

# X-Band Solid-State Power Amplifiers

## SPXB8xxxN

Using technology developed for ModuMAX™ amplifiers, these outdoor SSPAs feature a modular architecture with field-replaceable RF assemblies and offer output powers of up to 200 watts across the standard 7.90–8.40 GHz satellite uplink band. Housed in a weatherproof NEMA 4X enclosure, the amplifiers can be mounted in an antenna hub or outdoors in applications where it is desirable to reduce cable losses by mounting the SSPA close to the antenna. Built for reliable, trouble-free service, the amplifiers incorporate a microprocessor-based monitor and control system.

### Features

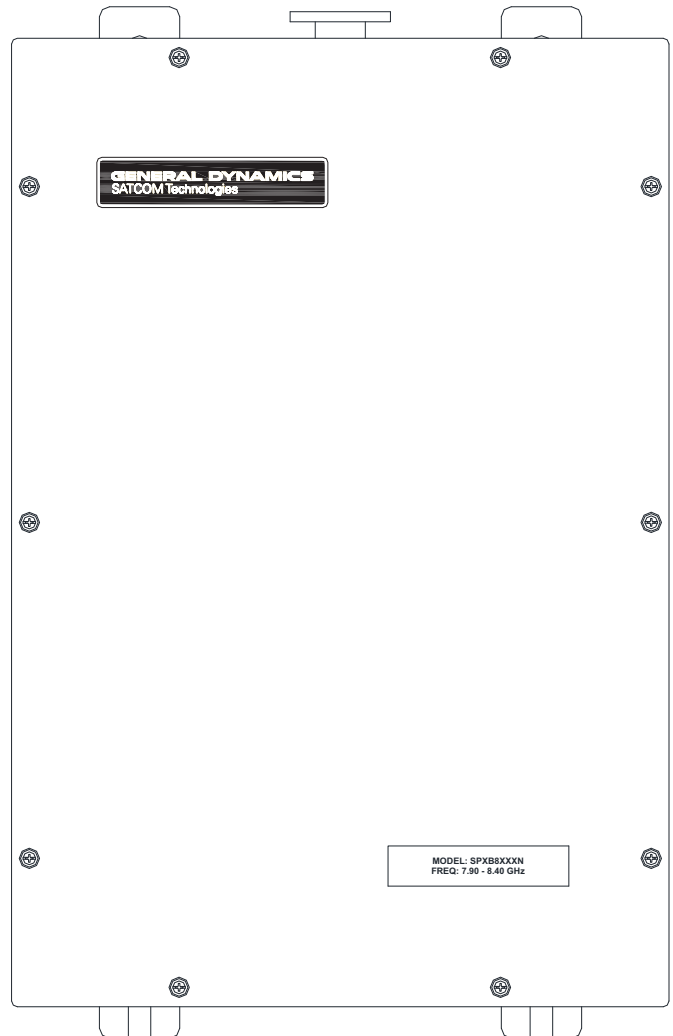
- Field-replaceable RF assembly
- 50/100/125/200 W saturated output power
- Microprocessor-based monitor and control
- Serial interface (RS-232/-422/-485)
- Output isolator for high load VSWR protection
- 20 dB range digital gain adjustment
- RF output sample port
- Reflected power monitoring

