

Low-Power Solid-State Power Amplifiers

LPC, LPX, LPKxxxxR

Using technology developed for ModuMAX™ amplifiers, these rack-mount SSPAs offer output powers of up to 50 watts in C-, X-, and Ku-Band satellite uplink bands. The SSPAs incorporate a modular architecture that includes the RF modules, power supplies, logic, fans, and front panel assembly. The amplifiers are designed for reliable service in fixed and mobile applications.

Features

- 25, 35, or 50 W saturated output power
- Digital gain adjustment (20 dB range)
- Forward power monitoring
- Microprocessor-based monitor and control
- Serial interface (RS-232/-422/-485) standard
- 10 Base-T network interface (SNMP)
- Integral 1:1 redundancy control
- RF output sample port

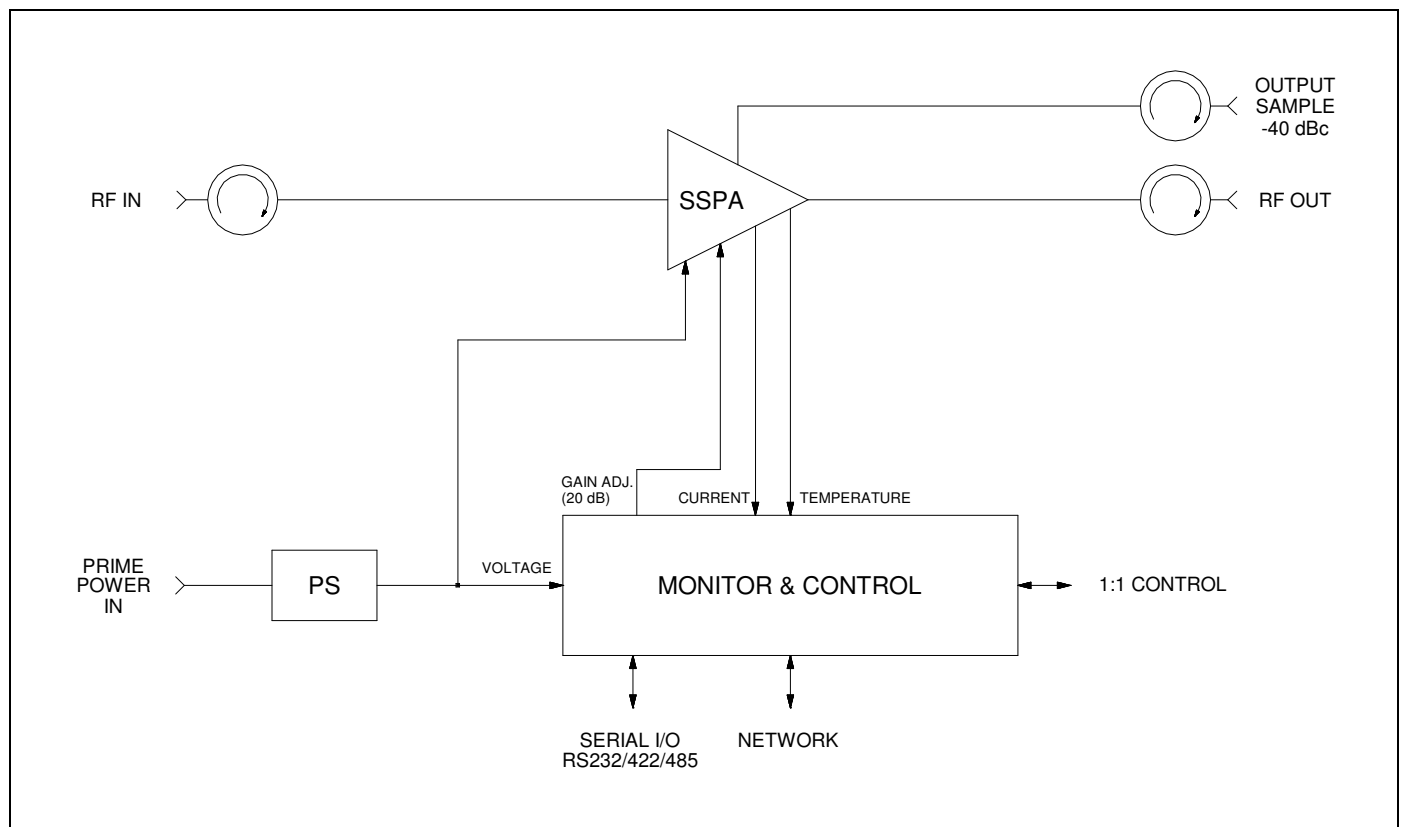
Applications

- Single-thread SSPA
- Redundant systems (1:1, 1:2)
- Fixed installations
- Mobile terminals
- Commercial, Government, and Military systems

