Solid-State Power Amplifiers

C, X, and Ku Bands

- Modular Architecture
- 3-Year All-inclusive Warranty
- Worldwide Service
- Proven Reliability
- CE Certified

Rack-Mount Indoor Units

High Power Outdoor Units

Compact, Antenna-Mount Units

GENERAL DYNAMICS
C4 Systems

Rack-Mount SSPAs and Systems

Features

- Digital gain adjustment (20 dB range)
- Forward and reflected power monitoring
- Microprocessor-based monitor and control
- Serial interface (RS232/422/485) standard
- 10 Base-T Network interface (SNMP, HTTP)
- Front panel RF input and output sample ports
- Integral 1:1 redundancy control

Using technology developed for VertexRSI's ModuMAX™ amplifiers, these rack-mount 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.

Available models provide up to 400 W saturated output power in C-band, up to 350 W in X-Band, and up to 200 W in Ku-band. Lower power units in each band use a single RF module (SMR) in an EIA standard 4U (7-inch) rack-mount chassis; higher power units phase-combine the output of dual RF modules (DMR) and are packaged in a 5U (8.75-inch) chassis.

One-for-one redundancy control logic is built in, so no external con–troller is required for redundant systems. An optional maintenance switch is available for redundant systems to allow selection of the antenna or a dummy load at the system output.

The RCP-2001 remote control panel is also available. This 1U rack panel duplicates all menus and functions available at the SSPA front panel for operation from a remote location up to 1.3 km (4000 ft.) away.

Part Number/Order Information — Consult factory for custom configurations.

C-Band SSPAs

SPC□6100R (100 W)
SPC□6125R (125 W)
SPC□6200R (200 W)
SPC□6250R (250 W)
DPC□6400R (400 W)

D = 5.850–6.425 GHz
M = 5.850–6.725 GHz

C-Band Redundant Systems

SPRC□□100R-□ (100 W)
SPRC□□125R-□ (125 W)
SPRC□□200R-□ (200 W)
SPRC□□250R-□ (250 W)
DPRC□□400R-□ (400 W)

A = Maint. Sw.
X = No Switch

D = 5.850–6.425 GHz
M = 5.850–6.725 GHz

1 = 1-for-1 Redundancy
2 = 1-for-2 Redundancy

X-Band SSPAs

SPXB8100R (100 W)
SPXB8125R (125 W)
SPXB8200R (200 W)
DPXB8350R (350 W)

B = 7.90–8.40 GHz

X-Band Redundant Systems

SPRX□B100R-□ (100 W)
SPRX□B125R-□ (125 W)
SPRX□B200R-□ (200 W)
DPRX□B350R-□ (350 W)

A = Maint. Sw.
X = No Switch

B = 7.90–8.40 GHz

1 = 1-for-1 Redundancy
2 = 1-for-2 Redundancy

Ku-Band SSPAs

SPK□14050R (50 W)
SPK□14070R (70 W)
SPK□14100R (100 W)
DPK□14200R (200 W)

M = 14.00–14.50 GHz
O = 13.75–14.50 GHz

Ku-Band Redundant Systems

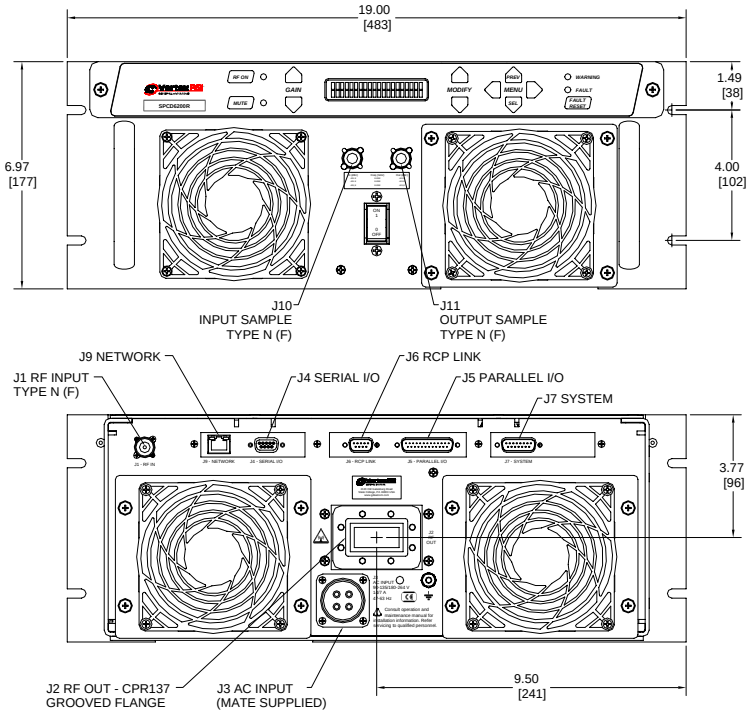
SPRK□□050R-□ (50 W)
SPRK□□070R-□ (70 W)
SPRK□□100R-□ (100 W)
DPRK□□200R-□ (200 W)

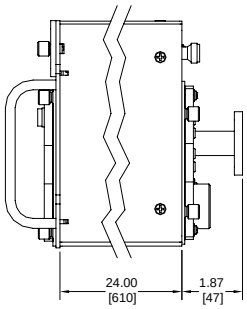
A = Maint. Sw.
X = No Switch

M = 14.00–14.50 GHz
O = 13.75–14.50 GHz

1 = 1-for-1 Redundancy
2 = 1-for-2 Redundancy

Single-Module Rack SSPA (C-Band shown; X- and Ku-Bands are similar)

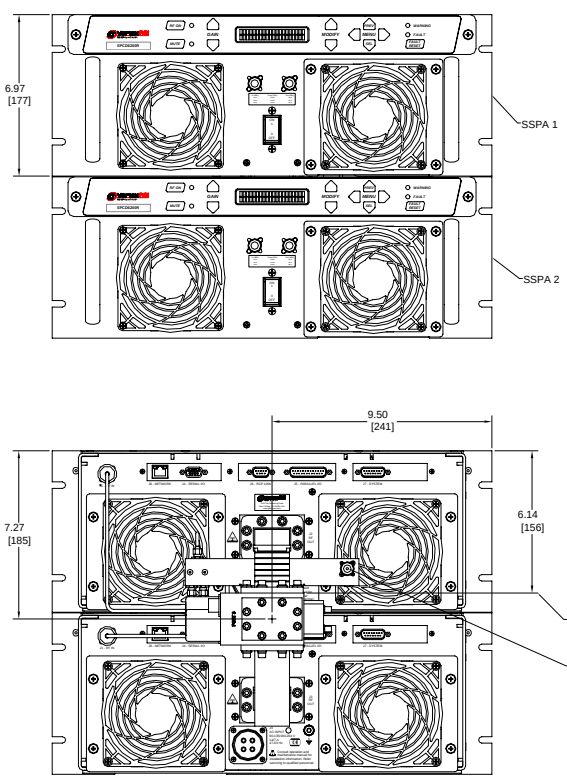


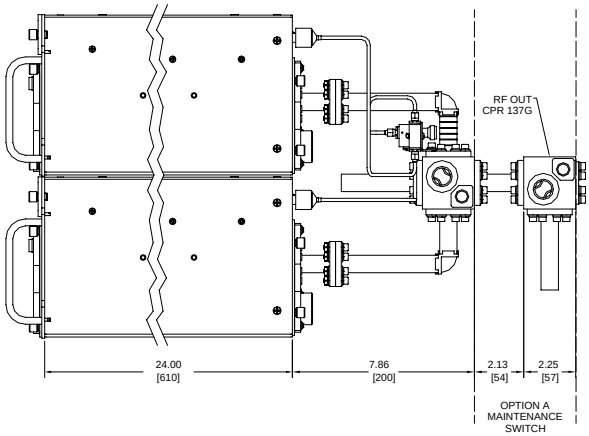


NOTES:

1. DIMENSIONS ARE SHOWN IN INCHES [mm].

Single-Module Rack SSPA 1:1 Redundant System (C-Band shown; X- and Ku-Bands are similar)