### Applications

- Stand-alone SSPA
- 1:1 and 1:2 redundant systems

### Options

- Block upconverter



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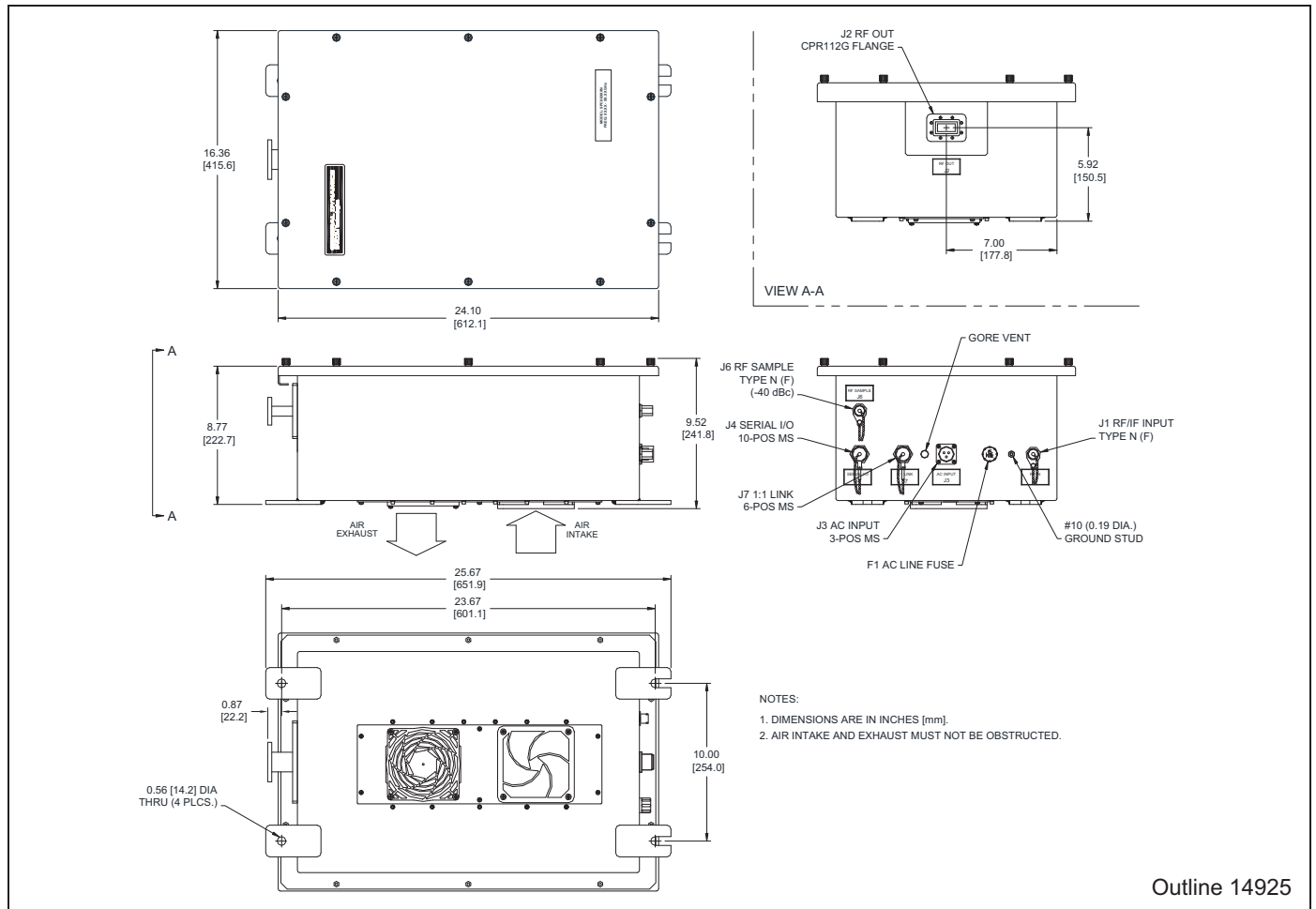
### Single-Thread SSPA Specifications

