TELEDYNE
PARADISE DATACOM
Everywhereyoulook™

6RU Rack Mountable
GaAs Solid State Power Amplifier

1.1 kW C-Band High Power SSPA

FEATURES

- Extremely High Power Density:
  to 1.1 kW C-Band;
  to 1000W X-Band;
  to 500W Ku-Band.
- Hot Swap, n+1 Redundant Power Supply
- Power Factor Corrected Power Supply
- Modular (soft-fail) Architecture
- Front Panel Touchscreen
- Removable fan assemblies
- Ethernet Port
- RF Output Sample Port
- Built-in 1:1 Redundancy Control
- Built-in Maintenance Switch Controller

OPTIONS

- Extended Frequency Band
- L-Band Input operation
- Reflected Power Monitor
- Phase Combined Systems
- Remote Control Panel
- RF Input Sample Port
- Rear Panel Exhaust

SPECIFICATIONS

- SSPA Chassis housing:
  19.0 X 10.47 X 30.25 in
  483 X 266 X 768 mm
  180 lbs. / 82 kg
- 1RU Power Supply:
  19.0 X 1.75 X 16.30 in
  483 X 45 X 414 mm
  33 lbs. / 15 kg
- Gray powder coat finish
- Operating temperature:
  0 to +50 °C

DESCRIPTION

Teledyne Paradise Datacom's Indoor, High Power Rack Mount (R) series SSPAs represent the industry's highest power density and most reliable high power amplifier systems. These high power amplifiers are accompanied with a separate 1RU power supply chassis.

The power supply is configured as a n+1 redundant, hot swappable power supply comprised of up to four modules. The power supply is populated with one module more than needed to power the HPA. In the event of a single power supply module failure, the amplifier system will not fail. The power supply module can be changed without ever taking the HPA out of service. The microwave amplifier architecture is also designed for maximum soft fail redundancy.

The High Power Rack Mount SSPA employs a modular design, which allows quick and easy replacement in the event of a catastrophic failure of one of the SSPA components. These modular assemblies include: front and rear fan trays; and a rear panel controller card.

Specifications, C-Band SSPAs

PARAMETER	NOTES	LIMITS	UNITS
Frequency Range	Frequency selection “A” Frequency selection “B” [1] Frequency selection “C” Frequency selection “E” Frequency selection “F” Frequency selection “G”	5.850 to 6.425 5.850 to 6.725 5.750 to 6.670 6.425 to 6.725 6.725 to 7.025 5.750 to 6.475	GHz GHz GHz GHz GHz GHz
Output Power Typical, P_{sat} Guaranteed minimum, P_{1dB}	 HPAC6800ARXXXXP HPAC6900ARXXXXP HPAC611KARXXXXP	P_{sat} / P_{1dB} 59.0 (800) / 58.0 (630) 59.5 (900) / 58.5 (700) 60.4 (1100) / 60.0 (1000)	 dBm (W) dBm (W) dBm (W)
Power Requirements Line Frequency Line Power (Voltage) (typical @ 220 VAC)	power factor HPAC6800ARXXXXP HPAC6900ARXXXXP HPAC611KARXXXXP	.98 47 to 63 4150 (180 to 265) 4850 (180 to 265) 6000 (180 to 265)	 Hz W (VAC) W (VAC) W (VAC)

Note 1: De-rate output power by 1 dB linearly from 6.425 to 6.725 GHz.

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General Specifications: 6RU RM Series

PARAMETER	NOTES	LIMITS	UNITS
Gain Gain Flatness Gain Slope Gain Variation vs. Temperature Gain Stability Gain Adjustment	minimum full band Extended C-Band units per 40 MHz 0 °C to +50 °C at constant temperature 0.1 dB resolution	75 ± 1.0 ± 1.5 ± 0.3 ± 1.0 ± 0.25 20	dB dB dB dB/40 MHz dB dB/24 hours dB
Intermodulation Distortion	3dB back off relative to P_{1dB}	-25	dBc
AM/PM Conversion	(@ rated P_{1dB}) (@ P_{1dB} - 3 dB)	3.5 0.5	°/dB °/dB
Spurious Harmonics	(@ rated P_{1dB}) (@ rated P_{1dB} - 3 dB)	-65 -50	dBc dBc
Input/Output VSWR	All units except Extended C-Band Extended C-Band units[1]	1.30:1 1.50:1	
Noise Figure	at maximum gain	12	dB
Group Delay (per 40 MHz segment)	Linear Parabolic Ripple	0.01 0.003 1.0	ns/MHz ns/MHz^2 ns p-p
Noise Output	TX Band RX Band	-75 -150	dBW/4 KHz dBW/4 KHz
Output Isolation	@ full reflected power	25	dB
Residual AM Noise	0 - 10 KHz 10 KHz - 500 KHz 500 KHz - 1 MHz	-45 -20 (1.25 + log F) -80	dBc dBc dBc
Phase Noise		IESS –308/309 - 10 dB	

