

Revision 0.a Release Date January 2008

Revision Notes Initial release

Technical Specifications Summary

Frequency Range:	20 -100 MHz	Gain:	60dB
P1dB:	1200 Watts CW	Efficiency:	36%
Class:	AB	Temperature Range:	0 to 55°C
Supply Voltage:	220VAC, 1 Phase	Max VSWR:	3:1

Amplifier General Description

This three stage amplifier contains a MOSFET based driver and IPA and eight output MOSFET based PAs. An input directional coupler / detector assembly with integral PIN Diode Attenuator array protects the front end of the amplifier and provides the front end of the gain control loop. An output directional coupler feeds a UDCC, which is the detector assembly for the amplifier. The UDCC also houses a fast shut-down for emergency amplifier shutdown in the event of over power or high reflected power. The UDCC contains two detectors per channel, one for RMS reporting of power and to power the ALC loop, and a second channel tuned for high peak or pulse waveforms to protect the amplifier.

All amplifiers, splitter, combiner are mounted to a large central heatsink which is fan cooled. Two large fans pull air through the heat sink into the air box where it is exhausted at the rear of the cabinet. Airflow is restricted to the interior of the heatsink and power supplies. Power supply is externally mounted.

A PAB series controller runs the amplifier and processes all communications. The controller constantly monitors each of the PAs directly, as well as the driver, fans, temperature, and power supplies. A separate internal analog path takes care of fast shutdown and reports to the controller.

Amplifier Picture

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Parameter	Min	Typ	Max	Units	Notes
Frequency	20		100	MHz	
P1dB	1200			W, CW	Software limit 1100W CW
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		-25		dBc	For 2 tones, 10kHz spacing, 1.0kW PEP
Power Input		0		dBm	
Gain	60			dB	
Gain Variation			±2	dB	ALC off
Vsupply		48		V, DC	Module supply
Drain Current			64	A, DC	
Efficiency	31	36		%	Module - DC. 1kW CW output
Input VSWR			1.5:1		
Insertion Phase Variation		±5		°	Unit to unit
Spurious			-60	dBc	
Harmonic Distortion			-60	dBc	Above 120 MHz

All specifications valid for 50 Ω load impedance

Parameter	Min	Typ	Max	Units	Notes
Form Factor					19" IEC Rackmount Cabinet 5U Height (RFPA) 1U Height (PSU) 26" Depth
Weight		125		lbs	
Operating Temperature	0		55	°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
MTBF		10000		Hours	MIL-HDBK-217-F Calculation, Gm Env Var
Control Connector		DB-9 Female			Control, Communications, Status
Mains AC Connector		HBL-30			
RF Input Connector		SMA-Female			Rear Panel Standard
RF Output Connector		N-Female			Rear Panel Standard
Interface - Data		RS-232			Rear Panel Standard, optional RS-485

