

Revision 0.a Release Date Jan 2008

Revision Notes Initial Release

## Technical Specifications Summary

Frequency Range:	500 - 1000 MHz	Gain:	60 dB
P1dB:	1000 Watts CW	Efficiency:	28% (system)
Class:	AB	Temperature Range:	-18 to 55°C
Supply Voltage:	220V / 1 Phase	Max VSWR:	infinite

## Amplifier General Description

The SCA Series of broadband LDMOS based amplifiers offer high performance and high reliability in a compact form factor. Based on our custom manufactured bonded fin, oversized heatsink, this design is capable of dissipating 25% more heat than the design requires. This overhead ensures low device temperatures for increased reliability. Using advanced thermal modeling software, RF Amplifiers and other heat generating components are placed carefully on both sides of the heatsink to minimize thermal density.

Using all gold metallized LDMOS transistors, and highly efficient broadband matched amplifiers, this system offers an excellent balance of linearity and efficiency. The PAB series controller monitors all critical amplifier functions, and will protect the amplifier against external faults such as excessive VSWR, overtemperature, AC line faults. In the event of an internal fault, including damaged amplifier, damaged fan or block airflow, damaged power supply, the controller reduces output power to keep amplifier operational.

Front panel and remote control are standard, as well as a number of optional communications protocols including parallel, TTL, Ethernet, RS-485, etc. Additional options include mechanical switch networks, filters, and fast PIN diode T/R switches.

## Amplifier Picture

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Parameter	Min	Typ	Max	Units	Notes
Frequency	500		1000	MHz	
P1dB	1000	1200			W, CW
Psat		1370		W,CW	Software limited to 1100W
Output VSWR			2:1		For full rated power delivered
Output VSWR			3:1		Power gracefully reduced from 2:1
IMD3		-28		dBc	For 2 tones, 10kHz spacing, 1kW PEP
Power Input		0		dBm	Optional 10dBm, 20 dBm
Gain	60		64	dB	
Gain Variation		±2.0		dB	ALC off
Vsupply		30		V, DC	For internal RF Modules, Fans
Drain Current		125		A, DC	1000W O/P 1:1 VSWR
Efficiency	28	34		%	Module - DC
Input VSWR			1.5:1		
Insertion Phase Variation		±5		°	Unit to unit
Spurious			-60	dBc	
Harmonic Distortion			-50	dBc	Above 1100 MHz
RF Switch time, On-Off			50	uS	90 - 10 %

All specifications valid for 50 Ω load.

Parameter	Min	Typ	Max	Units	Notes
Form Factor	19" IEC Rackmount Cabinet 6U - RF Cabinet 1U - Power Supply				
Weight		132		lbs	
Operating Temperature	-18		60	°C	
Storage Temperature	-20		85	°C	
Altitude	0		10000	Ft ASL	Derate Max Operating Temperature to 40°C linearly from 8000 Ft to Max
Relative Humidity	5		95	%	Non condensing
Shock	Designed to meet MIL-883-C Method 516.2 Proc 2				
Vibration	Normal Truck Transport				
Control Connector	DB-9 Male				Optional RJ-45 10B-t Ethernet
Mains AC Connector	HBL-30				Optional MS-Circular
RF Input Connector	N-Female				Optional SMA-F, TNC-F
RF Output Connector	7/16 DIN Female				Optional SC-F

