SCE Model 750 Power Supply

The Model 750, a large (3KW) supply, powers the signal processor unit in the AGP-68 radar system. This radar system is the **primary fire control radar** for the **F16 fighter aircraft, and is used on the B1 as well.** It is a form-fit-function replacement for the OEM Westinghouse supply.

Main output is **5V/400** Amps with several auxiliary outputs. The main output consists of two closely-coupled full bridge converters each providing 200 Amps. The bridge employs current-doubling output topology and zero voltage, quasi resonant (primary) switching for reduced losses and noise.

The higher-powered auxiliary outputs are two-transistor forward converters while the lower powered outputs are all discrete linear regulators. Required start up-shutdown sequencing and fault handling is very precisely specified and rather complex, therefore all switching outputs are phased locked to an external sync source. A microprocessor-based design was employed greatly, simplifying the Westinghouse design. All outputs are fully isolated to simplify the system grounding.

Now in production, SCE expects to build well over 1000 units at a **savings to the Government of $60 million** over OEM prices.

SPECIFICATIONS

Electrical

Input Voltage:

- 3-Phase, 400Hz, per MIL-STD-704A.
  105-120VAC, with overvoltage protection to 180V L-N.
  (311V L-L)
  28 VDC, with overvoltage protection to 60VDC

Maximum Input Power:

- 1 KW per phase

Control Input:

- < 0.5A at + 28V input (used for control and line relay control)

Power Factor:

- > 0.90 at full load

Outputs:

- Main: +5V @ 400A - output via copper-bus-bars
- Auxiliaries:
  +12V @ 8A - ouput via 50-pin D-connector
  +12V @ 20A - output via 50-pin D-connector
  -5.45V @ 20A - output via 50-pin D-connector
  -2.75V @ 8A - output via 50-pin D-connector
  ±15V @ 2A - output via 50-pin D-connector
  -20V @ 0.5A - ouput via 50-pin D-connector
  20-30 V unregulated bulk output @ 0.3A

Protection: All outputs will regulate down to zero load.

Mechanical:

- Dimensions: 20" x 10" x 4" , plus 1" high mounting ears.
- Weight: 42 lbs, flight trim

Environmental:

- Operating Temperature Range: -55ºC to +71ºC
  (5 lbs./min. cooling air required)
  Vibration: 10Gs RMS 10-2KHz, gunfire
  Humidity / Salt Fog

Reliability:

- A high MTBF (MIL-HDBK-217) is achieved by de-rating all components 50% for both voltage and power stress, with critical power handling derated even further.