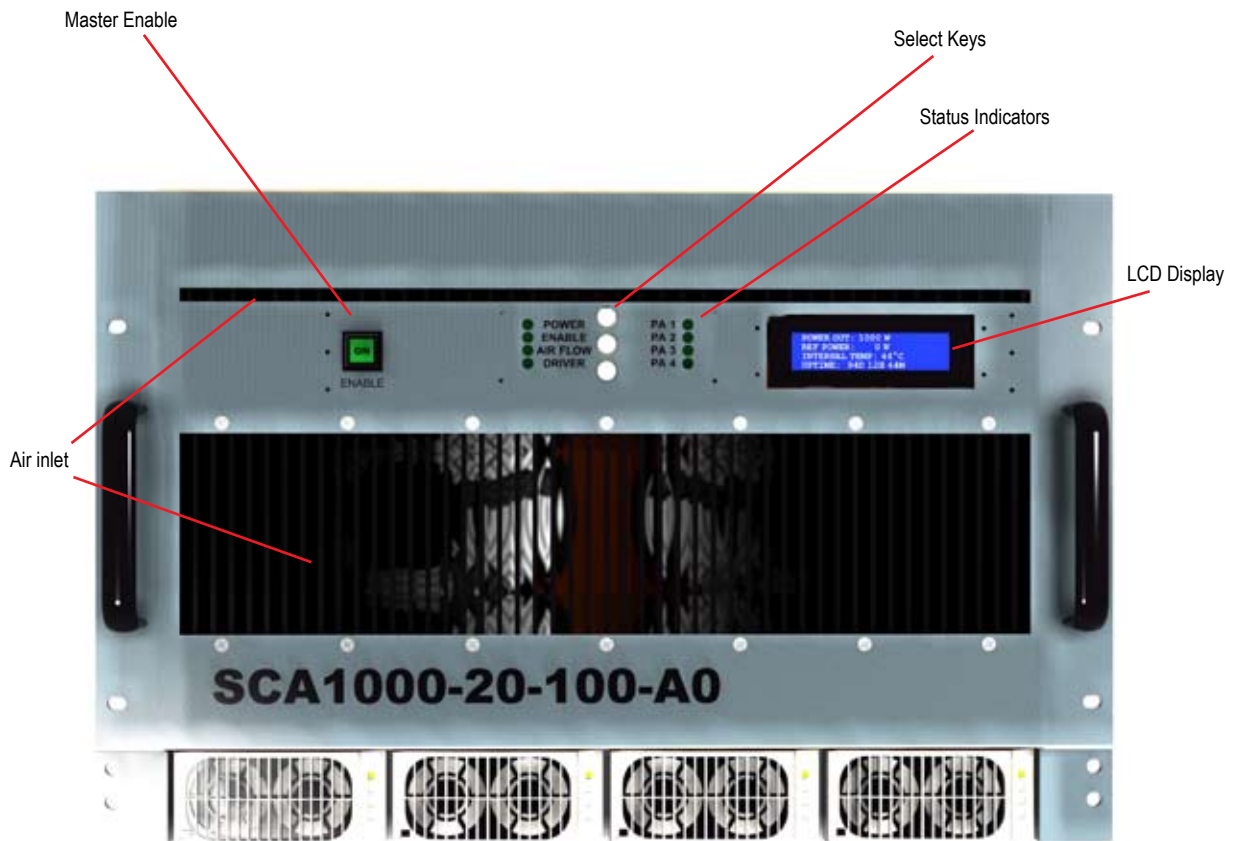
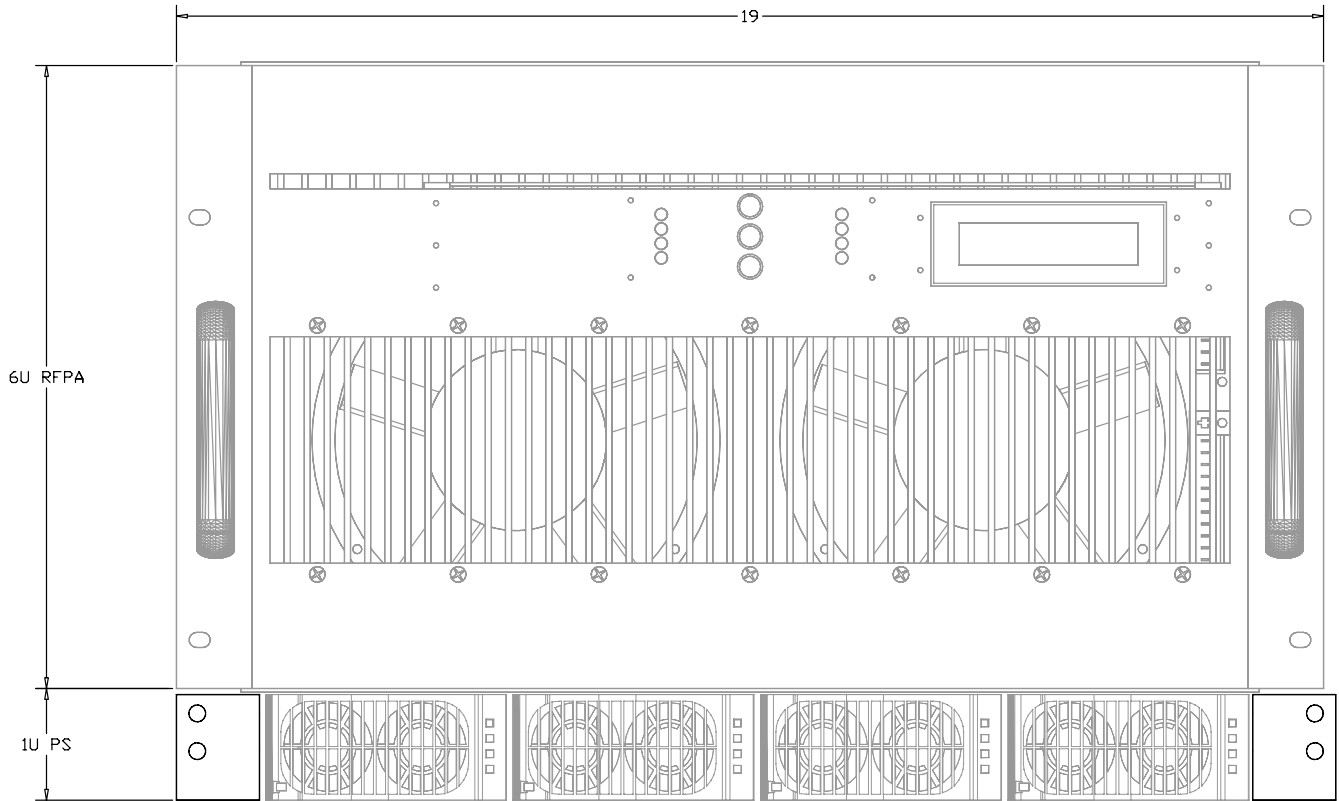
Environmental, Mechanical, Interface