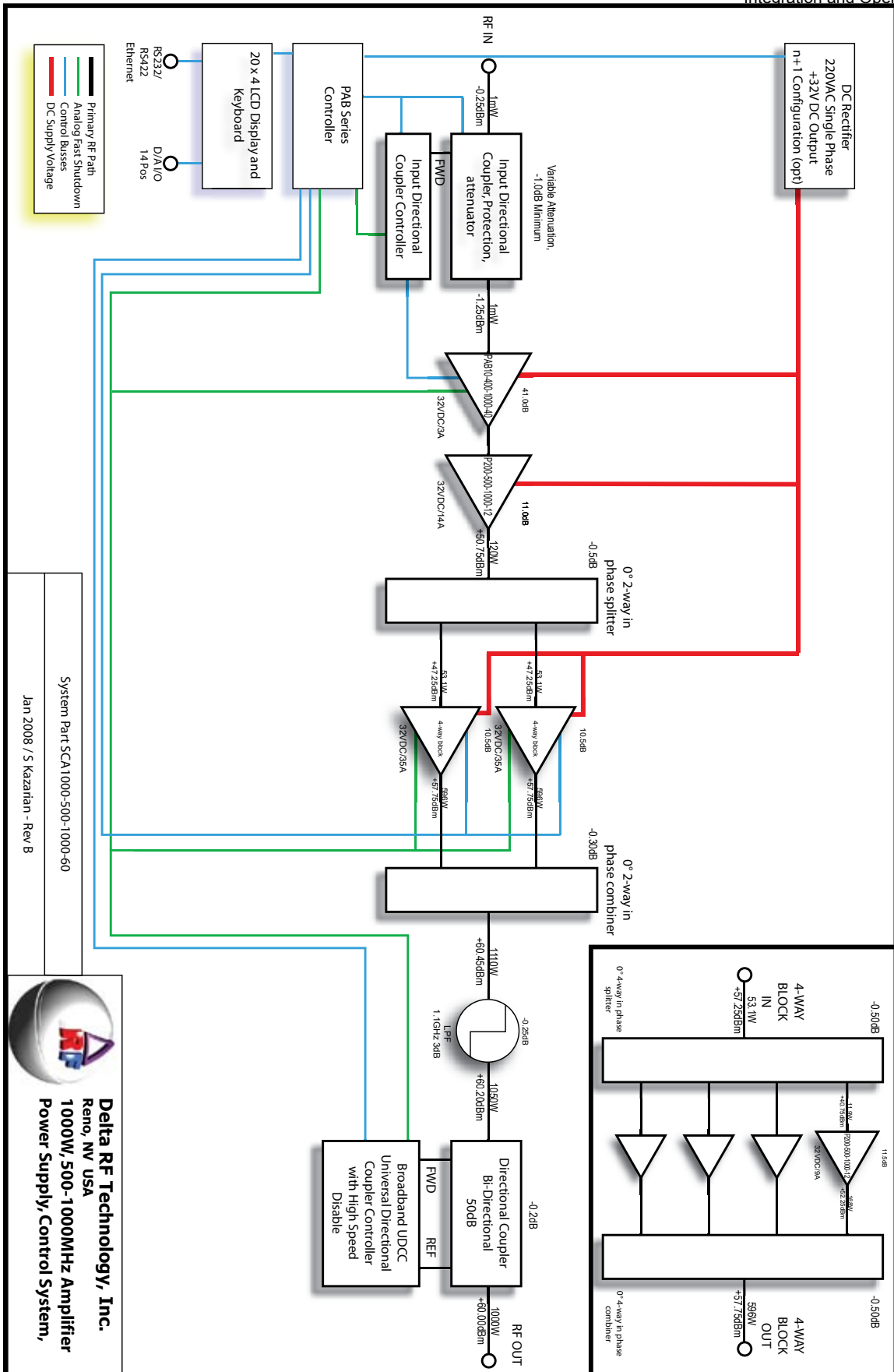


Parameter	Value	Units	Notes
Operating Voltages	180 - 248	V AC	Single Phase, 47 - 63 Hz
Maximum Power Consumption	5000	W	
Maximum Current	23	A AC	220V
Maximum Input Power	10	dBm	For normal operation at max power
Maximum Input Power	30	dBm	No amplifier damage
Load mismatch survival	$\infty$ : 1		

Parameter	Min	Typ	Max	Units	Notes
Detector Type	Logarithmic Amplifier, RMS				ALC & Detector Information
ALC Modes	Constant Gain (ALC Disabled) Constant Power				
Input Attenuator Range	0 - 10dB, continuous				Can be programmed for discreet power levels
Forward Power Accuracy		$\pm 25$	$\pm 50$	Watts	1000W, 50 $\Omega$
Reflected Power Accuracy		$\pm 30$	$\pm 63$	Watts	100W, 50 $\Omega$
Input Power Accuracy		$\pm 2.5$		dBm	
Forward Power Trip - Hardware	1050		1100	Watts	50 $\Omega$
Reflected Power Trip - Hardware	115		150	Watts	Referenced to 50 $\Omega$
Forward Power Trip - Software		1050		Watts	50 $\Omega$
Reflected Power Trip - Software		120		Watts	Referenced to 50 $\Omega$
Voltage - Driver, PA, PS		2	5	%	
Current - Driver, PA, PS		2	5	%	

