

Revision 0.b Release Date Jan 2008

Revision Notes Updated mechanicals, performance specifications

Technical Specifications Summary

Frequency Range:	1.5 - 30 MHz	Gain:	67dB
P1dB:	5000 Watts CW	Efficiency:	25% (system)
Class:	AB	Temperature Range:	-20 to 55°C
Supply Voltage:	240V / 3 Phase	Max VSWR:	5:1

Amplifier General Description

This 5kW broadband HF solid state amplifier offers modular simplicity and excellent performance. Based on our P300-2-30-18 MOSFET Pallet amplifier, in production for over 10 years, and our PAB control system, this amplifier offers ruggedness and reliability.

Integrated into this amplifier are high efficiency switching power supplies in an n+2 configuration. Twelve hot swappable power supplies have 8% headroom, and two additional online spares ensure uninterrupted high power operation. Up to two individual power supplies can fail before the system's maximum power is affected (CW mode). Our PAB series controller will keep the system operational in the event of power supply or amplifier failure at highest possible power levels.

The system design features 9.5kW of silicon to achieve 5kW output power - the end result is an extremely robust amplifier capable of driving poor loads safely. In-phase isolated combiners at the amplifier and system level allow operation even if individual pallet amplifiers are damaged. Our driver chain uses full class A linear amplifiers, and output stages offer Class AB linear amplifiers for an ideal balance between efficiency and linearity. This system is suitable for use in AM and FM communications systems.

The PAB controller monitors all individual amplifiers, combiners, input power, output power, reflected power, temperatures and reports status on front panel and to the primary controller. The Primary Controller monitors all of the amplifier blocks as well as the power supplies, and reports status on all components on an easy to use 7" touch panel interface.

This amplifier is provided in a 40U ruggedized rack standard. An optional 45U rack can be provided with an optional exciter / radio.

Amplifier Picture



Delta RF Technology, Inc.

High Power RF Amplifiers and Accessories

350 South Rock Boulevard • Reno • NV • 89502 • USA

Phone +1.775 DELTA RF [775 335 8273]

Fax +1.775 DELTA FX [775 335 8239]

website: <http://www.drft.com>

email: sales@drft.com

Parameter	Min	Typ	Max	Units	Notes
Frequency	1.5		30	MHz	
P1dB	5000			W, CW	
Psat		6000		W,CW	Software limited to 5500W
Output VSWR			2:1		For full rated power delivered
Output VSWR			3:1		Power gracefully reduced from 2:1
Maximum VSWR			5:1		Amplifier is disabled above this VSWR
IMD3			-30	dBc	For 2 tones, 10kHz spacing, 5kW PEP
Power Input		25		dBm	Radio dependent, up to 100W CW
Gain		45		dB	Set to match radio parameters
Gain Variation		±1.5		dB	ALC off
Vsupply		48		V, DC	For internal RF Modules, Fans
Drain Current			380	A, DC	5000W O/P 1:1 VSWR
Power Consumption			15kVA	kVA	AM, SSB
Efficiency		45		%	Module - DC
Input VSWR			1.5:1		
Insertion Phase Variation		±5		°	Unit to unit
Spurious			-60	dBc	* Contribution from amplifier
Harmonic Distortion			-60	dBc	After LPF

All specifications valid for 50 Ω load.

Parameter	Min	Typ	Max	Units	Notes
Form Factor	19" IEC Rackmount Cabinet 40U Height 1 Cabinet - 73" H				
Weight		22" Wide, 860		32" Depth lbs	
Operating Temperature	-20		55	°C	
Storage Temperature	-30		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	RJ-45 10B-t Ethernet				Control, Communications, Status
Mains AC Connector	Hard wire				
RF Input Connector	N-Female				
RF Output Connector	7/8 EIA-Flange				If no radio installed