Mechanical

Size HPA Chassis (6RU)	width X height X depth	19.0 X 10.47 X 30.25 483 X 266 X 768	inches mm
Power Supply Chassis (1RU)	width X height X depth	19.0 X 1.75 X 16.30 483 X 44 X 414	inches mm
Weight HPA Chassis Power Supply Chassis (1RU)	 Chassis plus four (4) modules	 180 (82) 33 (15)	 lbs.(kg) lbs.(kg)
Finish		powder coat	Gray

Environmental

Operating Temperature	Ambient	0 to +50	°C
Operating Relative Humidity	Non-condensing	95	%
Operational Altitude	Above sea level	10,000 (3,048)	ft. (m)
Storage Temperature	Ambient	-20 to +75	°C
Storage Relative Humidity	Non-Condensing	90	%
Cooling System	Integrated	Forced air	

L-Band Operation

Teledyne Paradise Datacom amplifiers are available with an integrated L-Band Block Up Converter. L-Band units utilize Teledyne Paradise Datacom's proprietary zBUC technology. The addition of a zBUC® converter to the SSPA typically increases the gain by 2-4 dB. The advantages of zBUC technology include:

- zBUC converter can detect and switch to an extenally supplied reference.
- Optional internal high stability (10MHz) reference.
- zBUC converter can lock to an externally supplied reference of 10 MHz or 50 MHz.
- zBUC converter can accept a wide range of external reference power (-10 to +5 dBm).

Available Frequency Plans

Band	Frequency Band	IF Input	LO Frequency	RF Output	Gain Change
C	Sub-Band "A"	950 - 1525 MHz	4.900 GHz	5.850 - 6.425 GHz	0-4 dB
C	Sub-Band "B"	950 - 1825 MHz	4.900 GHz	5.850 - 6.725 GHz	0-4 dB
C	Sub-Band "C"	950 - 1870 MHz	4.800 GHz	5.750 - 6.670 GHz	0-4 dB
C	Sub-Band "E"	950 - 1250 MHz	5.475 GHz	6.425 - 6.725 GHz	0-4 dB
C	Sub-Band "F"	950 - 1250 MHz	5.775 GHz	6.725 - 7.025 GHz	0-4 dB
C	Sub-Band "G"	950 - 1675 MHz	4.800 GHz	5.750 - 6.475 GHz	0-4 dB

Electrical Specifications for 6RU RM SSPA with ZBUC converter

PARAMETER	NOTES	LIMITS		UNITS
Gain	Nominal setting	75		dB
Gain Flatness	full band	± 2.0		dB
Gain Slope	per 40 MHz	± 0.5		dB/40 MHz
Gain Adjusted Range		20		dB
	Typical C-Band Adj. Range	60 - 80		dB
	-40 to +60 °C	± 1.5		dB
Gain Stability				
Phase Noise	Offset frequency from carrier	Absolute max.	C-band (typ.)	
	10 Hz	-30	-60	dBc/Hz
	100 Hz	-60	-74	dBc/Hz
	1 KHz	-70	-84	dBc/Hz
	10 KHz	-80	-100	dBc/Hz
	100 KHz	-90	-105	dBc/Hz
	1 MHz	-90	-125	dBc/Hz
Spurious	In-Band Signal Related (C-Band)		-50	dBc
	(Extended C-Band)		-40	dBc
	Close to Carrier Spurious (≤ 20 MHz)		-50	dBc
	Local Oscillator		-30	dBm
Noise Figure	At Maximum gain		20	dB
Transmit Band Noise Output Power Density	Tx Band at Maximum gain		-65	dBW/4kHz
Input VSWR	L-Band		1.5 : 1	
Internal Reference Option	Reference Accuracy (initial)		$\pm 1 \cdot 10^{-8}$	
	Aging per day (after 30 days)		$\pm 1 \cdot 10^{-9}$	
	Aging per year (after 30 days)		$\pm 6 \cdot 10^{-8}$	
	Reference Stability over Temperature (-40 to +40 °C, ambient)		$\pm 1 \cdot 10^{-8}$	