- ◆ Standard Communications Serial RS-232. optional 10 Base-T Ethernet, Telnet interface. Windows based program optional.
- ◆ Optional RS-422, RS-232 Serial and / or Parallel interface
- ◆ Output Connector 7/16- DIN Female
- ◆ Input Connector N-Female
- ◆ Interface Connector, DB-9. RS-232, optional RJ-45
- ◆ BITE Functions include Current, Voltage, Temperature, VSWR, Input Power, Output Power, Power Supply
- ◆ 14 Pin Analog / Digital Parallel interface Bus - For integration with exciter / radio / external control
- ◆ All interconnect RF and IO cables included
- ◆ Airflow from front of PA / PSU units and exhausts through rear of amplifier
- ◆ AC Inputs Hubbel 30A, or optional MS-Circular connectors



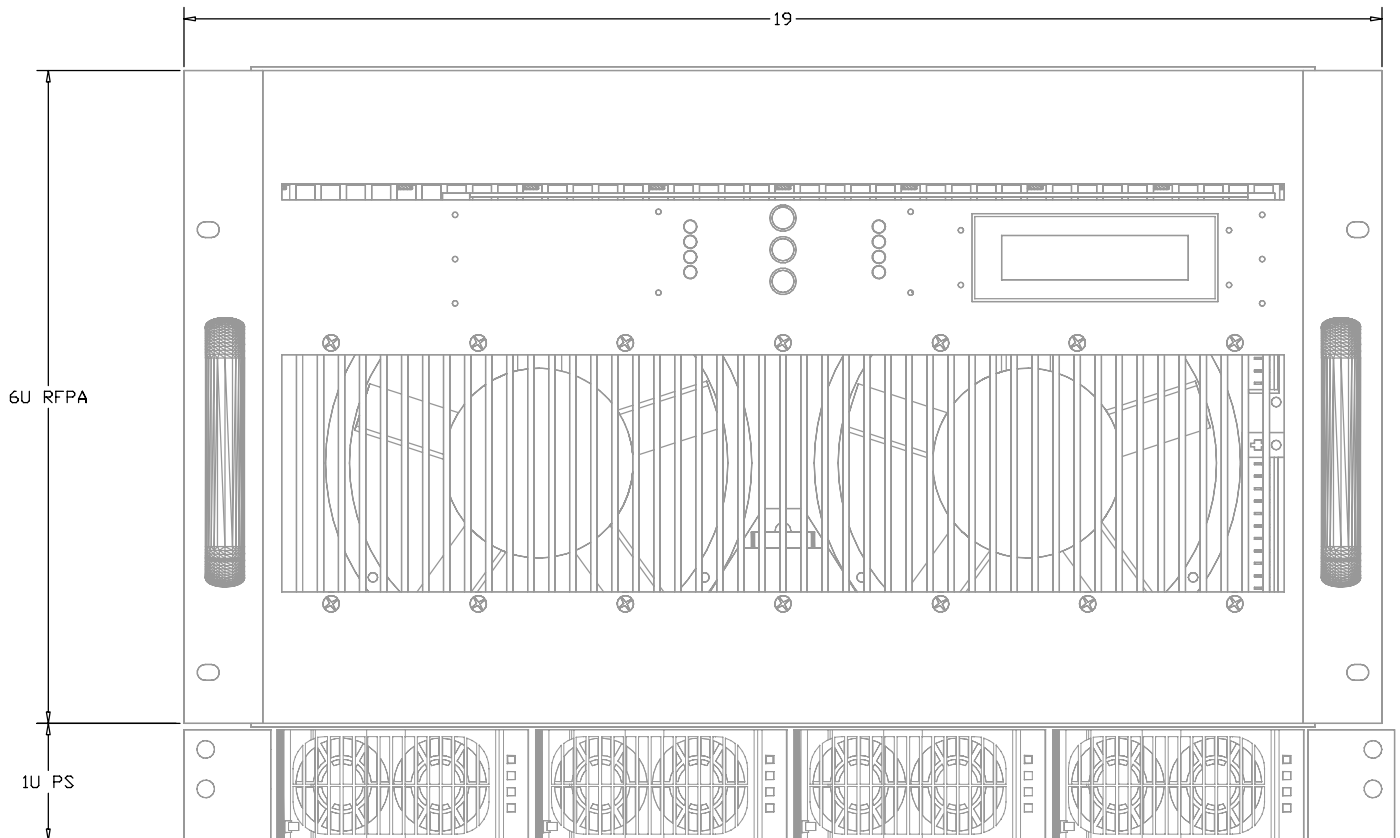


System Part: SCA1000-500-1000-60  
 Jan 2008 / 5 Kazanian - Rev B



**Delta RF Technology, Inc.**  
 Reno, NV USA  
**1000W, 500-1000MHz Amplifier**  
 Power Supply, Control System,

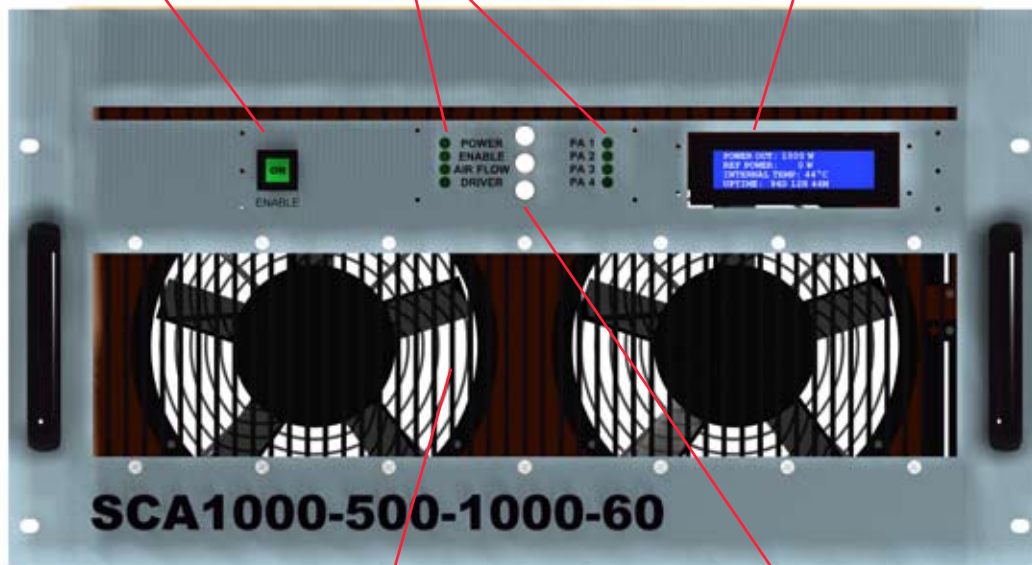




System Enable

Bi Color LED Status Indicators

