

Revision 0.a Release Date April 2008

Revision Notes Initial release

Technical Specifications Summary

Frequency Range:	86-108 MHz	Gain:	18dB
Pout:	1100 Watts CW	Efficiency:	75%
Class:	C	Temperature Range:	-20 to 60°C
Supply Voltage:	28V	Max VSWR:	3:1

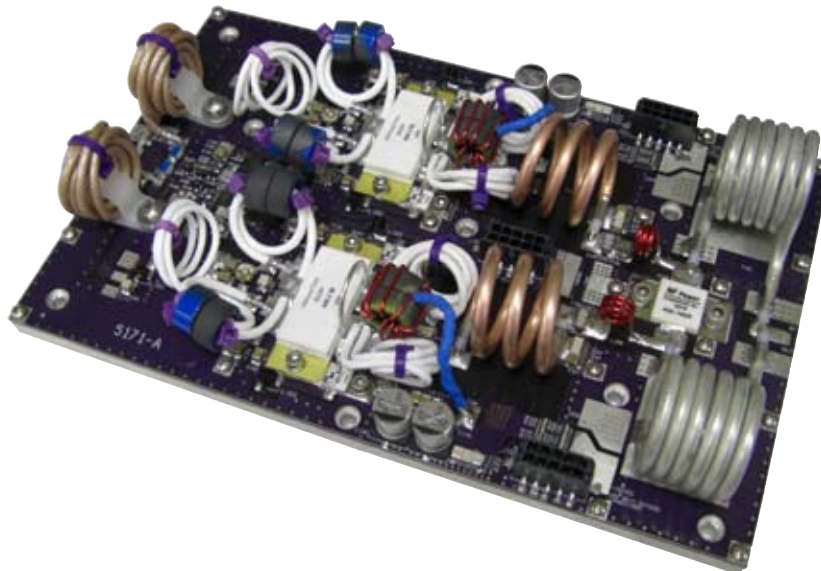
Amplifier General Description

The P1000-FM-18 pallet amplifier uses the latest generation gold metallized LDMOS transistors to offer an incredible balance of power density, efficiency, and value. Offering over 1100W of power capability, this pallet will allow the system integrator to build an inexpensive, compact, 1kW FM transmitter by adding only a directional coupler and output filter.

A standard heatsink version is available, along with a module which adds directional coupler, input power protection, low pass filter, and thermal trip.

Amplifier must be mounted to a heatsink with adequate airflow for proper operation.

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	86		108	MHz	
Pout	1000	1100		W, CW	
Psat			1250	W, CW	Amplifier is rated for this power into 1:1 load only
Linear Power Out		N/A		W	
Power Input		18		W, CW	1100W CW Output
Gain	17	18		dB	1100W CW
Vsupply	26	28	30	V, DC	
Drain Current		50		A, DC	1100W CW
Efficiency	72	78		%	1100W CW
Input VSWR			1.5:1		
Insertion Phase Variation		±5		°	Unit to unit
Gain Variation		±1.5		dB	Unit to unit
F2 Second Harmonic		-20		dBc	
F3 Third Harmonic		-15		dBc	
Baseplate Operating Temperature	-20		60	°C	1000W CW

Physical Dimensions 5.0" x 7.9" x 1.50"

All specifications valid for 50 Ω output load, $V_{sup} = +28.0VDC$, $I_{dq} = 0A$

