Overview
Our Series of High-Power Outdoor (SPOD) C-, X- and Ku-Band Solid-State Power Amplifiers (SSPAs) are cost-effective, reliable and deliver its rated power at the 1 dB compression point, to the transmit waveguide flange. A SPOD consists of an SSPA module with the Monitor/Control Processor (MCP), an integrated power supply and a field replaceable fan assembly. The amplifier features our low loss combining technique and MCP-based temperature versus gain compensation.

All SPOD SSPAs have a self-contained, extremely rugged, power supply. While generally fielded as an AC powered unit, SPODs are also available with -48 VDC power supplies.

The SSPAs are constructed with highly reliable Gallium Arsenide Field Effect Transistors (GaAs FETs). Solid-State provides significant advantage over alternate technologies, including:
- More superior third order inter-modulation products – from 4-6 dB better
- Saturated power levels up to twice that of the SPOD’s rated output

The SPOD SSPAs are equipped with useful features that other manufacturers offer as options. Included in each unit’s base price are:
- Temperature compensation
- Sample ports
- Power monitor
- Power factor corrected supply
- Full remote monitor and control capabilities, including Ethernet HTTP pages and SNMP

Redundancy
The SPOD has the ability to function as a 1:1 (one backup for one primary) redundant controller in a redundant mode without the use of an external device. With a unique solution to system control, the SPOD offers a very cost-effective solution for 1:1 redundant TX requirements. The optional redundancy configuration is implemented by attaching a ganged waveguide/coax transfer switch(es) to the input and output connectors of the amplifiers, using a combination coaxial cable and waveguide kit.

Data Logging Capability
The SPOD includes a built-in data logging capability to enhance system maintainability. By recording critical operational parameters (such as temperature, output power, mute status, etc.) at time stamped intervals, the user can quickly gather intelligence not only about the unit itself, but also the unit’s operational environment.
Specifications

RF Output Frequency

<table>
<thead>
<tr>
<th>Model</th>
<th>Psat (Typical)</th>
<th>P1dB (Guaranteed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS1-20Ku</td>
<td>43 dBm (20 W)</td>
<td>42 dBm (16 W)</td>
</tr>
<tr>
<td>PS1-32Ku</td>
<td>45 dBm (32 W)</td>
<td>44 dBm (25 W)</td>
</tr>
<tr>
<td>PS1-40Ku</td>
<td>46 dBm (40 W)</td>
<td>45 dBm (32 W)</td>
</tr>
<tr>
<td>PS1-5-50Ku</td>
<td>47 dBm (50 W)</td>
<td>46 dBm (40 W)</td>
</tr>
<tr>
<td>PS1-5-80Ku</td>
<td>48 dBm (60 W)</td>
<td>47 dBm (50 W)</td>
</tr>
<tr>
<td>PS2-100Ku</td>
<td>50 dBm (100 W)</td>
<td>49 dBm (80 W)</td>
</tr>
<tr>
<td>PS2-125Ku</td>
<td>51 dBm (125 W)</td>
<td>50 dBm (100 W)</td>
</tr>
<tr>
<td>PS1-32C, X</td>
<td>45 dBm (32 W)</td>
<td>44 dBm (25 W)</td>
</tr>
<tr>
<td>PS1-50C, X</td>
<td>47 dBm (50 W)</td>
<td>46 dBm (40 W)</td>
</tr>
<tr>
<td>PS1-60C, X</td>
<td>48 dBm (60 W)</td>
<td>47 dBm (50 W)</td>
</tr>
<tr>
<td>PS1.5-80C, X</td>
<td>49 dBm (80 W)</td>
<td>48.5 dBm (70 W)</td>
</tr>
<tr>
<td>PS1.5-110C, X</td>
<td>50.4 dBm (110 W)</td>
<td>49.5 dBm (90 W)</td>
</tr>
<tr>
<td>PS1.5 or PS2-125C, X</td>
<td>51 dBm (125 W)</td>
<td>50 dBm (100 W)</td>
</tr>
<tr>
<td>PS2-150C, X</td>
<td>51.8 dBm (150 W)</td>
<td>51 dBm (125 W)</td>
</tr>
<tr>
<td>PS2-200C, X</td>
<td>53 dBm (200 W)</td>
<td>52.5 dBm (175 W)</td>
</tr>
<tr>
<td>PS2-250C, X</td>
<td>54 dBm (250 W)</td>
<td>53 dBm (200 W)</td>
</tr>
</tbody>
</table>

Input Power Supply Requirements
90 – 264 VAC, 47-63 Hz, Power Factor Corrected, .96 (48 VDC optional)

Gain Min. (Typical) All power levels
70 (75 dB)

Max. Input level (no damage) +10 dBm

Gain Adjust
20 dB in 0.25 dB steps

Gain Flatness
± 1.5 dB full band (optional ± 2.0 dB full band (-50 to +55C))
± 0.30 dB per 40 MHz (optional ± 0.50 dB per 40 MHz (-50 to +55C))

Gain variation over temp
±1.5 dB max., -40 to +55°C (optional ± 2.0 dB max. (-50 to +55C))

Input Return Loss
19.1 dB (1.25:1 VSWR)

Output Return Loss
19.1 dB (1.25:1 VSWR)

Noise Figure
8-10 dB typ., 15 dB max. @ min. attenuation

RF Mute Isolation
60 dB min.

AM/PM Conversion
2° typ., 3.5° max. @ Rated P1dB

3rd Order Intermod. Level
(2 tones, @ -3 dB Total Back Off from P1 dB (-6 dBc SCL), Δ 1 MHz)
-30 dBc typ., -25 dBc Guaranteed

Spurious Level

Harmonics
-50 dBC @ Prated - 3dB

Non-Harmonic Related
-65 dBC max.

Group delay variation
Linear: ± 0.03ns/MHz
Parabolic: ± 0.003ns/MHz^2
Ripple: ± 1.0 ns pk-pk

Note:
1. Allow 1 dB degradation from 13.75 to 14.0 GHz and 6425 to 6725 MHz

Data Logging parameters
Non-Volatile RAM: Capacity 30 days @ 90 minute intervals
Includes: RF Output Power
Mute Status
Heatsink Temperature

Environmental & Physical

Temperature
Operating
-40° to 122°F (-40° to 55°C) (optional -50 to 55C or -40 to +60°C)

Storage
-67° to 167°F (-55° to 75°C)

Humidity
100% condensing rain 2” per hour

Ingress Protection
Designed for IP-66 (Dust tight, strong water jets)

Altitude
10,000 AMSL (derate 2°C/1000 ft. AMSL)

Shock
Normal commercial shipping and handling

Dimensions
height x width x depth (excluding connectors)

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS1.1,5</td>
<td>7.37” x 6.26” x 12.65”</td>
</tr>
<tr>
<td>PS2</td>
<td>9.78” x 8.80” x 16.81”</td>
</tr>
</tbody>
</table>

Weight

<table>
<thead>
<tr>
<th>Model</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS1.1,5</td>
<td>17 lbs Nominal</td>
</tr>
<tr>
<td>PS2</td>
<td>47 lbs Nominal</td>
</tr>
</tbody>
</table>

Connectors

RF Input
Type N, female

RF Output
PS1, C-Band: Type N, female
PS1.5/PS2, C-Band: CPR137G
PS1/1.5/PS2 X-Band: CPR112G
PS1/1.5/PS2 Ku-Band: WR75G

M&C/Ethernet/Redundancy Switches
19-pin MS Style (Single Integrated cable assembly available, dependent upon configuration)