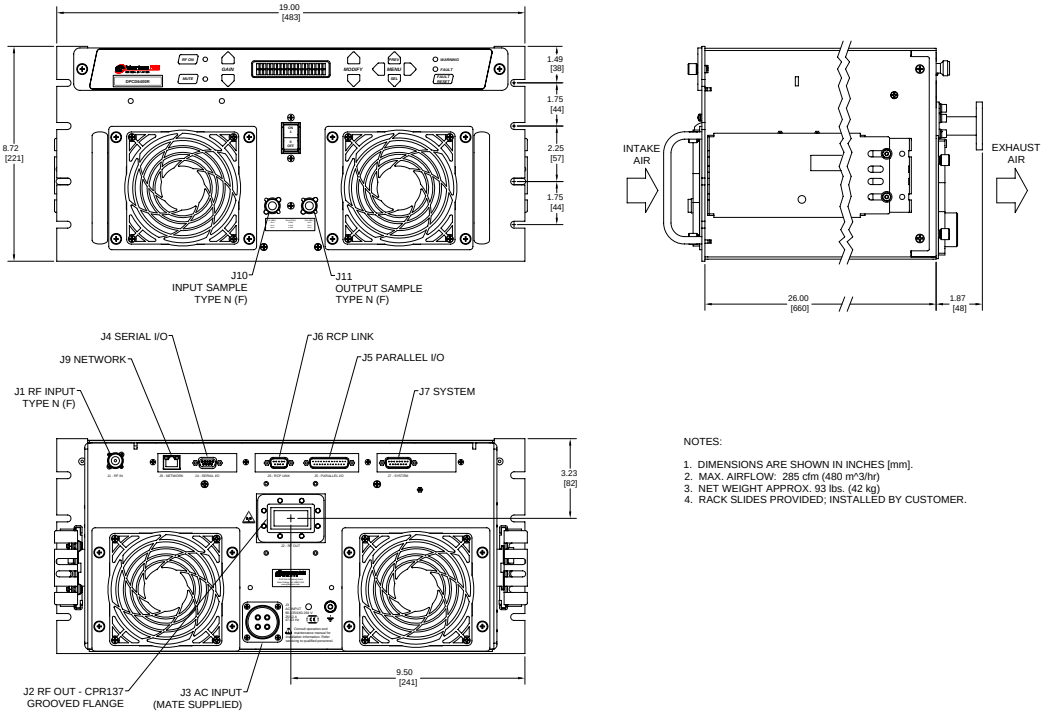
NOTES:

1. DIMENSIONS ARE SHOWN IN INCHES [mm].

2. SHOWN WITH OPTIONAL MAINTENANCE SWITCH.

Outline Drawings

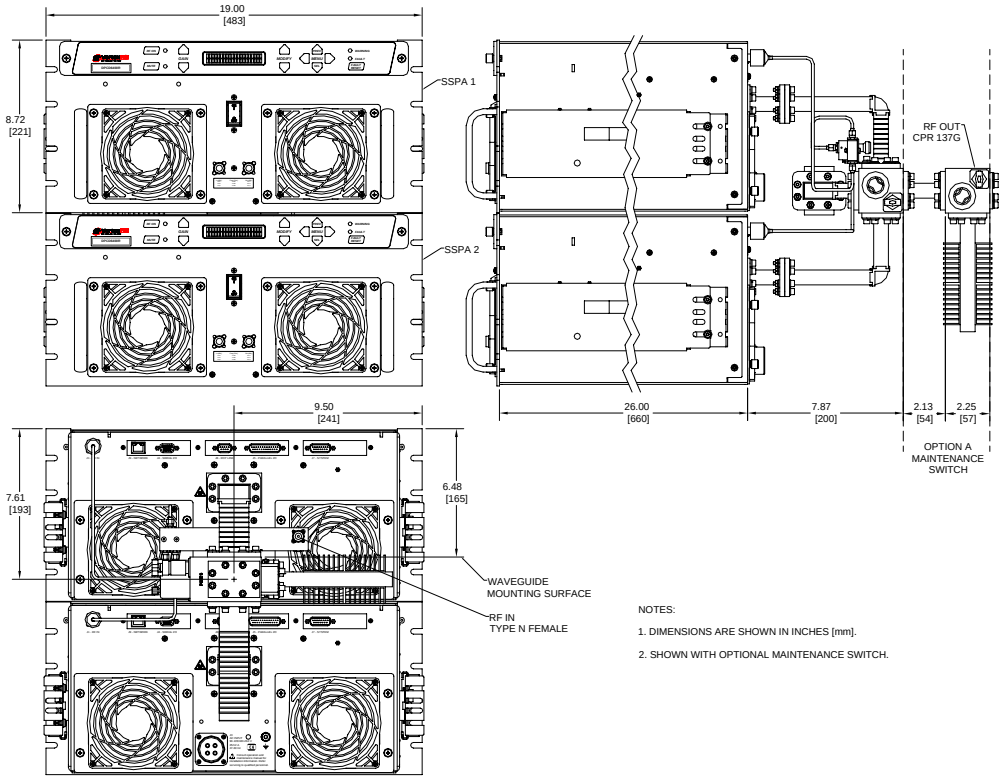
Dual-Module Rack SSPA (C-Band shown; X- and Ku-Bands are similar)



NOTES:

1. DIMENSIONS ARE SHOWN IN INCHES [mm].
2. MAX. AIRFLOW: 285 cfm (480 m^3/hr)
3. NET WEIGHT APPROX. 93 lbs. (42 kg)
4. RACK SLIDES PROVIDED; INSTALLED BY CUSTOMER.

Dual-Module Rack SSPA 1:1 Redundant System (C-Band shown; X- and Ku-Bands are similar)



NOTES:

1. DIMENSIONS ARE SHOWN IN INCHES [mm].
2. SHOWN WITH OPTIONAL MAINTENANCE SWITCH.

Parameter	Conditions	Min	Nom/Typ†	Max	Units
Frequency Range	Band "D" Band "M"	5.850 5.850		6.425 6.725	GHz GHz
Gain (@ max. gain setting)		70			dB
Gain Adjust Range	Digital, 0.1 dB steps	20			dB
Gain Flatness	Full band *(100-250 W)* Full band *(400 W)* Per 40 MHz			±0.75 ±1.0 ±0.3	dB dB dB
Saturated Power Output	*100 W* *125 W* *200 W* *250 W ** *400 W*		+50 (100) +51 (125) +53 (200) +54 (250) +56.0 (400)		dBm (W) dBm (W) dBm (W) dBm (W) dBm (W)
Power Output, at 1 dB compression ($P_{1\ dB}$)	*100 W* *125 W* *200 W* *250 W ** *400 W*	+49.5 (89) +50 (100) +52 (159) +53 (200) +55.5 (350)			dBm (W) dBm (W) dBm (W) dBm (W) dBm (W)
Two-tone Intermodulation	At 3 dB total backoff from 1 dB compression point		-30	-25	dBc
Group Delay	Linear Parabolic Ripple			0.03 0.003 1.0	ns/MHz ns/MHz^2 ns p-p
AM/PM Conversion	At $P_{1\ dB}$		2.5	3.5	°/dB
Noise Figure	At maximum gain		8		dB
VSWR	Input Output		1.25 1.20	1.30 1.30	:1 :1
Front Panel Sample Ports	Input Output		-10 -40		dBc dBc
Connectors	Input Output Sample Ports Serial I/O Parallel I/O RCP Link Power System Network		Type N Female CPR137G Waveguide Type N Female 9-pos D-sub, Female (mate supplied) 25-pos D-sub, Male (mate supplied) 9-pos D-sub, Male 4-pos CE05 (mate supplied) 15-pos D-sub, Male RJ-45 jack		
Power Requirements	Voltage Frequency Power, *100 W* Power, *125 W* Power, *200 W* Power, *250 W ** Power, *400 W* Power factor corrected	 47	90-135 or 180-270 500 750 900 1000 2000 0.98	 63 600[A] 900[A] 1100[A] 1200[A] 2400[A]	Vac Hz W W W W W
Cooling System			Forced air. Intake on front panel.		
Operating Temp. Range	Ambient air temperature	0		+50	°C
Size	*100/125/200/250 W (Single-Module Design)* *400 W (Dual-Module Design)*		19 W x 7 H x 24 D 483 W x 178 H x 610 D 19 W x 8.75 H x 27.88 D 483 W x 222 H x 708 D		inches mm inches mm
Weight	Approximate, *100-250 W* Approximate, *400 W*		55 (25) 93 (42)		lb (kg)

† 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.