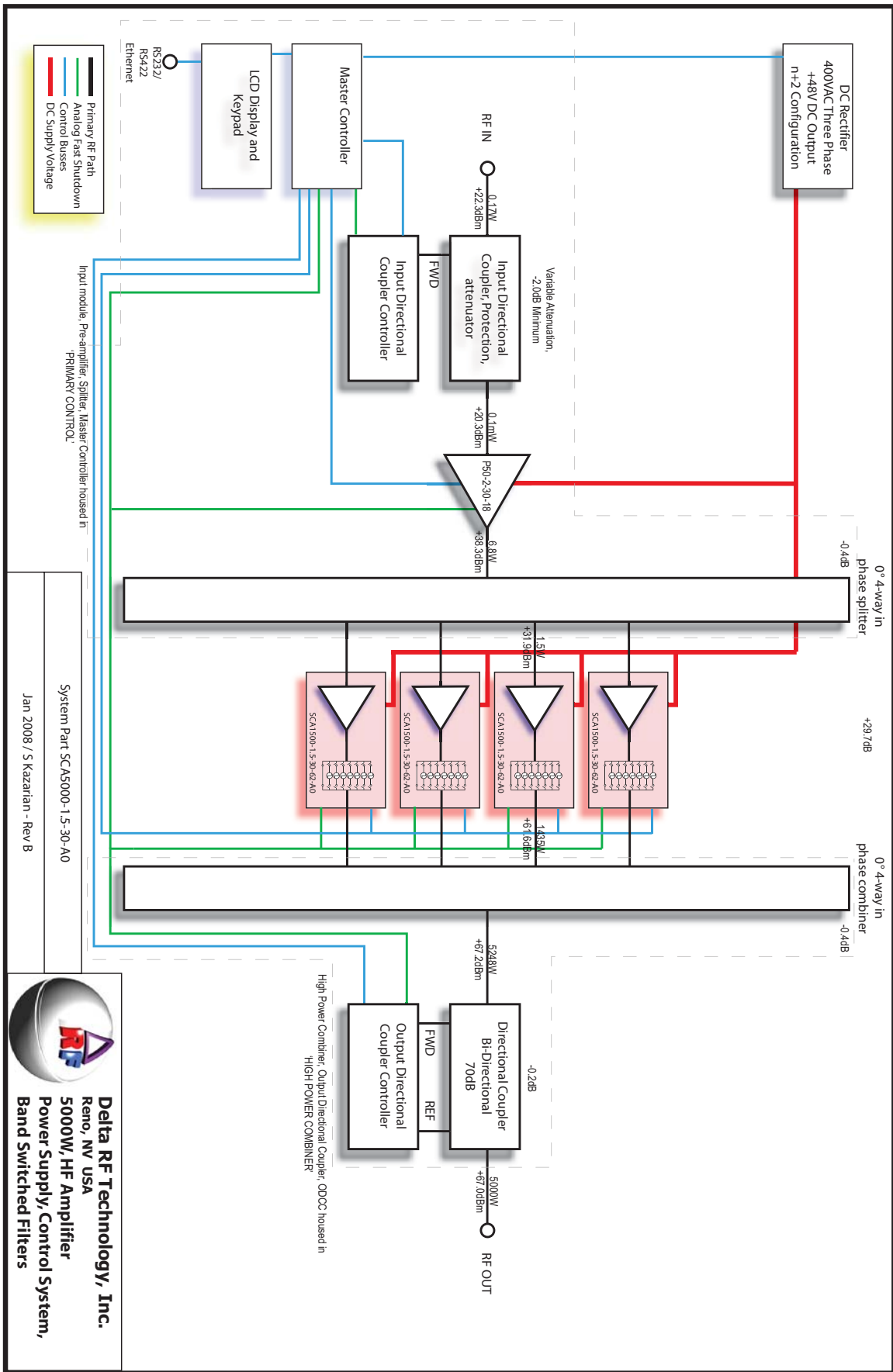
Absolute Maximum Ratings

Parameter	Value	Units	Notes
Operating Voltages	340 - 420	V AC	Three Phase, 47 - 63 Hz
Maximum Power Consumption	21000	W	
Maximum Current	35	AAC	220V / ea leg
Maximum Input Power	30	dBm	For normal operation at max power
Maximum Input Power	40	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		± 125	± 250	Watts	5000W, 50 Ω
Reflected Power Accuracy		± 62	± 125	Watts	500W, 50 Ω
Input Power Accuracy		± 2.0		dBm	
Forward Power Trip - Hardware	5500		6000	Watts	50 Ω
Reflected Power Trip - Hardware	1000		1250	Watts	Referenced to 50 Ω
Forward Power Trip - Software		5500		Watts	50 Ω
Reflected Power Trip - Software		750		Watts	Referenced to 50 Ω
Voltage - Driver, PA, PS		2	5	%	
Current - Driver, PA, PS		2	5	%	

- ◆ Standard Communications 10 Base-T Ethernet, Telnet interface. Windows based program optional.
- ◆ Optional RS-422, RS-232 Serial and / or Parallel interface
- ◆ Output Connector 7/8- EIA Flange
- ◆ Input Connector N-Female if no radio installed
- ◆ Interface Connector, RJ-45
- ◆ BITE Functions include Current, Voltage, Temperature, VSWR, Input Power, Output Power, Power Supply
- ◆ 14 Pin Serial / Parallel interface Bus - For integration with exciter / radio
- ◆ All interconnect RF and IO cables included
- ◆ Airflow from front of PA / PSU units and exhausts through the top of the rack
- ◆ AC Inputs are direct wire connections