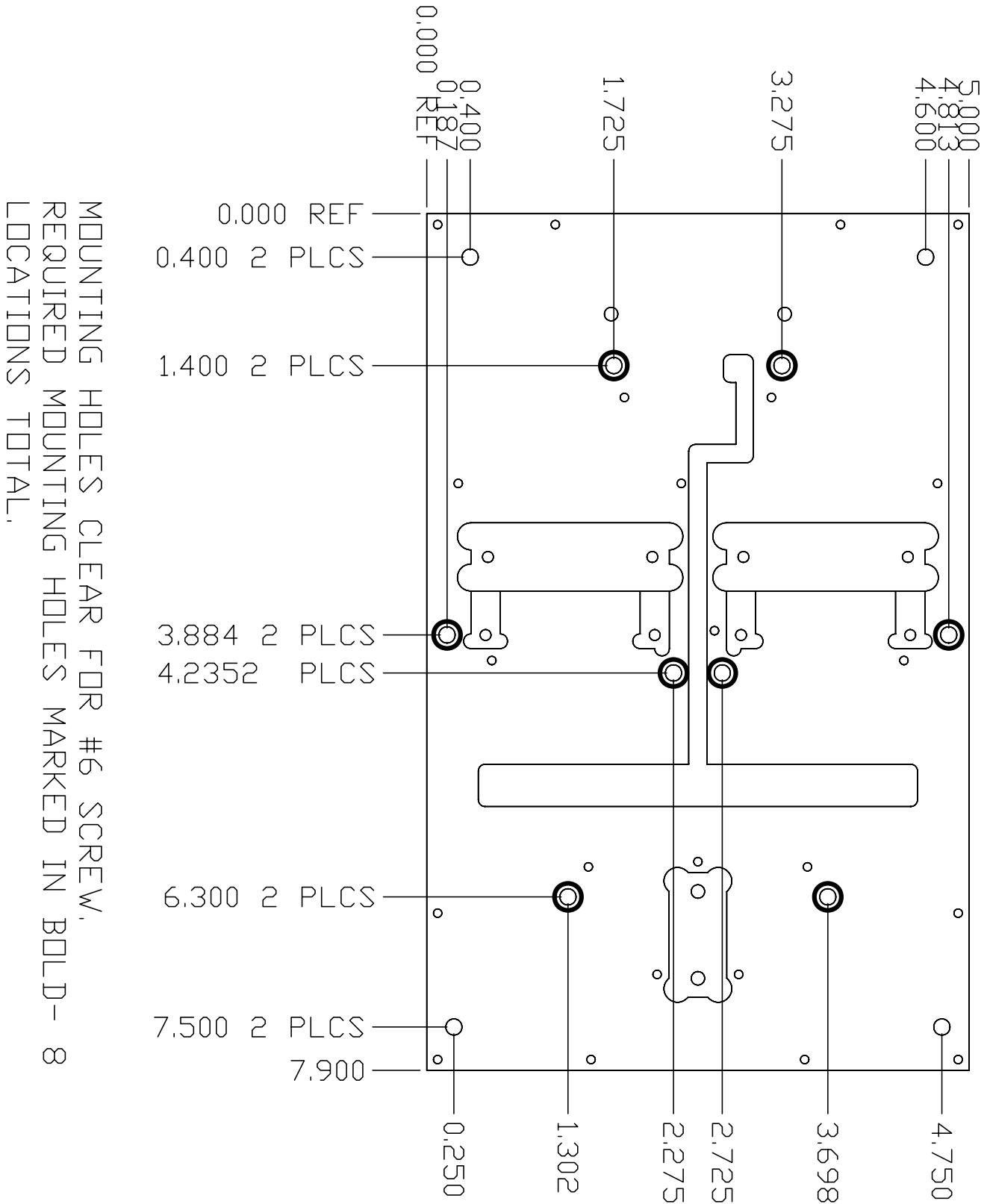
Absolute Maximum Ratings

Parameter	Value	Units	Notes
Maximum Operating Voltage	30	V, DC	
Stable Operating Voltage	26 - 30	V, DC	
Maximum Bias Current, Q100, Q101	0.5	A, DC	
Maximum Drain Current	60	A, DC	
Load Mismatch Survival	3:1		Current limited to 60A DC!
Storage Temperature	-20 to +85	°C	
Maximum Operating Baseplate Temp	60	°C	

Features, Auxillary Functions

- ◆ Temperature Controller - Analog Temperature Output
- ◆ High Temperature PA Power Reduction
- ◆ Current Sense, Each Transistor
- ◆ Connectorized Power and I/O





MOUNTING HOLES CLEAR FOR #6 SCREW.
 REQUIRED MOUNTING HOLES MARKED IN BOLD - 8
 LOCATIONS TOTAL.

It is highly recommended to use all mounting holes provided for a total of 12 screws.



Operating and integration instructions:

The pallet amplifier must be bolted to an appropriate heatsink. Under worst case conditions at maximum power, the pallet amplifier will dissipate 510 W of heat, typically 330 W. The heatsink and fan combination must be capable of keeping the heatsink mounting surface at or below 60°C with maximum expected inlet air temperature.

Make sure to use a thin even layer of thermal compound, such as Wakefield 120.

This is an extremely high power amplifier and the various RF components may radiate RF energy. It is highly recommended to shield the amplifier in a grounded metal box. Leave a minimum of 0.5" clearance on the top of the amplifier and to the sides.