Parameter	Value	Units	Notes
Operating Voltages	180 - 264	V AC	Single Phase, 47 - 63 Hz
Maximum Power Consumption	4500	kVA	
Maximum Current	21	A AC	220V
Maximum Input Power	20	dBm	For normal operation at max power
Maximum Input Power	30	dBm	No amplifier damage
Load mismatch survival	∞ : 1		

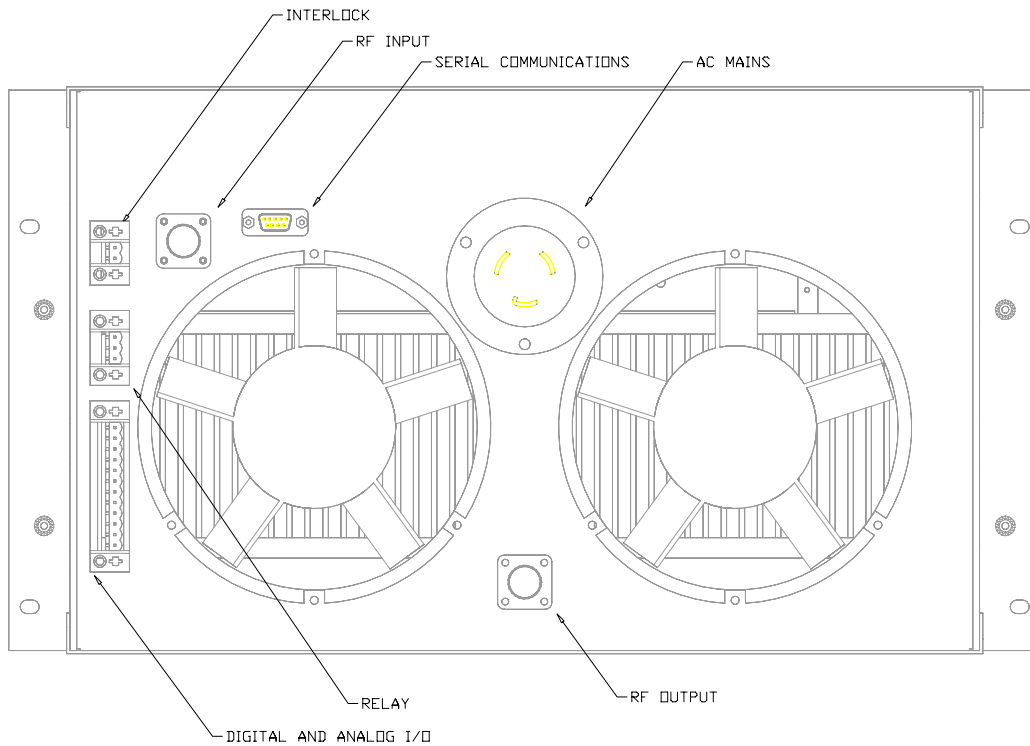
Parameter	Min	Typ	Max	Units	Notes
Detector Type	Logarithmic Amplifier, RMS				
ALC Modes	Constant Gain (ALC Disabled)				
	Constant Power				
Input Attenuator Range	0 - 10dB, continuous				
Forward Power Accuracy		±25	±50	Watts	1000W, 50Ω
Reflected Power Accuracy		±12	±25	Watts	150W, 50Ω
Input Power Accuracy		±2.0		dBm	
Forward Power Trip - Hardware	1200		1250	Watts	50Ω
Reflected Power Trip - Hardware	150		225	Watts	Referenced to 50Ω
Forward Power Trip - Software		1100		Watts	50Ω
Reflected Power Trip - Software		175		Watts	Referenced to 50Ω
Voltage - Driver, PA, PS		2	5	%	
Current - Driver, PA, PS		2	5	%	