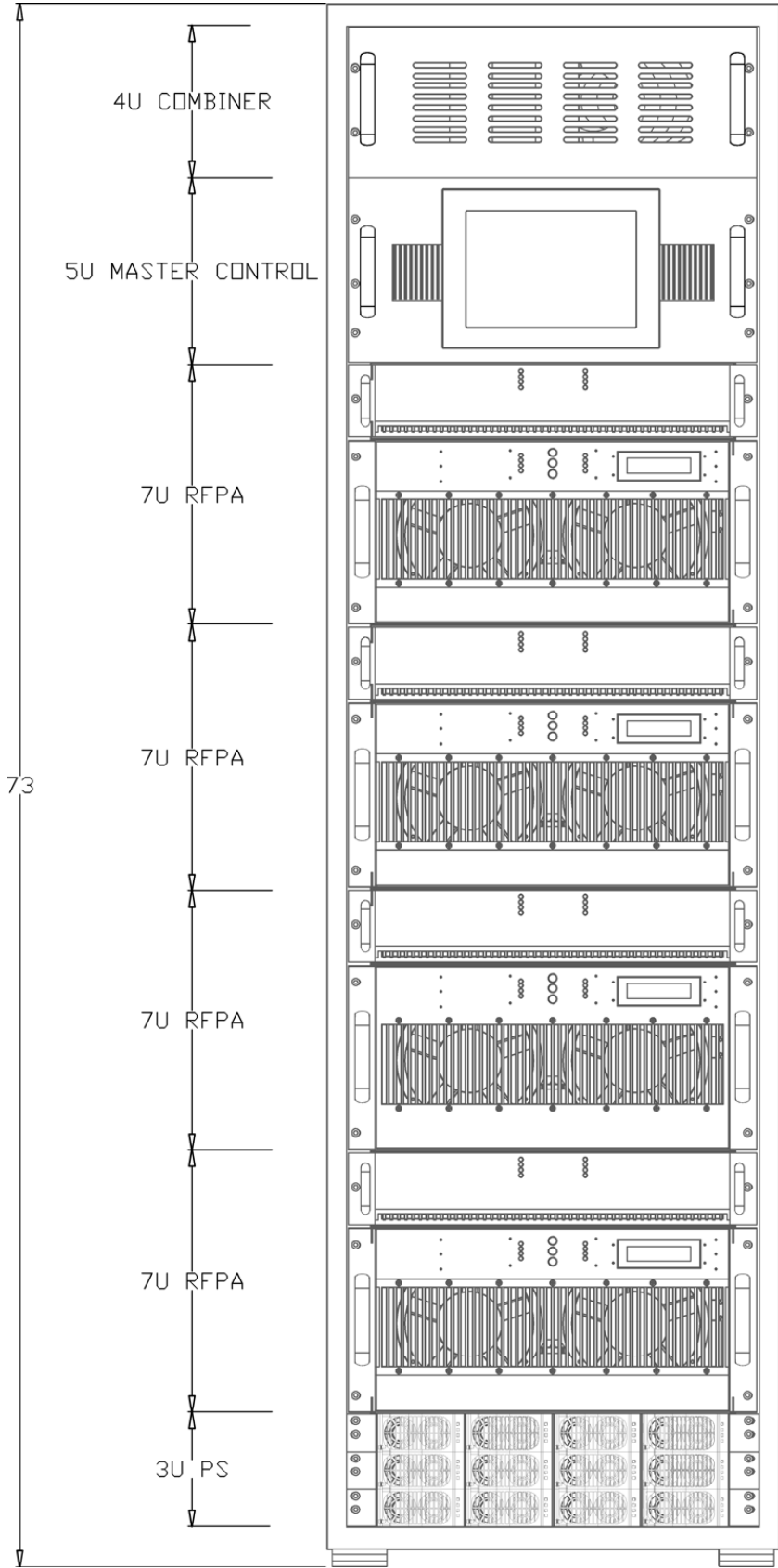


System Part SCA5000-1.5-30-A0
 Jan 2008 / S Kazarian - Rev B



Delta RF Technology, Inc.
 Reno, NV USA
5000W, HF Amplifier
Power Supply, Control System,
Band Switched Filters





Master Control:

- * Monitors system performance - Output Power, Reflected Power, Radio Status, System Temperature
- * Handles all status requests, logging and reporting
- * Allows for continuous power output control or discrete output power level
- * Advanced Error Trapping - to module level within each amplifier
- * Zoom in on status of each individual amplifier to module level, including
 - Power Amplifier
 - Power Supplies
 - Power Amplifier Combiner
 - Efficiency
 - Temperatures

Individual Amplifiers:

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
SCA5000-1.5-30-A0	Self Contained HF Amplifier, 5kW, 1.5 - 30 MHz	4831
Options		
-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.

The specifications contained herein are subject to change without notice. Delta RF Technology, Inc. assumes no liability for the use of this information. This data sheet and contents are the property of Delta RF Technology, Inc. © Delta RF Technology, Inc. 2008.