* Consult factory for 250 W extended band (Band "M").

[A] Cold start at 0 °C and Pout in saturation.

X-Band Rack-Mount SSPA Specifications

Parameter	Conditions	Min	Nom/Typ†	Max	Units
Frequency Range	Band "B"	7.90		8.40	GHz
Gain (@ max. gain setting)	*100-200 W* *350 W*	70 67			dB dB
Gain Adjust Range	Digital, 0.1 dB steps	20			dB
Gain Flatness	Full band *(100-200 W)* Full band *(350 W)* Per 40 MHz			±0.75 ±1.0 ±0.3	dB dB dB
Saturated Power Output	*100 W* *125 W* *200 W* *350 W*		+50 (100) +51 (125) +53 (200) +55.5 (350)		dBm (W) dBm (W) dBm (W) dBm (W)
Power Output, at 1 dB compression ($P_{1\ dB}$)	*100 W* *125 W* *200 W* *350 W*	+49.5 (89) +50 (100) +52 (159) +54.8 (305)			dBm (W) dBm (W) dBm (W) dBm (W)
Two-tone Intermodulation	At 3 dB total backoff from 1 dB compression point		-30	-25	dBc
Group Delay	Linear Parabolic Ripple			0.03 0.003 1.0	ns/MHz ns/MHz^2 ns p-p
AM/PM Conversion	At $P_{1\ dB}$		2.5	3.5	°/dB
Noise Figure	At maximum gain		8		dB
VSWR	Input Output		1.25 1.20	1.30 1.30	:1 :1
Front Panel Sample Ports	Input Output		-10 -40		dBc dBc
Connectors	Input Output Sample Ports Serial I/O Parallel I/O RCP Link Power System Network		Type N Female CPR112G Waveguide Type N Female 9-pos D-sub, Female (mate supplied) 25-pos D-sub, Male (mate supplied) 9-pos D-sub, Male 4-pos CE05 (mate supplied) 15-pos D-sub, Male RJ-45 jack		
Power Requirements	Voltage Frequency Power, *100 W* Power, *125 W* Power, *200 W* Power, *350 W* Power factor corrected	 47	90-135 or 180-270 650 850 1000 1900 0.98	 63 850[A] 1000[A] 1200[A] 2100[A]	Vac Hz W W W W
Cooling System			Forced air. Intake on front panel.		
Operating Temp. Range	Ambient air temperature	0		+50	°C
Size	*100/125/200 W (Single-Module Design)* *350 W (Dual-Module Design)*		19 W x 7 H x 24 D 483 W x 178 H x 610 D 19 W x 8.75 H x 27.88 D 483 W x 222 H x 708 D		inches mm inches mm
Weight	Approximate, *100-200 W* Approximate, *350 W*		55 (25) 93 (42)		lb (kg)

† 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 0 °C and Pout in saturation.

Parameter	Conditions	Min	Nom/Typ†	Max	Units
Frequency Range	Band "M" Band "O"	14.00 13.75		14.50 14.50	GHz GHz
Gain (@ max. gain setting)	*50-100 W* *200 W*		70 69		dB dB
Gain Adjust Range	Digital, 0.1 dB steps	20			dB
Gain Flatness	Full band *(50-100 W)* Full band *(200 W)* Per 40 MHz			±0.75 ±1.0 ±0.3	dB dB dB
Saturated Power Output	*50 W* *70 W* *100 W ** *200 W*		+47 (50) +48.5 (70) +50 (100) +53 (200)		dBm (W) dBm (W) dBm (W) dBm (W)
Power Output, at 1 dB compression ($P_{1\ dB}$)	*50 W* *70 W* *100 W ** *200 W*	+46.0 (40) +47.5 (56) +49.0 (80) +52.0 (158)			dBm (W) dBm (W) dBm (W) dBm (W)
Two-tone Intermodulation	At 3 dB total backoff from 1 dB compression point		-30	-25	dBc
Group Delay	Linear Parabolic Ripple			0.03 0.003 1.0	ns/MHz ns/MHz^2 ns p-p
AM/PM Conversion	At $P_{1\ dB}$		2.5	3.5	°/dB
Noise Figure	At maximum gain		8		dB
VSWR	Input Output		1.25 1.20	1.30 1.30	:1 :1
Front Panel Sample Ports	Input Output		-10 -40		dBc dBc
Connectors	Input Output Sample Ports Serial I/O Parallel I/O RCP Link Power System Network		Type N Female WR75 Waveguide Type N Female 9-pos D-sub, Female (mate supplied) 25-pos D-sub, Male (mate supplied) 9-pos D-sub, Male 4-pos CE05 (mate supplied) 15-pos D-sub, Male RJ-45 jack		
Power Requirements	Voltage Frequency Power, *50 W* Power, *70 W* Power, *100 W ** Power, *200 W* Power factor corrected	 47	90-135 or 180-270 500 650 900 1950 0.98	 63 650[A] 800[A] 1200[A] 2400[A]	Vac Hz W W W W
Cooling System			Forced air. Intake on front panel.		
Operating Temp. Range	Ambient air temperature	0		+50	°C
Size	*50/70/100 W* *(Single-Module Design)* *200 W* *(Dual-Module Design)*		19 W x 7 H x 24 D 483 W x 178 H x 610 D 19 W x 8.75 H x 27.88 D 483 W x 222 H x 708 D		inches mm inches mm
Weight	Approximate, *50-100 W* Approximate, *200 W*		55 (25) 93 (42)		lb (kg)

† 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.

* Consult factory for 100 W extended band (Band "O").

[A] Cold start at 0 °C and Pout in saturation.

High Power Outdoor SSPAs and Systems

Features

- Field-replaceable RF assemblies
- Microprocessor-based monitor and control
- Serial interface (RS232/422/485) standard
- Output isolator for high load VSWR protection
- Digital gain adjustment (20 dB range)
- RF output sample port
- Reflected power monitoring
- Optional integrated block upconverter

Housed in a weatherproof (NEMA-4X) enclosure, these outdoor SSPAs can be mounted in an antenna hub or outdoors in applications where it is desirable to reduce cable losses by mounting the amplifier close to the antenna. The units use technology developed for VertexRSI's ModuMAX™ amplifiers and feature a modular architecture with field-replaceable RF assemblies. Built for reliable, trouble-free service, the amplifiers incorporate a microprocessor-based monitor and control system.

Available models provide up to 400 W saturated output power in C-band, up to 350 W in X-Band, and up to 200 W in Ku-band. Lower power units in each band use a single RF module (SMN); higher power units phase-combine the output of dual RF modules (DMN).

One-for-one redundancy control logic is built in, so no external controller is required for redundant systems. An optional maintenance switch is available for redundant systems to allow selection of the antenna or a dummy load at the system output.

All units can be configured with an optional internal L-Band block upconverter (BUC).

Part Number/Order Information — Consult factory for custom configurations.