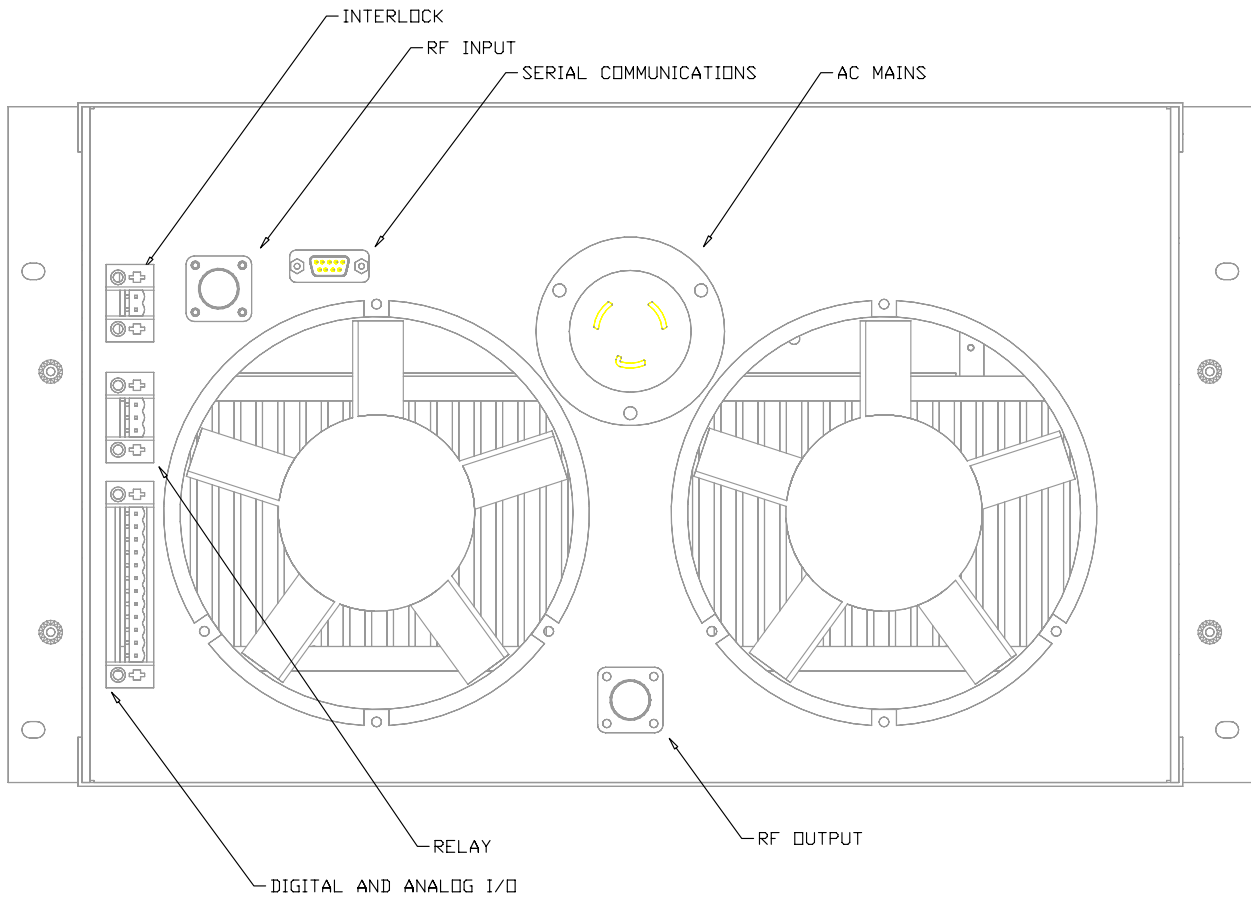
LCD Display

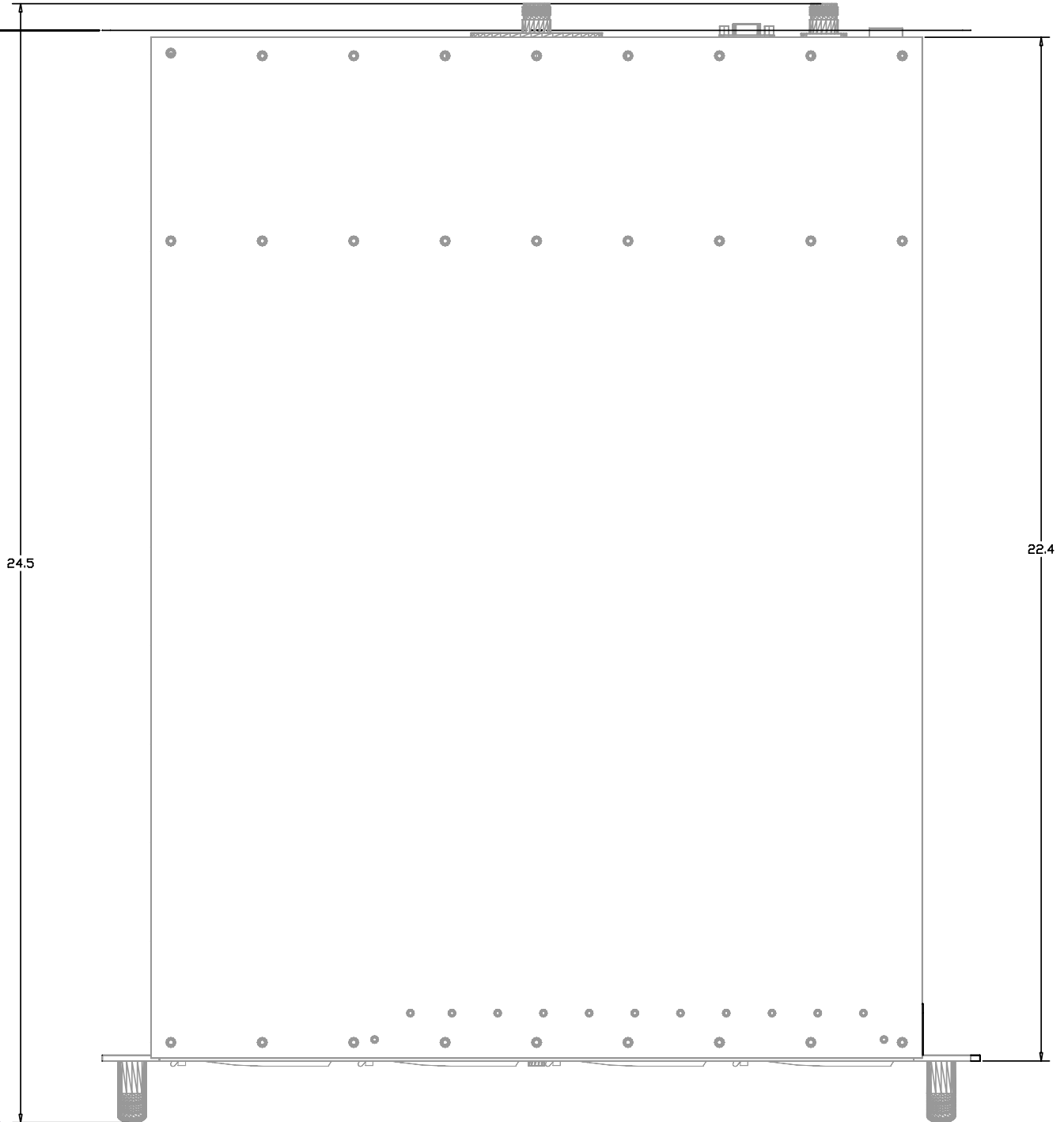


Air Intake

Push Button Control







## Front Panel Displays:

- \* Forward Power (watts)
- \* Reflected Power (watts)
- \* Input Power (watts)
- \* Up-time (d h m)
- \* Event Log
- \* PA voltages, Driver Voltage, PA Currents, Driver Current, PA Temperatures, Driver Temperature
- \* Chassis Temperature
- \* Module Serial Numbers

## Error Trapping:

- \* Output Power too high (power reduced 3dB, second trip disabled)
- \* Reflected Power too high (2:1, power reduced 3dB, second trip disabled)
- \* Input Power too high (disabled)
- \* PS Failure (Over voltage, PS Failure, PS Fan Failure)
- \* Fan Failure (reduce output power 3dB, if temp continues to rise, power off)
- \* Overtemperature (reduce output power 3dB, if temp continues to rise, power off)
- \* Too many password attempts (can only be re-enabled through front panel)

## Other front panel functions:

- \* Enter password for operation
