available, place a probe next to the heatsink of MOSFET Q2. Neither the probe or ground clip need to be clipped onto a component. There is such a strong field from the switching MOSFET that just placing the oscilloscope probe next to the heatsink and setting the scope to read something like 5V/div you will see a signal. This will give up a good indication as to whether the PSU is operating correctly. Power up the PSU and look at the oscilloscope waveshape. Refer to figs 4 & 5 to give you an indication of what a good waveshape should look like at 120V & 240V.
Measure the DC voltages. Please refer to Fig.3.
They should be +23.5V ± 0.5V.
+18.5V ± 0.5V
-18.5V ± 0.5V
+7.5V ± 0.25V
.+54V ± 1V.

Switch off the PSU and check that none of the components are getting too hot to touch. If they are something is still faulty.
If everything is okay; power up the PSU again check the DC voltages and begin increasing the variac voltage. As the ac input voltage increases listen for any odd noises and look at the waveshape change on the oscilloscope screen.

When you get to 240V; again switch off and check for any components getting untouchable. Power up the PSU and everything should be okay.
If you suspect there is a fault in the stagebox circuitry and not the PSU; you can connect an iDR live PSU. The pinout on the white connector is the same for both products.
However; you must also plug in the 10way ribbon connector to get the mute relays to unmute the audio channels.

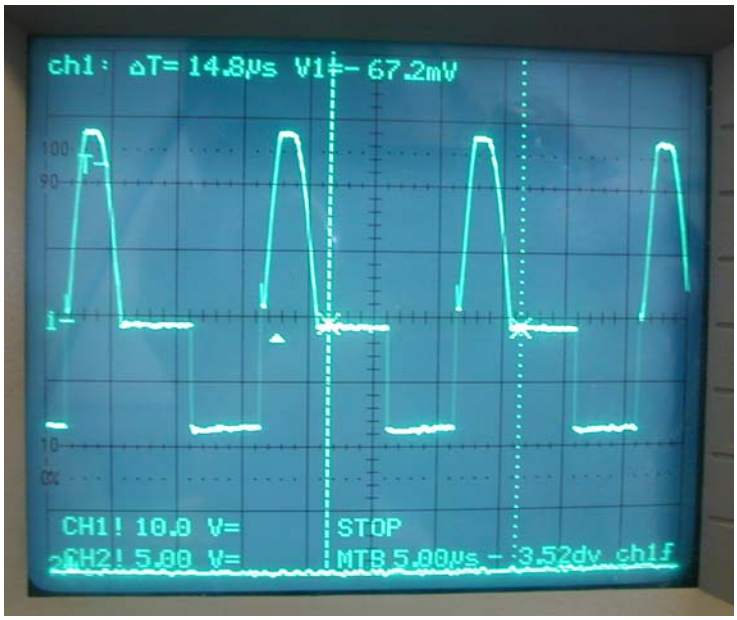

Fig 4: Q2 MOSFET waveshape at 120V mains input voltage

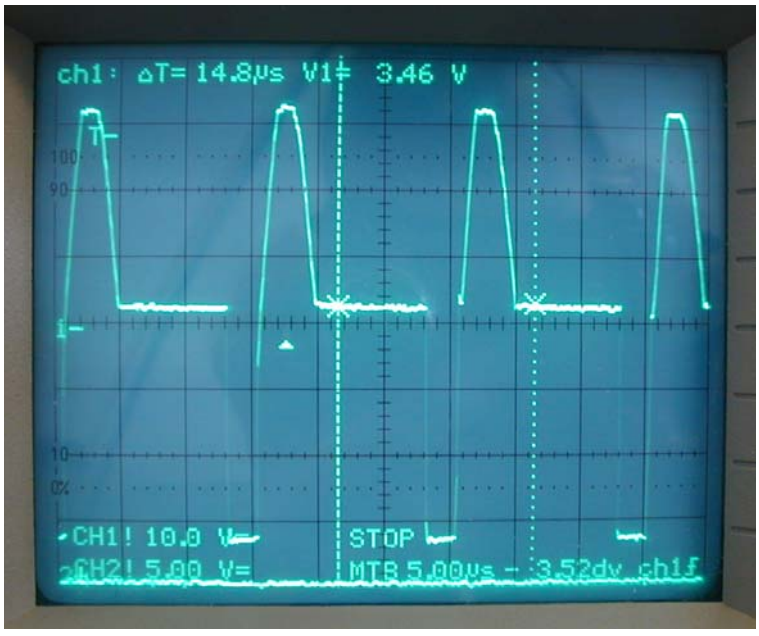

Fig 5: Q2 MOSFET waveshape at 240V mains input voltage