Accessories

- RCP-2001 remote panel

Block Diagram



Single-Thread SSPA Specifications

Parameter	Notes	Min	Nom/Typ [†]	Max	Units
Frequency Range	C-Band, Standard ("D")	5.850		6.425	GHz
	C-Band, Extended ("M")	5.850		6.725	GHz
	X-Band, Standard ("B")	7.90		8.40	GHz
	Ku-Band, Standard ("M")	14.00		14.50	GHz
	Ku-Band, Extended ("O")	13.75		14.50	GHz
Gain, at maximum gain setting	C-, X-, and Ku-Bands	70		75	dB
Gain versus Temperature	0 to +50 °C		±0.5	±0.75	dB
Gain Adjust Range	Digital, 0.1 dB steps	20			dB
Gain Flatness	Full band			±0.75	dB
	Per 40 MHz			±0.30	dB
Saturated Power Output	50 W C-Band		+47 (50)		dBm (W)
	25 W C-Band		+44 (25)		dBm (W)
	50 W X-Band		+47 (50)		dBm (W)
	25 W X-Band		+44 (25)		dBm (W)
	35 W Ku-Band		+45.5 (35)		dBm (W)
	25 W Ku-Band		+44 (25)		dBm (W)
Power Output at 1 dB compression (P _{1 dB})	50 W C-Band	+46.5 (45)			dBm (W)
	25 W C-Band	+43.5 (22)			dBm (W)
	50 W X-Band	+46.5 (45)			dBm (W)
	25 W X-Band	+43.5 (22)			dBm (W)
	35 W Ku-Band	+44.5 (28)			dBm (W)
	25 W Ku-Band	+43.0 (20)			dBm (W)
Two-tone Intermodulation	At 3 dB total backoff from 1 dB compression point		-30	-25	dBc
Noise Figure	At maximum gain		8		dB
Residual Noise	C-Band, 5.85–6.425 GHz			-70	dBW/4 kHz
	C-Band, 3.4–4.2 GHz			-150	dBW/4 kHz
	X-Band, 7.25–8.40 GHz			-70	dBW/4 kHz
	Ku-Band, 13.75–14.50 GHz			-70	dBW/4 kHz
	Ku-Band, 10.7–12.75 GHz			-120	dBW/4 kHz
Group Delay	Linear			0.03	ns/MHz
	Parabolic			0.003	ns/MHz ²
	Ripple			1.0	ns p-p
AM/PM Conversion	At P _{1 dB}		2.5	3.5	%/dB
Second Harmonic	At P _{1 dB}		-60		dBc
Spurious	At P _{1 dB} , in band			-70	dBc
VSWR	Input		1.2	1.3	:1
	Output		1.3	1.5	:1
Front Panel Sample Ports	Output		-40		dB

[†] When there is only one value on a line, this column is a nominal value. Otherwise it is a typical value. Typical values are intended to illustrate typical performance, but are not guaranteed.