C-Band SSPAs

SPC☐6100N-☐ (100 W)
SPC☐6125N-☐ (125 W)
SPC☐6200N-☐ (200 W)
SPC☐6250N-☐ (250 W)
DPC☐6400N-☐ (400 W)

7 = L-Band BUC
X = No BUC

D = 5.850–6.425 GHz
M = 5.850–6.725 GHz

C-Band Redundant Systems

SPRC☐☐100N-☐☐ (100 W)
SPRC☐☐125N-☐☐ (125 W)
SPRC☐☐200N-☐☐ (200 W)
SPRC☐☐250N-☐☐ (250 W)
DPRC☐☐400N-☐☐ (400 W)

A = Maint. Sw.
X = No Switch

7 = L-Band BUC
X = No BUC

D = 5.850–6.425 GHz
M = 5.850–6.725 GHz

1 = 1-for-1 Redundancy
2 = 1-for-2 Redundancy

X-Band SSPAs

SPXB8100N-☐ (100 W)
SPXB8125N-☐ (125 W)
SPXB8200N-☐ (200 W)
DPXB8350N-☐ (350 W)

7 = L-Band BUC
X = No BUC

B = 7.90–8.40 GHz

X-Band Redundant Systems

SPRX☐B100N-☐☐ (100 W)
SPRX☐B125N-☐☐ (125 W)
SPRX☐B200N-☐☐ (200 W)
DPRX☐B350N-☐☐ (350 W)

A = Maint. Sw.
X = No Switch

7 = L-Band BUC
X = No BUC

B = 7.90–8.40 GHz

1 = 1-for-1 Redundancy
2 = 1-for-2 Redundancy

Ku-Band SSPAs

SPK☐14050N-☐ (50 W)
SPK☐14070N-☐ (70 W)
SPK☐14100N-☐ (100 W)
DPK☐14200N-☐ (200 W)

7 = L-Band BUC
X = No BUC

M = 14.00–14.50 GHz
O = 13.75–14.50 GHz

Ku-Band Redundant Systems

SPRK☐☐050N-☐☐ (50 W)
SPRK☐☐070N-☐☐ (70 W)
SPRK☐☐100N-☐☐ (100 W)
DPRK☐☐200N-☐☐ (200 W)

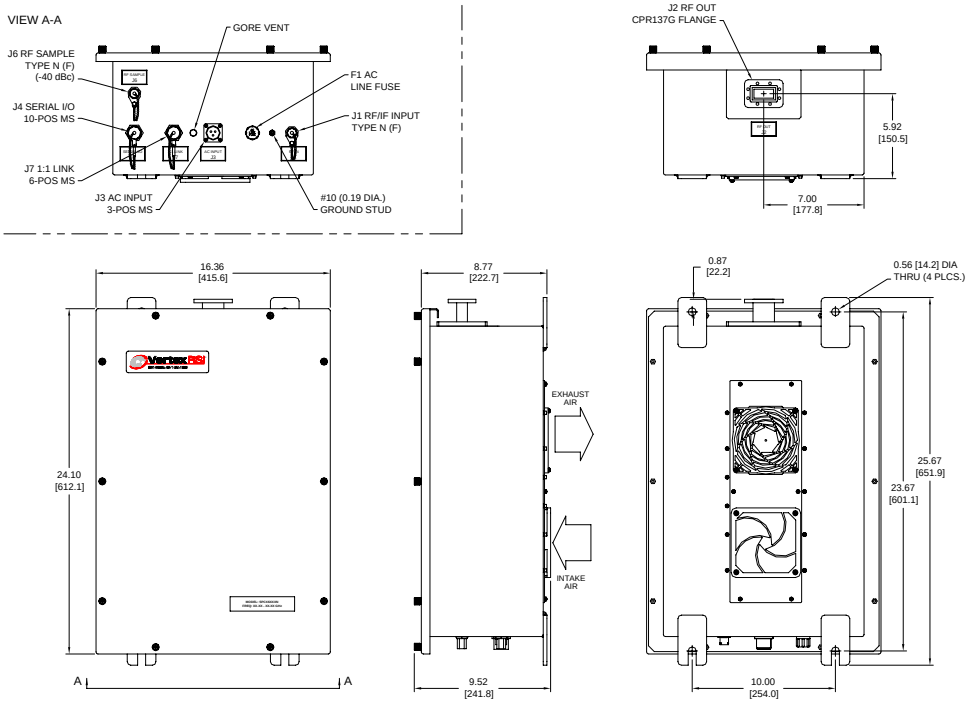
A = Maint. Sw.
X = No Switch

7 = L-Band BUC
X = No BUC

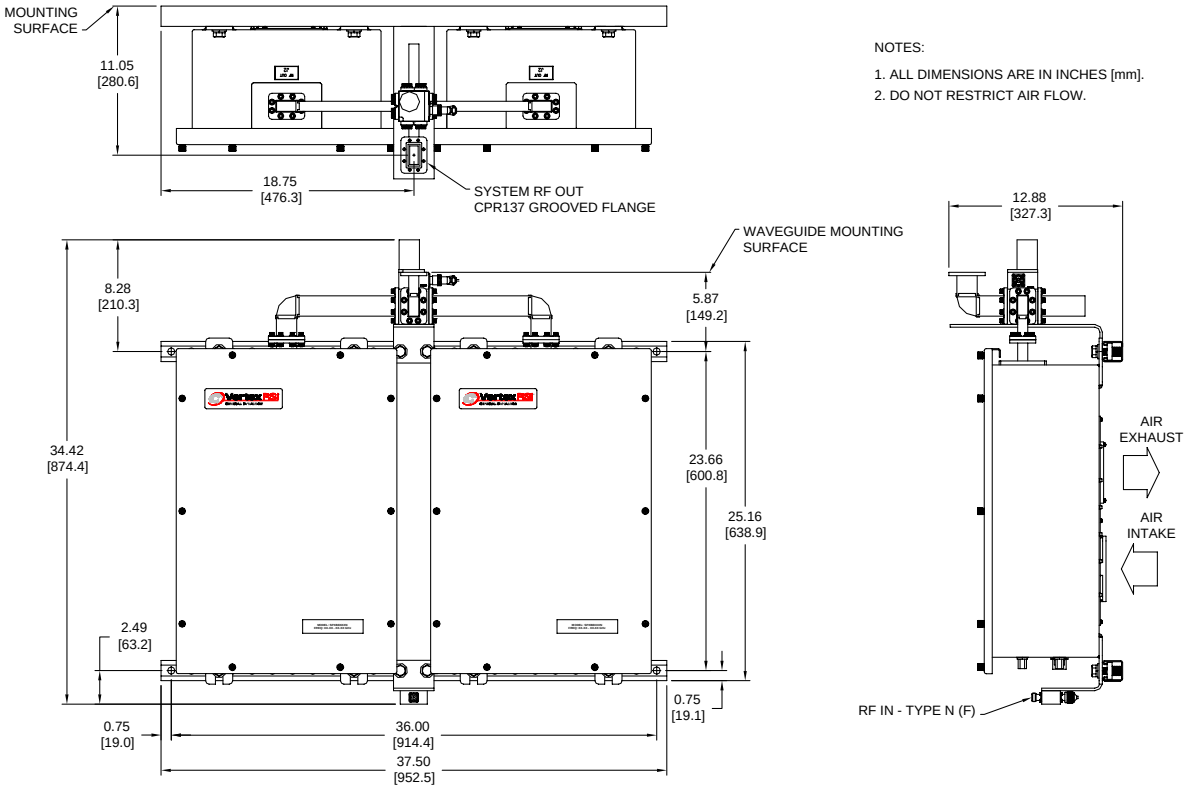
M = 14.00–14.50 GHz
O = 13.75–14.50 GHz

1 = 1-for-1 Redundancy
2 = 1-for-2 Redundancy

Single-Module NEMA SSPA (C-Band shown; X- and Ku-Bands are similar)