Parameter	Notes	Min	Nom/Typ <sup>†</sup>	Max	Units
Frequency Range		7.90		8.40	GHz
Input Frequency Range with Option 7, Block Upconverter		950		1450	MHz
Gain, at max. gain setting		70			dB
Gain Adjust Range		20			dB
Gain Flatness	Full band, standard			±1.0	dB
	Full band, with Option 7			±1.5	dB
	Per 40 MHz, standard			±0.3	dB
	Per 40 MHz, with Option 7			±0.5	dB
Gain Stability vs. Temp.	-40 to +50 °C, standard		±1.0	±1.5	dB
	-40 to +50 °C, with Option 7		±2.0	±2.5	dB
Saturated Power Output	50 W		+47 (50)		dBm (W)
	100 W		+50 (100)		dBm (W)
	125 W		+51 (125)		dBm (W)
	200 W		+53 (200)		dBm (W)
Power Output, at 1 dB compression (P <sub>1 dB</sub> )	50 W	+46.5 (45)			dBm (W)
	100 W	+49.4 (88)			dBm (W)
	125 W	+50.0 (100)			dBm (W)
	200 W	+52.0 (158)			dBm (W)
Two-tone Intermodulation	At 3 dB total backoff from 1 dB compression point		-30	-25	dBc
Group Delay	Linear			0.03	ns/MHz
	Parabolic			0.003	ns/MHz <sup>2</sup>
	Ripple			1.0	ns p-p
AM/PM Conversion	At P <sub>1 dB</sub>		2.5	3.5	°/dB
Noise Figure, at max. gain	Standard		8		dB
	With Option 7		15		dB
VSWR	Input, Standard		1.20	1.30	:1
	Input, with Option 7		1.35	1.50	:1
	Output		1.20	1.30	:1
Output Sample Port Connectors			-40		dBc
	Input		Type N Female		
	Output		CPR112G Waveguide		
	Sample Port		Type N Female		
	Serial I/O		10-pos MS, mate supplied		
	1:1 Link		6-pos MS, mate supplied		
	Power		3-pos MS, mate supplied		
Power Requirements	Voltage		90–135 or 180–265		Vac
	Frequency	47		63	Hz
	Power, 50 W		375	500 <sup>A</sup>	W
	Power, 100 W		600	900 <sup>A</sup>	W
	Power, 125 W		1000	1300 <sup>A</sup>	W
	Power, 200 W		1000	1500 <sup>A</sup>	W
	Power factor corrected		0.97		
Cooling System			Forced air		
Operating Temp. Range	Ambient air temperature	-40		+50	°C
Weight			53 (24)		lb (kg)
Dimensions	See outline drawing		25.67 H x 16.36 W x 9.52 D		inches
			651.9 H x 415.6 W x 241.8 D		mm

<sup>†</sup> 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.

<sup>A</sup> Cold start, at -40 °C and P<sub>OUT</sub> in saturation.

## Outline Drawing, SSPA



Outline 14925

## Part Number/Ordering Information

### SSPA:

Part/Model No. **SPXB8**  **N-X**

7.90–8.40 GHz = B

50 Watts = 050  
100 Watts = 100  
125 Watts = 125  
200 Watts = 200

### Option:

**Block Upconverter** ..... 7  
L-Band IF Input

\* 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.

