

POWER SUPPLY

RADAR TRANSMITTER - *S-Band TWT* - *NATO Ground Based Radar Application*



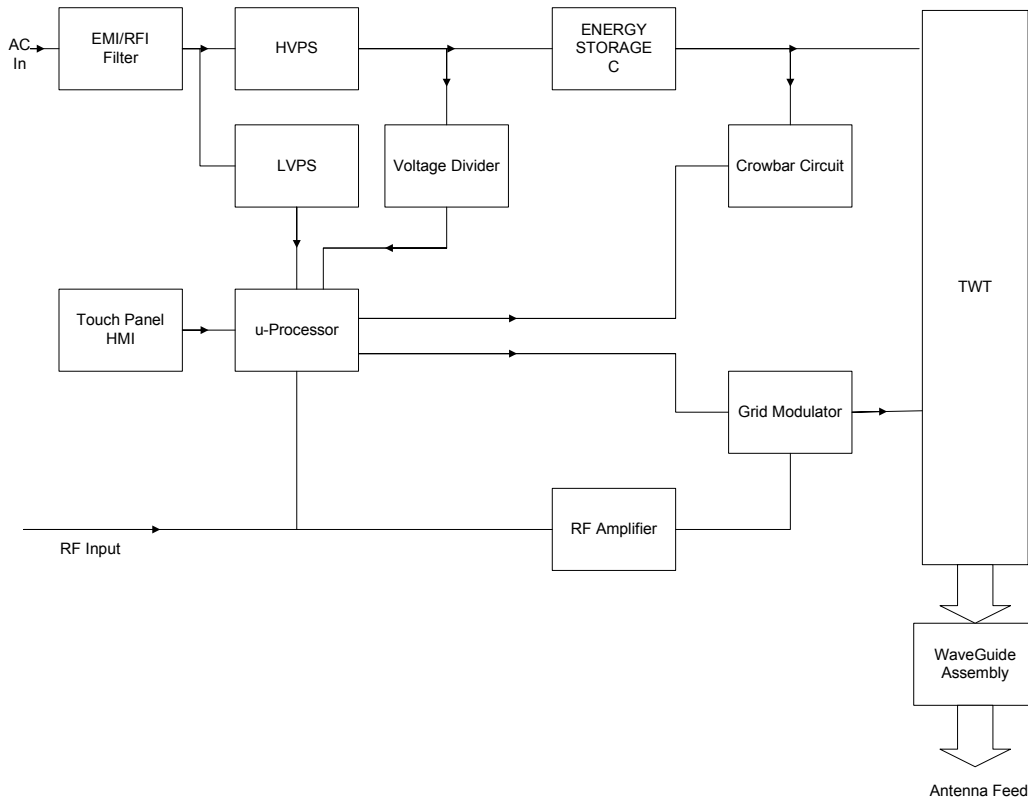
Features:

- 150kW, 45kVDC, solid-state power supply
- < 1% regulation
- Dual micro-processor control
- Touch-panel display
- Liquid Coolant: ethylene glycol/water
- Integrated BITE local/remote
- Reliability (MTBF): 2700 Hours
- Modular Design for Maintainability
- Maintenance: 60 Minutes Mct

Espey developed this, solid state, high voltage power supply, as the major subsystem of a 150 kW, 8.8% duty cycle, coherent S-Band TWT radar transmitter system. The solid state 45 KV DC power supply is rated at 60 kW average output power at 19 amps peak for pulse widths from 8 to 300 microseconds. The two-cabinet system is fed through a soft-start module and multiple, cold plate cooled individual switching regulator/inverter modules in the power and control cabinet. These solid state switching regulator/inverters drive the high voltage transformer which form the 45 kV high voltage power supply. A unique variable boost in conjunction with a fixed supply provides better than 1% regulation at 45 kV with extremely low pulse to pulse jitter of less than 3 volts for narrow pulses. The high voltage cabinet houses the TWT and associated high voltage assemblies including, the high voltage transformers, high voltage divider and energy storage capacitors. Dual microprocessors control the touch panel electro-luminescent digital readout display in the control cabinet as well as the monitoring and fault protection circuitry.

ESPEY Mfg. & Electronics Corp.

Block Diagram:



Specifications:

Electrical Specifications

- Voltage: 43.5 KV to 46.5 KV DC
- Voltage Adj: 25 V DC steps
- Peak Current: 19 Amps
- Duty Cycle: 8.8%
- Voltage Droop: < 0.1%
- Voltage Regulation: $\pm 0.5\%$
- Prime Power: 380Vac 3 Phase 50/60Hz

Mechanical Specifications

- Two Cabinet Assemblies designed for mobile shelter
- Power/Control Cabinet size: 48"x36" weight: 2500 lbs.
- High Voltage Cabinet size: 72"x36" weight: 2700 lbs.