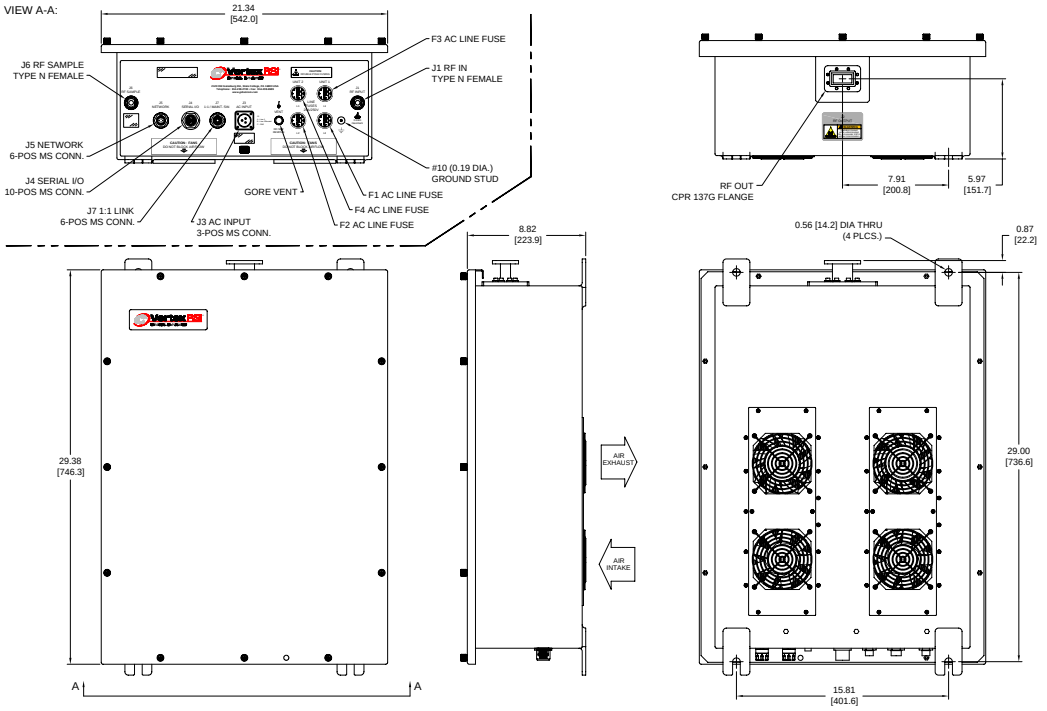


C-Band Single-Module NEMA 1:1 Redundant System (X- and Ku-Bands are similar)

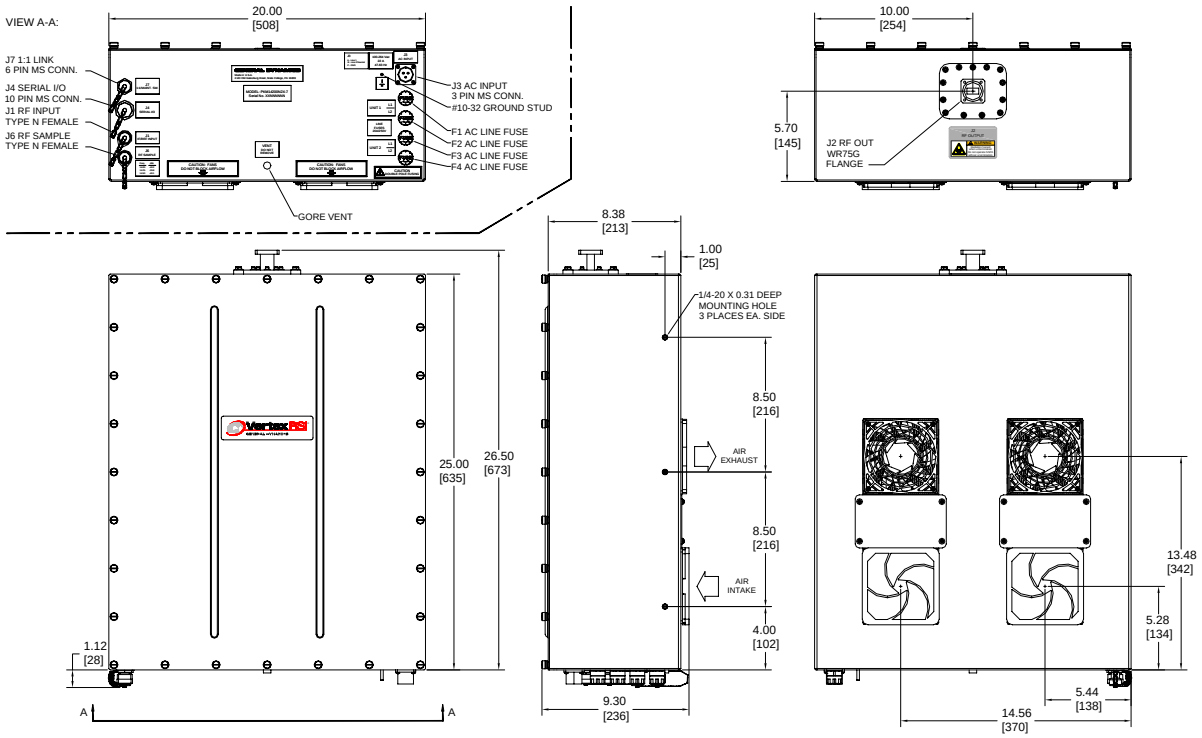


Outline Drawings

Dual-Module NEMA SSPA (C-Band shown; X-Band is similar)



Compact Design Ku-Band Dual-Module NEMA SSPA (SPK__14200N)



Parameter	Conditions	Min	Nom/Typ†	Max	Units
Frequency Range	Band "D"	5.850		6.425	GHz
	Band "M"	5.850		6.725	GHz
Input Frequency Range with Option 7, Block Upconverter	Band "D"	950		1525	MHz
	Band "M"	950		1825	MHz
Gain (@ max. gain setting)		70			dB
Gain Adjust Range	Digital, 0.1 dB steps	20			dB
Gain Flatness	Full band, standard			±1.0	dB
	Full band, Opt. 7, *100-250 W*			±1.5	dB
	Full band, Opt. 7, *400 W*			±2.0	dB
	Per 40 MHz, standard			±0.3	dB
	Per 40 MHz, Option 7			±0.5	dB
Gain Stability vs. Temperature	-40 to +50 °C, standard		±1.0	±1.5	dB
	-40 to +50 °C, Option 7		±2.0	±2.5	dB
Saturated Power Output	*100 W*		+50 (100)		dBm (W)
	125 W		+51 (125)		dBm (W)
	200 W		+53 (200)		dBm (W)
	*250 W **		+54 (250)		dBm (W)
	400 W		+56.0 (400)		dBm (W)
Power Output, at 1 dB compression ($P_{1\ dB}$)	*100 W*	+49.5 (89)			dBm (W)
	125 W	+50.5 (112)			dBm (W)
	200 W	+52.0 (158)			dBm (W)
	*250 W **	+53.0 (200)			dBm (W)
	400 W	+55.5 (320)			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^2
	Ripple			1.0	ns p-p
AM/PM Conversion	At $P_{1\ dB}$		2.5	3.5	°/dB
Noise Figure at max. gain	Standard, *100-250 W*		8		dB
	Option 7, *100-250 W*		20		dB
	Standard, *400 W*		10		dB
	Option 7, *400 W*		15		dB
VSWR	Input, standard		1.25	1.30	:1
	Input, Option 7		1.35	1.50	:1
	Output		1.20	1.30	:1
Output Sample Port			-40		dBc
Connectors	Input		Type N Female		
	Output		CPR137G 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 180-270		Vac
	Frequency	47		63	Hz
	Power, *100 W*		650	900[A]	W
	Power, *125 W*		800	1200[A]	W
	Power, *200 W*		950	1400[A]	W
	Power, *250 W **		1000	1500[A]	W
	Power, *400 W*		2000	2400[A]	W
	Power factor corrected		0.97		
Cooling System			Forced air.		
Operating Temp. Range	Ambient air temperature	-40		+50	°C
Size	*100/125/200/250 W*		16.36 W x 25.67 H x 9.52 D		inches
	(Single-Module Design)		416 W x 652 H x 242 D		mm
	400 W		21.34 W x 29.38 H x 9.52 D		inches
	(Dual-Module Design)		542 W x 746 H x 242 D		mm
Weight	Approximate, *100-250 W*		53 (24)		lb (kg)
	Approximate, *400 W*		104 (47)		lb (kg)

† 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.

* Consult factory for 250 W extended band (Band "M").

[A] Cold start at 0 °C and Pout in saturation.