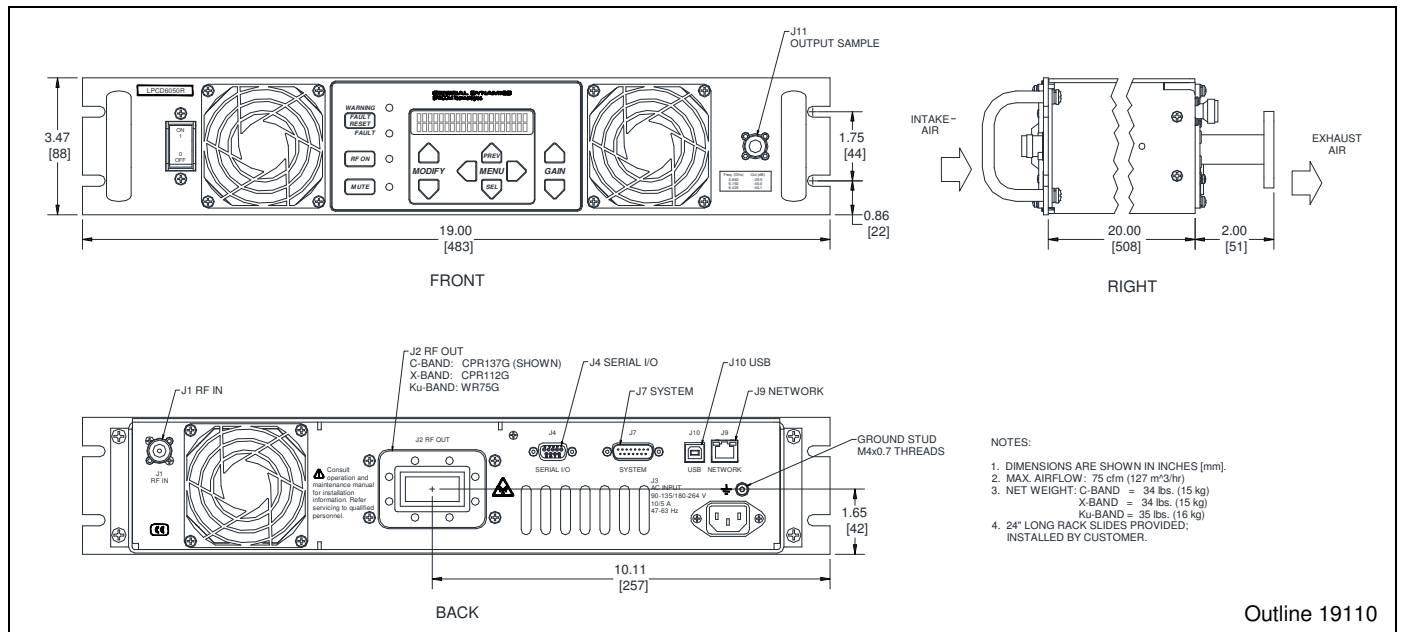
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Parameter	Notes	Min	Nom/Typ [†]	Max	Units
Connectors	RF Input RF Output, C-Band RF Output, X-Band RF Output, Ku-Band Sample Port Serial I/O System Network Power		Type N Female CPR137G Waveguide CPR112G Waveguide WR75G Waveguide Type N Female 9-pos D-sub Female, mate supplied 15-pos D-sub, Male RJ-45 Jack IEC-320		
Power Requirements	Voltage Frequency Power factor corrected	100 47	0.99	240 63	Vac Hz
Power Consumption	50 W C-Band 25 W C-Band 50 W X-Band 25 W X-Band 35 W Ku-Band 25 W Ku-Band		275 225 325 250 300 275	375 ^A 325 ^A 400 ^A 350 ^A 350 ^A 325 ^A	W W W W W W
Cooling System			Forced air		
Operating Temperature Range	Ambient air temperature	0		+50	°C
Altitude Derating	10,000 ft (3000 m) max.		Derate 2°C per 1000 ft (300 m)		
Dimensions	See outline drawing		3.5 H x 19 W x 22 D 89 H x 483 W x 559 D		inches mm

[†] When there is only one value on a line, this column is a nominal value. Otherwise it is a typical value. Typical values are intended to illustrate typical performance, but are not guaranteed.

