

Circuit Description

POWER SUPPLY

CAUTION: Dangerous voltages are present on this circuit board whenever the instrument is attached to an AC power source and the rear panel power switch is "on".

Always disconnect the power cord and wait at least one minute before opening the unit. Check the LED at the front edge of the power supply board. The unit is safe only if the LED is OFF. If the LED is ON, then DO NOT attempt any service on the unit.

UNREGULATED POWER SUPPLIES

A power entry module, with RF line filter, is used to configure the unit for 100, 120, 220, or 240 VAC. The line filter reduces noise from the instrument and reduces the unit's susceptibility to line voltage noise.

Bridge rectifiers are used to provide unregulated DC at $\pm 24V$, $\pm 20V$ and $\pm 8V$. Schottky diodes are used for all supplies to reduce rectifier losses.

Resistors provide a bleed current on all of the unregulated supply filter capacitors. Because of the large capacitances in this circuit, the time for the voltages to bleed to zero is about a minute after the power is turned off.

POWER SUPPLY REGULATORS

The voltage regulators provide outputs at +5V, -5V, $\pm 15V$, and $\pm 12V$. The +5V regulators are designed to operate with a very low drop-out voltage.

There are 2 +5V supplies, one to power the CPU board and front panel displays (+5V_P), and one to power the DSP Logic Board (+5V_I).

U6 and U8 are the $\pm 12V$ regulators. U5 is the -5V regulator.

U9 and U10 provide $\pm 20V$ sources which are not referenced to the digital ground (as are all of the supplies mentioned above). This allows the analog input board to establish a ground at the signal input without digital ground noise.

U1 provides power-up and power-down reset.

The 24 VDC brushless fan cools the heat sink and power supply rectifiers.