X-Band NEMA SSPA Specifications

Parameter	Conditions	Min	Nom/Typ†	Max	Units
Frequency Range	Band "B"	7.90		8.40	GHz
Input Frequency Range	with Opt. 7, Block Upconverter	950		1450	MHz
Gain (@ max. gain setting)		70			dB
Gain Adjust Range	Digital, 0.1 dB steps	20			dB
Gain Flatness	Full band, standard, *50-200 W*			±1.0	dB
	Full band, standard, *350 W*			±0.75	dB
	Full band, Opt. 7, *50-200 W*			±1.5	dB
	Full band, Opt. 7, *350 W*			±2.0	dB
	Per 40 MHz, standard			±0.3	dB
	Per 40 MHz, Option 7			±0.5	dB
Gain Stability vs. Temperature	-40 to +50 °C, standard		±1.0	±1.5	dB
	-40 to +50 °C, 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)
	350 W		+55.5 (350)		dBm (W)
Power Output, at 1 dB compression ($P_{1\ dB}$)	*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)
	350 W	+54.8 (300)			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^2
	Ripple			1.0	ns p-p
AM/PM Conversion	At $P_{1\ dB}$		2.5	3.5	°/dB
Noise Figure at max. gain	Standard, *50-200 W*		8		dB
	Option 7, *50-200 W*		20		dB
	Standard, *350 W*		10		dB
	Option 7, *350 W*		15		dB
VSWR	Input, standard		1.25	1.30	:1
	Input, Option 7		1.35	1.50	:1
	Output		1.20	1.30	:1
Output Sample Port			-40		dBc
Connectors	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, *50-200 W*		3-pos MS (mate supplied)		
	Power, *350 W*		4-pos MS (mate supplied)		
Power Requirements	Voltage, *50-200 W*		90-135 or 180-270		Vac
	Voltage, *350 W*	180		264	Vac
	Frequency	47		63	Hz
	Power, *50 W*		375	500[A]	W
	Power, *100 W*		600	900[A]	W
	Power, *125 W*		1000	1300[A]	W
	Power, *200 W*		1000	1500[A]	W
	Power, *350 W*		2000	3200[A]	W
	Power factor corrected		0.97		
Cooling System			Forced air.		
Operating Temp. Range	Ambient air temperature	-40		+50	°C
Size	*50/100/125/200 W*		16.36 W x 25.67 H x 9.52 D		inches
	(Single-Module Design)		416 W x 652 H x 242 D		mm
	350 W		21.34 W x 29.38 H x 9.52 D		inches
	(Dual-Module Design)		542 W x 746 H x 242 D		mm
Weight	Approximate, *50-200 W*		53 (24)		lb (kg)
	Approximate, *350 W*		104 (47)		lb (kg)

† 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 0 °C and Pout in saturation.

Parameter	Conditions	Min	Nom/Typ†	Max	Units
Frequency Range	Band "M"	14.00		14.50	GHz
	Band "O"	13.75		14.50	GHz
Input Frequency Range with Option 7, Block Upconverter	Band "M"	950		1450	MHz
	Band "O"	950		1700	MHz
Gain (@ max. gain setting)		70			dB
Gain Adjust Range	Digital, 0.1 dB steps	20			dB
Gain Flatness	Full band, standard			±1.0	dB
	Full band, Opt. 7, *40-100 W*			±1.5	dB
	Full band, Opt. 7, *200 W*			±2.0	dB
	Per 40 MHz, standard			±0.3	dB
	Per 40 MHz, Option 7			±0.5	dB
Gain Stability vs. Temperature	-40 to +50 °C, standard		±1.0	±1.5	dB
	-40 to +50 °C, Option 7		±2.0	±2.5	dB
Saturated Power Output	*40 W*		+46 (40)		dBm (W)
	50 W		+47 (50)		dBm (W)
	70 W		+48.5 (70)		dBm (W)
	*100 W **		+50 (100)		dBm (W)
	200 W		+53.0 (200)		dBm (W)
Power Output, at 1 dB compression ($P_{1\ dB}$)	*40 W*	+45 (32)			dBm (W)
	50 W	+46 (40)			dBm (W)
	70 W	+47.5 (56)			dBm (W)
	*100 W **	+49.0 (80)			dBm (W)
	200 W	+52.0 (159)			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^2
	Ripple			1.0	ns p-p
AM/PM Conversion	At $P_{1\ dB}$		2.5	3.5	°/dB
Noise Figure at max. gain	Standard, *40-100 W*		8		dB
	Option 7, *40-100 W*		20		dB
	Standard, *200 W*		10		dB
	Option 7, *200 W*		15		dB
VSWR	Input, standard		1.25	1.30	:1
	Input, Option 7		1.35	1.50	:1
	Output		1.20	1.30	:1
Output Sample Port			-40		dBc
Connectors	Input		Type N Female		
	Output		WR75G 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, *40-100 W*		90-135 or 180-270		Vac
	Voltage, *200 W*	180		264	Vac
	Frequency	47		63	Hz
	Power, *40 W*		450	575[A]	W
	Power, *50 W*		475	625[A]	W
	Power, *70 W*		550	700[A]	W
	Power, *100 W **		900	1200[A]	W
	Power, *200 W*		1950	2900[A]	W
	Power factor corrected		0.97		
Cooling System			Forced air.		
Operating Temp. Range	Ambient air temperature	-40		+50	°C
Size	*100/125/200/250 W*		16.36 W x 25.67 H x 9.52 D		inches
	(Single-Module Design)		416 W x 652 H x 242 D		mm
	400 W		20.00 W x 27.62 H x 9.30 D		inches
	(Dual-Module Design)		508 W x 701 H x 236 D		mm
Weight	Approximate, *40-100 W*		53 (24)		lb (kg)
	Approximate, *200 W*		83 (40)		lb (kg)

† 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.

* Consult factory for 100 W extended band (Band "O").

[A] Cold start at 0 °C and Pout in saturation.

Compact, Antenna-Mount SSPAs and Systems

Features

- Microprocessor-based monitor and control
- Serial interface (RS232/422/485) standard
- Output isolator for high load VSWR protection
- Temperature-compensated gain, -40 to +50 °C
- Digital gain adjustment (20 dB range)
- RF output sample port (-40 dBc)
- Output power monitoring
- Optional integrated block upconverter

These high-power solid-state power amplifiers are housed in a compact weatherproof enclosure that can be mounted in an antenna hub or outdoors close to the antenna in applications where it is desirable to reduce cable losses. The amplifiers feature a microprocessor-based M&C system that facilitates easy setup and control.

Available models provide up to 250 W saturated output power in C-band, up to 200 W in X-Band, and up to 70 W in Ku-band.

One-for-one redundancy control logic is built in, so no external controller is required for redundant systems. An optional maintenance switch is available for redundant systems to allow selection of the antenna or a dummy load at the system output.

All units can be configured with an optional internal L-Band block upconverter (BUC).

The RCP-2001 remote control panel is also available. This 1U rack panel duplicates all menus and functions available at the SSPA front panel for operation from a remote location up to 1.3 km (4000 ft.) away.

Part Number/Order Information — Consult factory for custom configurations.

C-Band SSPAs

PC☐6S050LA-☐☐ (50 W)
PC☐6S100LA-☐☐ (100 W)
PC☐6S125LA-☐☐ (125 W)
PC☐6S200LA-☐☐ (200 W)
PC☐6S250LA-☐☐ (250 W)

- 7 = L-Band BUC
- X = No BUC
- 4 = 1:1 Red.
- X = No 1:1
- D = 5.850–6.425 GHz
- M = 5.850–6.725 GHz

C-Band Redundant Systems

PRC☐☐050LA-☐☐ (50 W)
PRC☐☐100LA-☐☐ (100 W)
PRC☐☐125LA-☐☐ (125 W)
PRC☐☐200LA-☐☐ (200 W)
PRC☐☐250LA-☐☐ (250 W)

- A = Maint. Sw.
- X = No Switch
- 7 = L-Band BUC
- X = No BUC
- D = 5.850–6.425 GHz
- M = 5.850–6.725 GHz
- 1 = 1-for-1 Redundancy
- 2 = 1-for-2 Redundancy

X-Band SSPAs

PXB8S050LA-☐☐ (50 W)
PXB8S100LA-☐☐ (100 W)
PXB8S125LA-☐☐ (125 W)
PXB8S200LA-☐☐ (200 W)