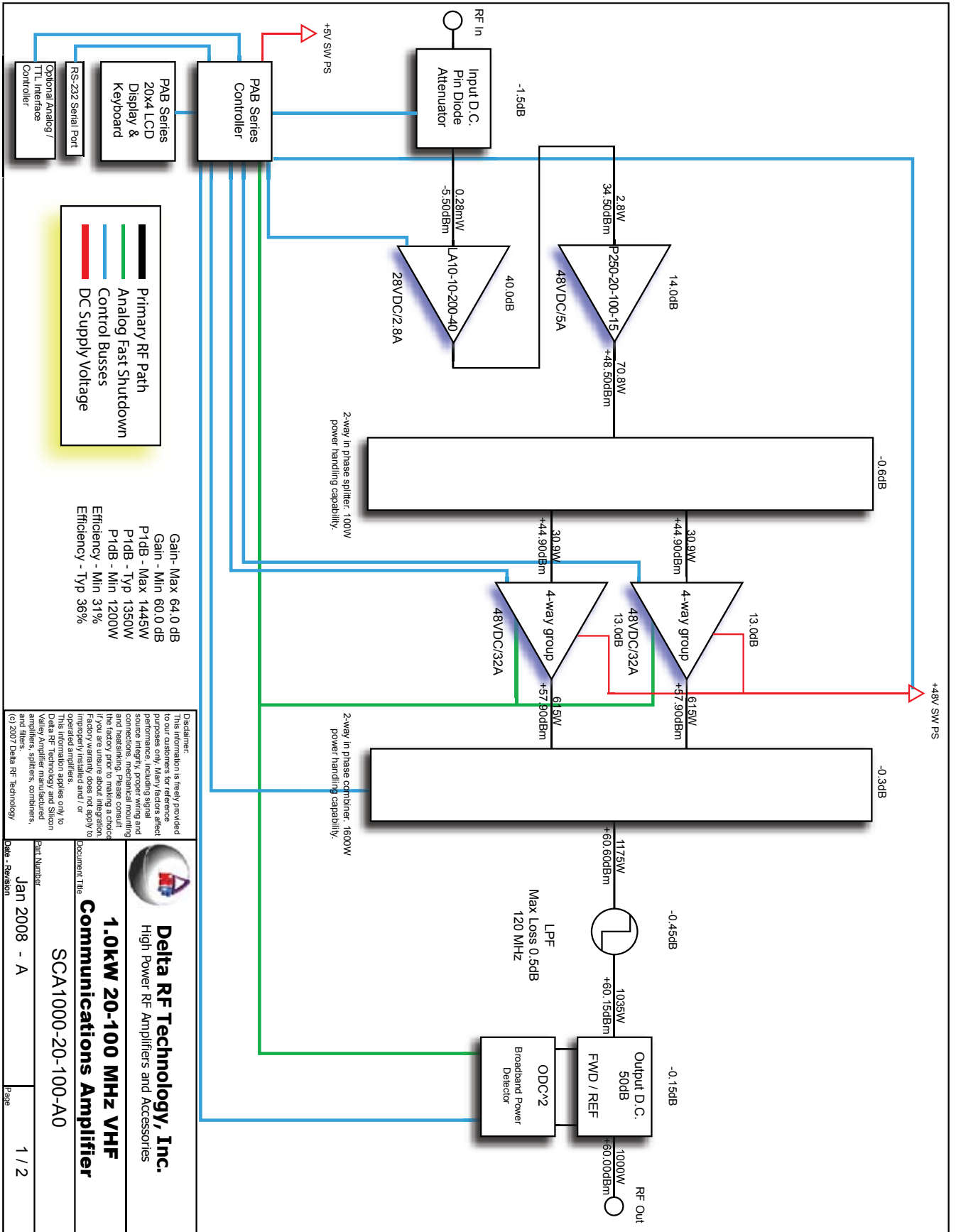


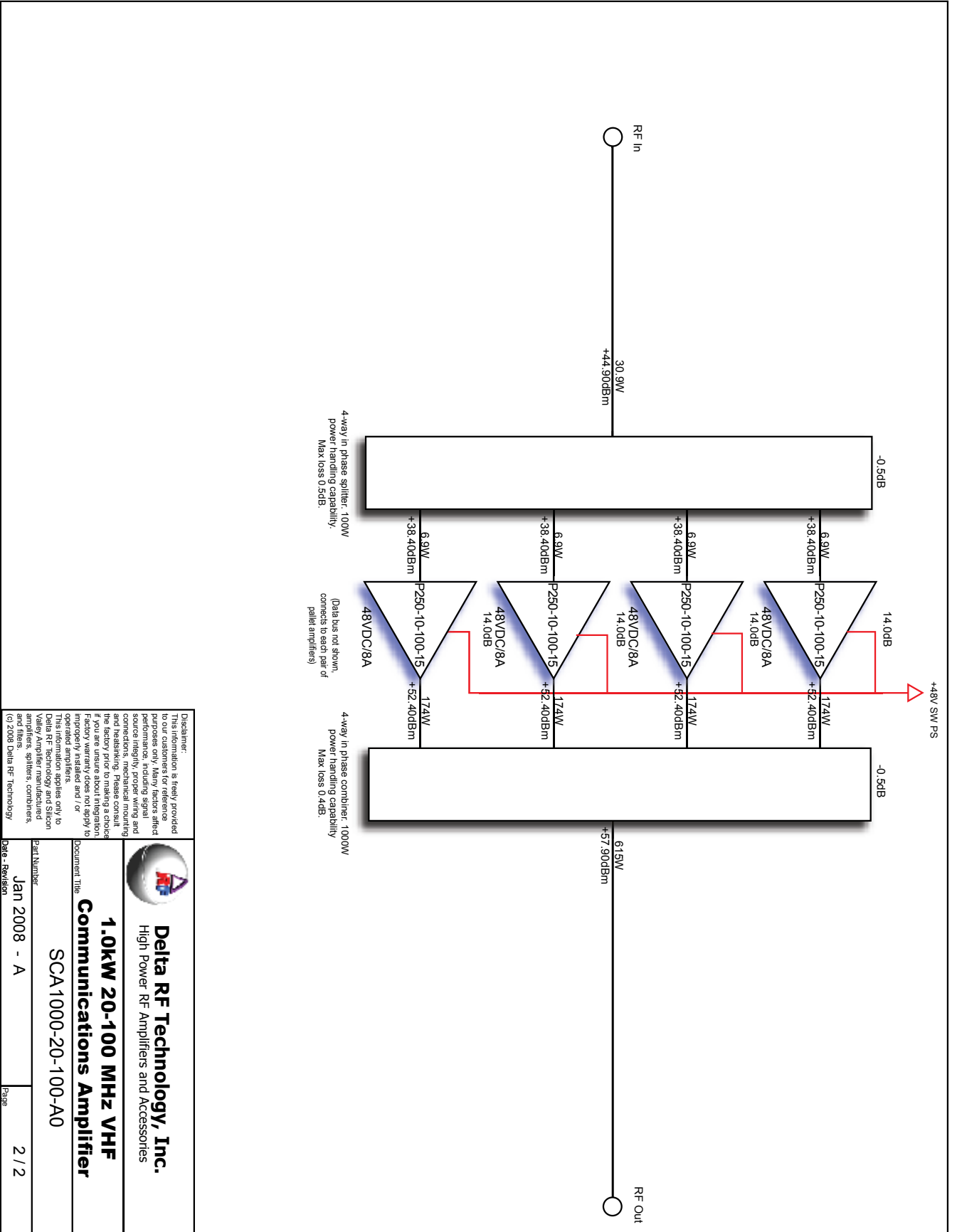




Output RF Sample port shall be added to this view, located TBD.







Delta RF Technology, Inc.
High Power RF Amplifiers and Accessories

1.0KW 20-100 MHz VHF Communications Amplifier

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SCA1000-20-100-A0

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Disclaimer:
This information is freely provided to our customers for reference purposes only. Many factors affect performance, including signal and connectors, mechanical mounting and heat sinking. Please consult the factory prior to making a choice if you are unsure about integration. Factory warranty does not apply to improperly installed and / or modified equipment.
This information applies only to Delta RF Technology and Silicon Valley Amplifier manufactured amplifiers, splitters, combiners, and mixers.
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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
- ◆ LPF 0 - through line (no filter)
- ◆ LPF x - sets x LPF band, 1- 8
- ◆ GAIN - Sets constant gain mode using last constant gain value programmed
- ◆ GAIN x - If not already in gain mode, sets to gain mode and sets gain to 'x'
- ◆ POWER - Sets constant power mode using last constant power value programmed
- ◆ POWER x - If not already in power mode, sets to power mode and sets power to 'x'

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



Ordering Information:

Order Code	Description	DRFT Reference
SCA1000-20-100-A0	1000W VHF amplifier, 20 - 100 MHz	5148
Options		
-T2	Extended Burn In	0271
-T3	Extended Data Collection	0272

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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