

# Troubleshooting Information

Please refer to the schematic diagrams for the component identification numbers used in this troubleshooting guide. The information provided in this section applies to all MPA Series Amplifiers.

## Dead Channel (No Display Lights)

When all lights are out on a channel, this usually indicates a blown internal fuse on the power supply PCB. Replace this fuse with an appropriate fuse only. Be sure the AC cord is unplugged from the wall.

When a fuse is blown, it may be an indication of excessive current draw within the channel. After replacing a fuse, use a variac to power up the unit slowly to prevent immediately blowing the fuse again. See below for information regarding troubleshooting AC power supply problems.

## Power Supply Problems

• **Stable, hard current draw: increases rapidly at only a few volts AC:**

The unit draws high current when the AC voltage is first applied (with signal but no load.) This indicates a short in the power supply. Remove the fuses for each channel, one at a time, to isolate the problem to an individual channel. Look for:

- shorted main bridge rectifier
- both supply clamping diodes (D907 & 908) shorted
- driver transistors shorted
- main output power transistors shorted
- shorted power supply capacitor(s): C929, 930, 935, 936 a&b

• **Medium-hard, fairly stable current draw, increasing more slowly, may reach 25-30VAC before current draw becomes excessive:**

The amplifier draws high current when the AC supply voltage is near 120VAC, but the current increases gradually as the supply voltage is increased. This indicates that the driver/output circuits are turning on due to incorrect biasing. Look for:

- shorted driver or output transistor
- shorted single-supply clamping diode, D6-7
- open bias diodes, D1-2, or resistive bias components, TR3 & R38
- poor FET isolation from the main heatsink via the Teksil insulator

• **Soft current draw, above 60VAC before current begins to increase, unit may pass signal:**

Unit draws high current when AC supply voltage is near 120VAC, but the current increases quickly as the supply

voltage passes through a breakdown point. This indicates that a component is failing from voltage breakdown (VCEO) or a low voltage component failure. Look for:

- severely maladjusted bias circuit
- severe oscillation, causing current drain, possibly caused by a defective feedback component
- one or both pull up resistors, R17-18, is open

• **Motor-Boating:**

A slow, pulsing 2-5 amp current draw may indicate a break in the bias circuit, often an open bias diode or a break in the circuit between diodes.

• **High voltage power supplies severely unbalanced:**

May be caused by either an AC feedback defect or a DC component failure. Begin by removing IC1 and remeasuring the power supplies. If the supplies are balanced with the op amp removed, the fault is in the feedback loop. Check op amps, U901 & 902, and FET switches, Q901-904 & 91 7-920.

If the DC supplies remain offset with the op amp removed, inspect the +/-15VDC supplies. If either one is at or near 0V, the 15V zener, Z1 or 2, or the 15V capacitor is shorted. If both supplies are above 3-4 volts, check the op amp second stage output voltage and the driver transistor base voltages.

If the +/- high voltage supplies are both near 0 V, the power supply transformer or its connections may be defective. Inspect the AC voltage at the transformer secondary connections on the 8 pin IDC connector, J2. If 45VAC is present on the secondary, inspect the supply fuse, F1. If the 45VAC is not present, the transformer or the IDC (Insulation Displacement Connector) may be defective.

• **Uneven Voltage Rails:**

- shorted D939-940, D953-954
- open FET switches

## Signal Amplification Problems

• **Unstable Output:**

NOTE: Do not confuse instability with 120Hz noise in the signal, which evenly spreads the trace vertically. To find this signal, sync the oscilloscope to the AC line and reduce the scope sweep rate to 10 mS, and look for 60/120 Hz frequencies.

Distinguish between instability (fuzziness), ringing, which is momentary instability after a transition, step distortion,