- 7 = L-Band BUC
- X = No BUC
- 4 = 1:1 Red.
- X = No 1:1
- B = 7.90–8.40 GHz

X-Band Redundant Systems

PRX☐B050LA-☐☐ (50 W)
PRX☐B100LA-☐☐ (100 W)
PRX☐B125LA-☐☐ (125 W)
PRX☐B200LA-☐☐ (200 W)

- A = Maint. Sw.
- X = No Switch
- 7 = L-Band BUC
- X = No BUC
- B = 7.90–8.40 GHz
- 1 = 1-for-1 Redundancy
- 2 = 1-for-2 Redundancy

Ku-Band SSPAs

PK☐14S25LA-☐☐ (25 W)
PK☐14S35LA-☐☐ (35 W)
PK☐14S50LA-☐☐ (50 W)
PK☐14S70LA-☐☐ (70 W)

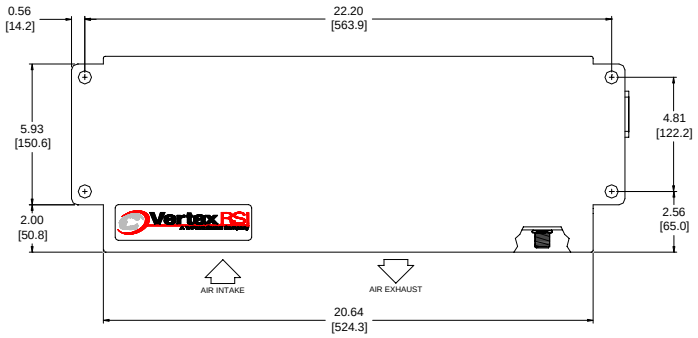
- 7 = L-Band BUC
- X = No BUC
- 4 = 1:1 Red.
- X = No 1:1
- M = 14.00–14.50 GHz
- O = 13.75–14.50 GHz

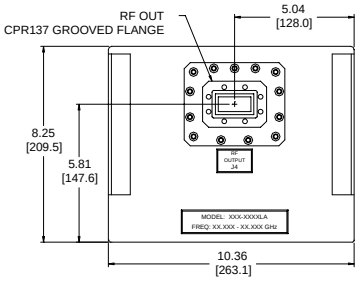
Ku-Band Redundant Systems

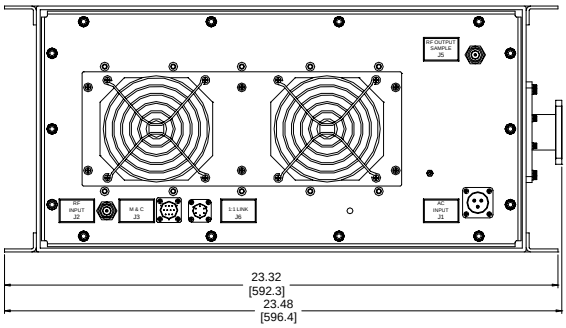
PRK☐☐25LA-☐☐ (25 W)
PRK☐☐35LA-☐☐ (35 W)
PRK☐☐50LA-☐☐ (50 W)
PRK☐☐70LA-☐☐ (70 W)

- A = Maint. Sw.
- X = No Switch
- 7 = L-Band BUC
- X = No BUC
- D = 5.850–6.425 GHz
- M = 5.850–6.725 GHz
- 1 = 1-for-1 Redundancy
- 2 = 1-for-2 Redundancy

Antenna-Mount SSPA (C-Band shown; X- and Ku-Bands are similar)







M&C (J3) Pinout

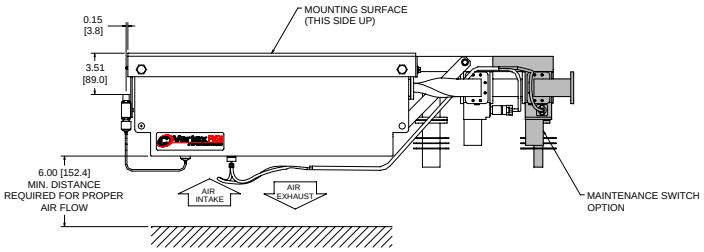
Serial I/O Tx +	A
Serial I/O Tx -	B
Serial I/O Rx -	C
Serial I/O Rx +	D
Serial I/O Rx Termination	J
Ground	E
Service Request (Form 'C' Output)	F - Closed on Svc Req
.	G - Common
.	H - Open on Svc Req
no connection/Ext. Fault (Opt.)	K

NOTES:

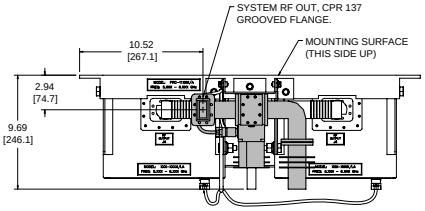
1. DIMENSIONS ARE IN INCHES [MM].
2. AIR INTAKE AND EXHAUST MUST NOT BE OBSTRUCTED.
3. APPROXIMATE WEIGHT IS 36 LB. (16 KG).

Antenna-Mount 1:1 Redundant System (C-Band shown; X- and Ku-Bands are similar)

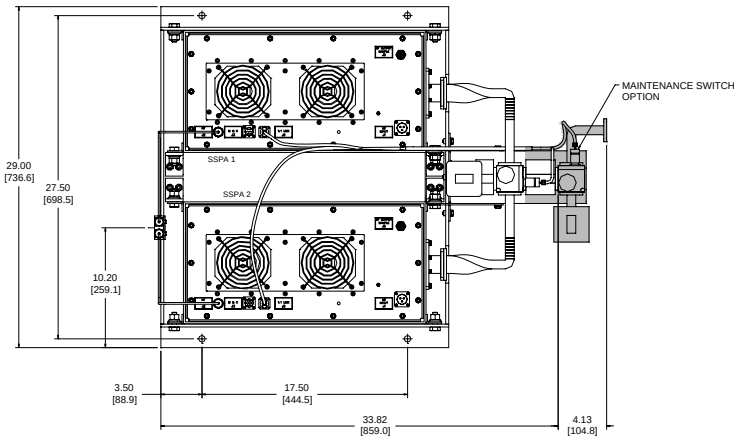
SIDE VIEW



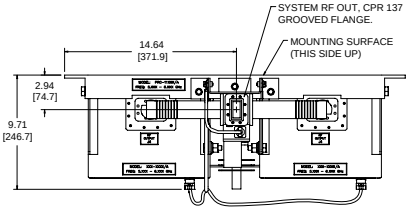
OUTPUT VIEW w/ MAINTENANCE SWITCH



BOTTOM VIEW



OUTPUT VIEW w/o MAINTENANCE SWITCH



NOTES:

1. OUTLINE OF PRC1_XXXLA SSPA SYSTEM WITH MOUNTING FRAME & OPTIONAL MAINTENANCE SWITCH.
2. ALL DIMENSIONS ARE IN INCHES AND [MILLIMETERS].
3. APPROXIMATE WEIGHT: 81 LBS. [179 kg].