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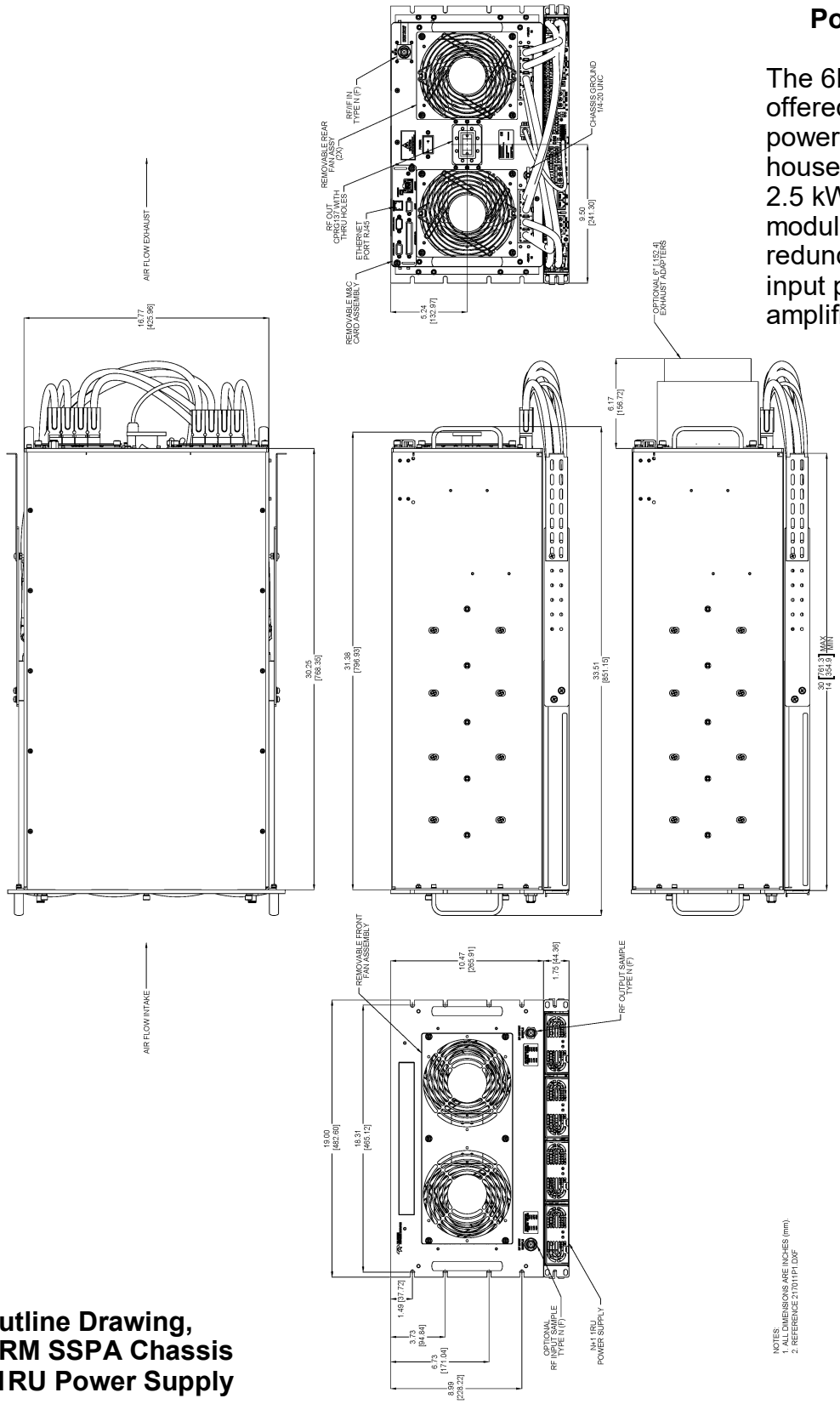

Outline Drawing, 6RU RM SSPA Chassis and 1RU Power Supply

Power Supply

The 6RU Chassis is offered with a 1RU power supply which houses up to four (4) 2.5 kW power supply modules, giving N+1 redundancy on the input power for the amplifier.

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Part Number Configuration Matrix

Power Level (Watts)	
C-Band	**800, 900, 1100 (11K)**

System Configuration	
R	Standalone amplifier

See the following datasheets for system options:
- Indoor Rack Mount Redundant SSPA Systems (203583)
- Indoor Rack Mount Phase Combined SSPA Systems (203584)

Rack Height	
6RU	**6**

Band	
C-Band	**C**

Block Up Converter	
M	Internal Reference BUC
P	External Reference BUC
X	No BUC

MODEL: HPA

C	6	8	0	0	A	R	M	X	X	X	P

Frequency Sub Band	
C-Band	
A[1]	5.850 to 6.425 GHz
B[1]	5.850 to 6.725 GHz
C[1]	5.750 to 6.670 GHz
E[1]	6.425 to 6.725 GHz
F[1]	6.725 to 7.025 GHz
G	5.750 to 6.475 GHz

[1] Available with optional BUC

Configuration Modifier 3	
P	Standard (N+1 Power Supply)
L	N+1 P.S. + Rear Exhaust Adapters

Configuration Modifier 2	
X	Standard
V	Reflected Power Monitor

Standalone Unit	
X	Standalone amplifier

Configuration Modifier 1	
X	Standard
S	Input Sample Port

Example - A standalone 800W GaAs C-Band 6RU Rack Mount SSPA with standard N+1 external power supply and an optional internal reference block up converter is part number: **HPAC6800ARMXXXP**.

COMMENTS:

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Data Security: Teledyne Paradise Datacom amplifiers and controllers do not inherently provide encryption to transmitted data, and have limited security measures to protect it. If the unit will be accessible over the Internet, exercise appropriate data security protocols. Teledyne Paradise Datacom strongly recommends placing the equipment behind a protective Firewall or setting up a VPN link with dual authentication for remote access.

Specifications are subject to change without notice.