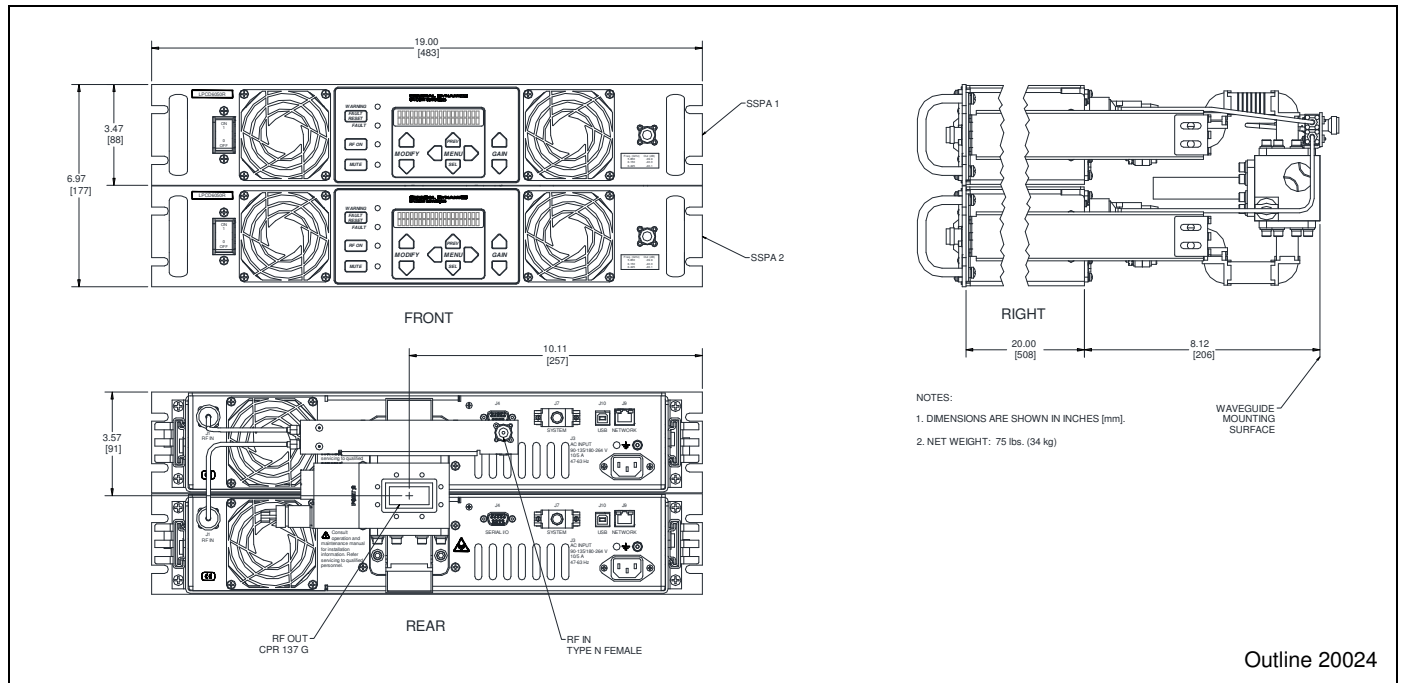
^A Cold start, at -40 °C and P_{OUT} in saturation.

Outline Drawing, SSPA (C-Band shown, other bands are similar)



Outline 19110

Outline Drawing, Typical 1:1 Redundant System (C-Band shown, other bands are similar)



Part Number/Ordering Information, Single-Thread SSPAs

C-Band	X-Band	Ku-Band
<p>LPC <input type="checkbox"/> 6 <input type="checkbox"/> R</p> <p>5.850-6.425 GHz = D 5.850-6.725 GHz = M</p> <p>25 Watts = 025 50 Watts = 050</p>	<p>LPXB8 <input type="checkbox"/> R</p> <p>7.90-8.40 GHz = B</p> <p>25 Watts = 025 50 Watts = 050</p>	<p>LPK <input type="checkbox"/> 14 <input type="checkbox"/> R</p> <p>14.00-14.50 GHz = M 13.75-14.50 GHz = O</p> <p>25 Watts = 025 35 Watts = 035</p>

Part Number/Ordering Information, 1:1 Redundant Systems*

C-Band	X-Band	Ku-Band
<p>LPRC1 <input type="checkbox"/> <input type="checkbox"/> R</p> <p>5.850-6.425 GHz = D 5.850-6.725 GHz = M</p> <p>25 Watts = 025 50 Watts = 050</p>	<p>LPRX1B <input type="checkbox"/> <input type="checkbox"/> R</p> <p>7.90-8.40 GHz = B</p> <p>25 Watts = 025 50 Watts = 050</p>	<p>LPRK1 <input type="checkbox"/> <input type="checkbox"/> R</p> <p>14.00-14.50 GHz = M 13.75-14.50 GHz = O</p> <p>25 Watts = 025 35 Watts = 035</p>

* Performance specifications of a redundant system depend on the installed configuration and optional accessories. Contact the factory for more information and for 1:2 system capabilities.

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19113 Rev. C

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