C-Band Antenna-Mount SSPA Specifications

Parameter	Conditions	Min	Nom/Typ†	Max	Units
Frequency Range	Band "D" Band "M"	5.850 5.850		6.425 6.725	GHz GHz
Input Freq. Range with Option 7, BUC	Band "D" Band "M"	950 950		1525 1825	MHz MHz
Gain, at max. gain setting		75			dB
Gain Adjust Range		20			dB
Gain Flatness	Full band, standard Full band, with Option 7 Per 40 MHz, standard Per 40 MHz, with Option 7			±1.0 ±1.5 ±0.3 ±0.5	dB dB dB dB
Gain Stability vs. Temp.	-40 to +50 °C, standard -40 to +50 °C, with Option 7		±1.0 ±2.0	±1.5 ±2.5	dB dB
Saturated Power Output	*50 W* *100 W* *125 W* *200 W* *250 W*		+47 (50) +50 (100) +51 (125) +53 (200) +54 (250)		dBm (W) dBm (W) dBm (W) dBm (W) dBm (W)
Power Output, at 1 dB compression ($P_{1\ dB}$)	*50 W* *100 W* *125 W* *200 W* *250 W*	+46.5 (45) +49.5 (89) +50.5 (112) +52.0 (158) +53.0 (200)			dBm (W) dBm (W) dBm (W) dBm (W) dBm (W)
Two-tone Intermodulation	At 3 dB total backoff from 1 dB compression point		-30	-25	dBc
Group Delay	Linear Parabolic Ripple			0.03 0.003 1.0	ns/MHz ns/MHz^2 ns p-p
AM/PM Conversion	At $P_{1\ dB}$		2.5	3.5	°/dB
Noise Figure	At maximum gain, standard At max. gain, with Option 7		8 20		dB dB
VSWR	Input Input, with Option 7 Output		1.20 1.35 1.20	1.30 1.50 1.30	:1 :1 :1
Output Sample Port			-40		dBc
Connectors	Input Output Sample Port I/O Power		Type N Female CPR137G Waveguide Type N Female 10-pin MS, mate supplied 3-pin MS, mate supplied		
Power Requirements	Voltage Frequency Power, *50 W* Power, *100 W* Power, *125 W* Power, *200 W* Power, *250 W*	 47	90-135 or 180-265 450 650 750 950 1000	 63 500 900 1000 1400 [A] 1500 [A]	Vac Hz W W W W W
Power factor corrected		0.97			
Cooling System			Forced air		
Operating Temp. Range	Ambient air temperature	-40		+50	°C
Weight			36 (16)		lb (kg)
Dimensions	See outline drawing		8.25 x 23.48 x 10.36 210 x 596 x 263		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 0 °C and Pout in saturation.

Parameter	Conditions	Min	Nom/Typ†	Max	Units
Frequency Range	Band "B"	7.90		8.40	GHz
Input Freq. Range with Option 7, BUC	Band "B"	950		1450	MHz
Gain	At maximum 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 ($P_{1\ dB}$)	*50 W*	+46.5 (45)			dBm (W)
	100 W	+49.0 (80)			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^2
	Ripple			1.0	ns p-p
AM/PM Conversion	At $P_{1\ dB}$		2.5	3.5	°/dB
Noise Figure	At maximum gain, standard		8		dB
	At max. gain, with Option 7		15		dB
VSWR	Input		1.20	1.30	:1
	Input, with Option 7		1.35	1.50	:1
	Output		1.20	1.30	:1
Output Sample Port			-40		dBc
Connectors	Input		Type N Female		
	Output		CPR112G Waveguide		
	Sample Port		Type N Female		
	I/O		10-pin MS, mate supplied		
	Power		3-pin MS, mate supplied		
Power Requirements	Voltage		90-135 or 180-265		Vac
	Frequency	47		63	Hz
	Power, *50 W*		375	500 [A]	W
	Power, *100 W*		600	800 [A]	W
	Power, *125 W*		750	1000 [A]	W
	Power, *200 W*		850	1200 [A]	W
	Power factor corrected		0.97		
Cooling System			Forced air		
Operating Temp. Range	Ambient air temperature	-40		+50	°C
Weight			36 (16)		lb (kg)
Dimensions	See outline drawing		8.25 x 23.48 x 10.36		inches
			210 x 596 x 263		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 0 °C and Pout in saturation.

Ku-Band Antenna-Mount SSPA Specifications

Parameter	Conditions	Min	Nom/Typ†	Max	Units
Frequency Range	Band "M" Band "O"	14.0 13.75		14.5 14.5	GHz GHz
Input Freq. Range with Option 7, BUC	Band "M" Band "O"	950 950		1450 1700	MHz MHz
Gain, at max. gain setting	*25 W, 35 W* *50 W, 70 W*	70 75			dB dB
Gain Adjust Range		20			dB
Gain Flatness	Full band, standard Full band, with Option 7 Per 40 MHz, standard Per 40 MHz, with Option 7			±1.0 ±1.5 ±0.3 ±0.5	dB dB dB dB
Gain Stability vs. Temp.	-40 to +50 °C, standard -40 to +50 °C, with Option 7		±1.0 ±2.0	±1.5 ±2.5	dB dB
Saturated Power Output (See Note 1)	*25 W* *35 W* *50 W* *70 W*		+44 (25) +45.5 (35) +47 (50) +48.5 (70)		dBm (W) dBm (W) dBm (W) dBm (W)
Power Output, at 1 dB compression ($P_{1\,dB}$) (See Note 1)	*25 W* *35 W* *50 W* *70 W*	+43 (20) +44.5 (28) +46 (40) +47.5 (56)			dBm (W) dBm (W) dBm (W) dBm (W)
Two-tone Intermodulation	At 3 dB total backoff from 1 dB compression point		-30	-25	dBc
Group Delay	Linear Parabolic Ripple			0.03 0.003 1.0	ns/MHz ns/MHz^2 ns p-p
AM/PM Conversion	At $P_{1\,dB}$		2.5	3.5	°/dB
Noise Figure	At maximum gain, standard At max. gain, with Option 7		8 20		dB dB
VSWR	Input Input, with Option 7 Output		1.20 1.35 1.20	1.30 1.50 1.30	:1 :1 :1
Output Sample Port			-40		dBc
Connectors	Input Output Sample Port I/O Power		Type N Female WR75G Waveguide Type N Female 10-pin MS, mate supplied 3-pin MS, mate supplied		
Power Requirements	Voltage Frequency Power, *25 W* Power, *35 W* Power, *50 W* Power, *70 W* Power factor corrected	 47	90-135 or 180-265 300 450 580 650 0.97	 63 375 [A] 475 [A] 675 [A] 750 [A]	Vac Hz W W W W
Cooling System			Forced air		
Operating Temp. Range	Ambient air temperature	-40		+50	°C
Weight			36 (16)		lb (kg)
Dimensions	See outline drawing		8.25 x 23.48 x 10.36 210 x 596 x 263		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 0 °C and Pout in saturation.

Note 1: Between 14.0 and 14.5 GHz; 1 dB lower between 13.75 and 14.0 GHz for Band "O" amplifiers.

Related Accessory—RCP-2001 Remote Control Panel

VertexRSI's RCP-2001 Remote Control Panel allows you to easily monitor and control a VertexRSI Solid-State Power Amplifier from a remote location. The RCP-2001 enables remote, real-time operation of a single SSPA, which is especially convenient for antenna-mount and outdoor installations where the SSPA may be located in an inaccessible or inconvenient location.

Features

- Duplicates SSPA front panel controls and menu structure for commands and status display
- Provides customer serial I/O (RS-232/-422/-485) and optional parallel I/O port
- Audible alarm
- Worldwide AC input capability
- Can be located up to 1.3 km (4000') from SSPA; linked with inexpensive cable

RCP-2001 Specifications

Parameter	Notes	Min	Nom/Typ	Max	Units
Power Requirements	Voltage, Standard	85		265	Vac
	Frequency	47		440	Hz
	Power			13.5	W
	Voltage, w/Option 5	20		32	Vdc
	Voltage, w/Option 6	42		56	Vdc
Operating Temperature Range		0		+50	°C
SSPA Link Cable Length		—		4000 (1.3)	feet (km)
Size			19 W x 1.72 H x 17.52 D		inches
			482.6 W x 43.7 H x 445 D		mm

Part Number/Order Information

RCP-2001

Options

1	Rack Slides
3	Parallel I/O
5	DC Power 24 V
6	DC Power 48 V

Order cable ACAB-13135-x separately (where 'x' denotes length in feet).

For more information ...

For more information about VertexRSI solid-state power amplifiers, including our ModuMAX™ and QuadMod™ product lines, or to arrange for a demonstration unit, please contact the VertexRSI Sales department in State College, Pennsylvania, at 814-238-2700.

General Dynamics C4 Systems offers a family of satellite and wireless communications products under its VertexRSI, Prodelin, and Gabriel brands. Visit our website at *http://www.gdsatcom.com*.

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C4 Systems

VertexRSI
2120 Old Gatesburg Road
State College, PA 16803 USA
Telephone 814-238-2700
Fax 814-238-6589
www.gdsatcom.com

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