**Redundant Systems\*** (Consists of 1:1 switching assembly, two SSPAs, and interconnecting cables):

Part/Model No. **SPRX1B**  **N-XX**

7.90–8.40 GHz = B

50 Watts = 050  
100 Watts = 100  
125 Watts = 125  
200 Watts = 200

### Options:

**Block Upconverter** ..... 7  
L-Band IF Input

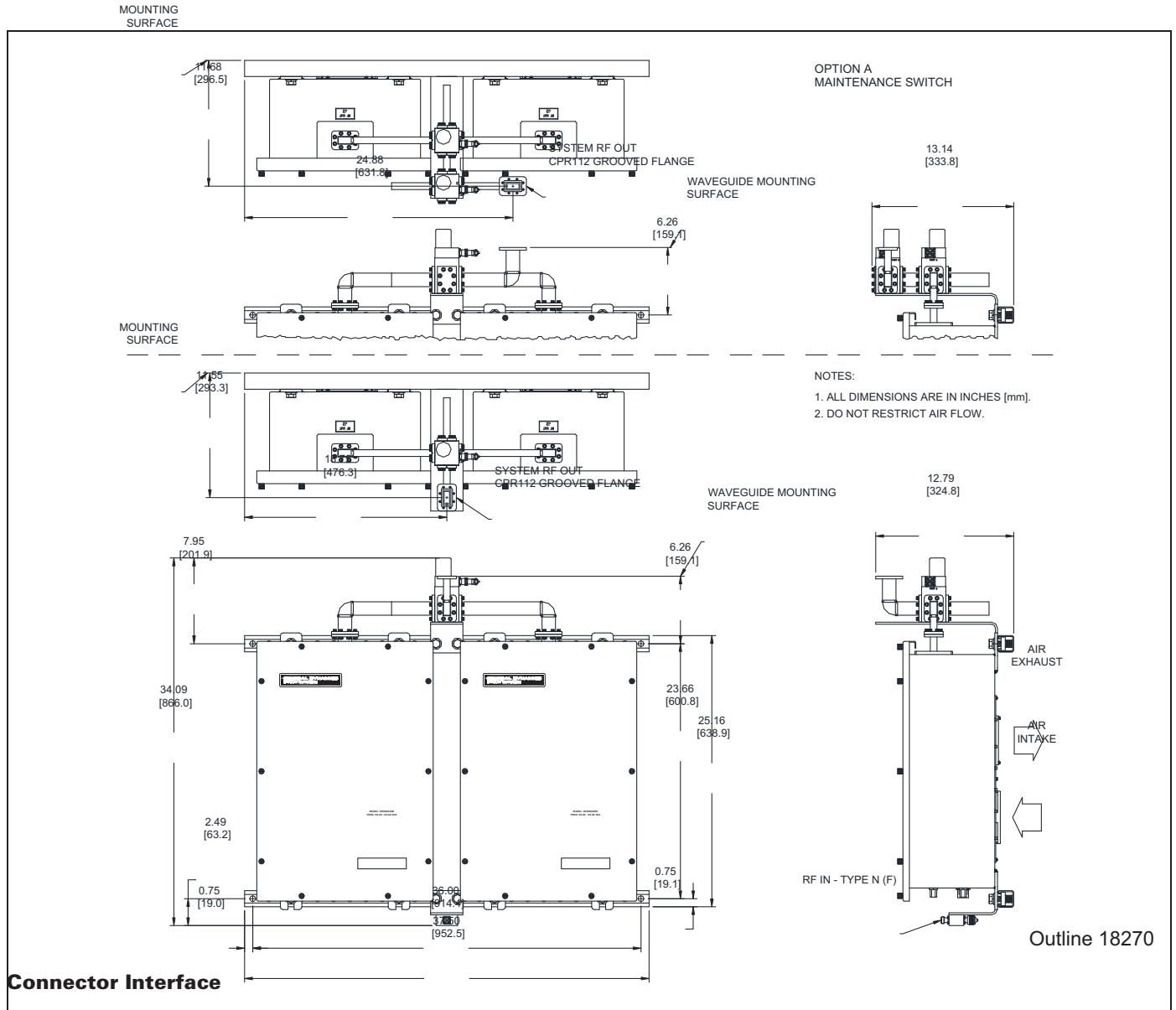
**Maintenance Switch** ..... A  
Selects antenna or dummy load at system output

### Related Accessory:

**RCP-2001, SSPA Remote Control Panel**

1U-high rack-mount panel enables remote manual control of the SSPA. Can be located up to 1.3 km (4000 ft.) away and interconnects with inexpensive cable.

## Typical 1:1 System Outline



### Connector Interface

Ref. Des.	Function	Connector Type	Mating Connector	Comment
J1	RF/IF Input	Type N Female	Type N Mate	
J2	RF Output	CPR112G Waveguide	CPR112 Flange	
J3	AC In	3-pos MS, Male	3-pos MS, Female	Mate supplied
J4	Serial I/O	10-pos MS, Female	10-pos MS, Male	Mate supplied
J6	Output Sample	Type N Female	Type N Male	
J7	1:1 Link	6-pos MS, Female	6-pos MS, Male	Mate supplied

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