- \* Disable / Enable remote control
- \* Amplifier On / Off
- \* Calibrate Directional Couplers
- \* Change Password - Remote and Front Panel
- \* Set system time and date

## Remote Control Functions: (9600/8/N/1)

- \* ON - Enables Amplifier
- \* OFF - Disables Amplifier, and resets error condition
- \* STATUS - Displays complete amplifier and module status, including power levels, voltages, currents, temperatures
- \* LOG - lists last log entry
- \* LOG xx - lists xx log entries - up to 1000

Please note - this is an abbreviated list, please refer to complete PAB series SCD which covers all possible functions.



**Ordering Information:**

Order Code	Description	DRFT Reference
SCA1000-500-1000-60	Self Contained UHF Amplifier, 1kW, 500 - 1000 MHz	5101
<b>Options</b>		
-A14	Ruggedized for vibration and harsh environment	0204
-T2	Extended Burn In	0271
-T3	Extended Data Collection	0272

**Standard Options:**

**Ruggedized** - all screws have threadlocking compound applied, and all flying components are staked and attached to base. Designed to withstand MIL-STD-810E 514.4 Category 8.

**Testing Options:**

**Standard** - includes power test and brief burn - in under laboratory conditions. Printed test report gives graph of Gain and Input Return Loss at rated P1dB and Voltage Conditions. Report shows pass/fail criteria. All amplifiers include this test.

**Extended burn in** - 8-hour burn in at P1dB with standard test run at completion. Unit is monitored during test and any discrepancy reported. Standard test data is included.

**Extended data collection** - Standard data is run and included. Detailed data is taken point by point giving the customer 25 - 70 frequency points, depending on the amplifier model. For each frequency point, data is generated to include gain, input power, input return loss, current, second harmonic, third harmonic, efficiency, audio distortion.

Other tests available - Vibration, Temp cycling, Shock. Please inquire.

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