There are three methods for applying DC power to the amplifier:

- 1) Solder 10 gauge wire - to pad labelled '+28VDC' in the center of the pallet amplifier. Use any ground screw to apply ground, or connect your ground connection directly to the heatsink on which the pallet amplifier is mounted. If ground connection wire is used, 10 gauge is recommended.
- 2) Using center plug - use all 10 pins with 18 gauge wire. These are all +Vsup connection. Use of Teflon Wire is highly recommended. Use any ground screw to apply ground, or connect your ground connection directly to the heatsink on which the pallet amplifier is mounted.

Using one center connector			
Power 3.0mm Micro Connector: MOLEX 43025-1000 MOLEX Pin 43030-0001, 43030-0007 AMP 1-794617-0 AMP Pin 794610, 794606	J100-1, 2, 3, 4, 5, 6, 7, 8, 9, 10	Vsup	Amplifier Vsup

- 3) Use two outer plugs using our standard power connector plug. Both connectors **must** be used.

Using two connectors, standard configuration			
Power 3.0mm Micro Connector: MOLEX 43025-1000 MOLEX Pin 43030-0001, 43030-0007 AMP 1-794617-0 AMP Pin 794610, 794606	J101-1, 2, 3, 8, 9	GROUND	Amplifier Ground
	J101-4,5,6,7	VSUP	Amplifier Vsup
	J101-10	CS	High Side Current Sense, Q103
	J102-2, 3, 8, 9, 10	GROUND	Amplifier Ground
	J102-4,5,6,7	VSUP	Amplifier Vsup
	J102-1	CS	High Side Current Sense, Q104

Whichever scheme is used, ensure that power supplies will current limit at 60 amperes. This pallet amplifier is fully capable of pulling 100A under adverse VSWR conditions and can damage internal wiring if allowed to reach this condition.

Connect RF INPUT and RF OUTPUT. Ensure output coax is rated to handle 1200W minimum at 108MHz.

A disable pad is included which is a TTL compatible control which when activated will reduce output RF power by approximately 200W. There is no on board disable function which will completely disable the amplifier. DO NOT PLACE A NEGATIVE VOLTAGE ON THIS PAD OR THE AMPLIFIER WILL BE DAMAGED.

Amplifier Startup and Operation

Apply Vsup to amplifier. It is desirable, but not necessary, to start the amplifier without RF. Apply RF after Vsup reaches +24V DC.



Ordering Information:

Order Code	Description	DRFT Reference
P1000-FM-18	1100W FM Class C pallet amplifier	5190
PAB1000-FM-18	1100W FM Class C amplifier module with heatsink	5191

Options

-A27	N Female Connectors In / Out	0217
-A12	Heat Sink Option	0202
-A13	Heat Sink Option with DC Fan, pre wired	0203
-A14	Ruggedized for vibration	0204
-A15	Wire harness, 1' length, 10 wires for pallet amplifier only (NON-FM)	0205
-A16	Wire harness, customer specified length for pallet amplifier only	0206
-A39	Wire harness, for single center connection, 1' length, 10 wires all red	0229
-T2	Extended Burn In	0271
-T3	Extended Data Collection	0272

Standard Pallet Options:

N Female Connectors, Input and Output. Stainless Body, Gold Center pin, 4-hole N bolted to pallet amplifier edge through bottom two holes located at amplifiers RF IN and RF OUT locations. All stainless steel hardware.

Enclosure- all aluminum machined enclosure available for most pallet amplifiers. Alodined aluminum, alloy 6061-T6. SMA Female input and output RF connectors. Supply voltage and ground through solder / feedthrough connections. Module must be bolted to appropriate heatsink.

Heat Sink - aluminum extruded heat sink, black anodized. Pallet amplifier or module will be bolted to heatsink. Customer will be required to provide adequate airflow.

Heat sink with fan - aluminum extruded heat sink as above, with included fan bolted to push air through the heat sink. Depending on heat requirements, a second fan may also be provided on the output of the unit.

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.

Power Connector - a 10 pin molex connector is used on all standard pallet amplifiers to supply +Vsup and Ground connections, as well as hi-side current shunts for current monitoring. Delta RF offers the mating connector with 1' wires - Red (Vsup), Black (Ground), Yellow (Current monitor). All wires are 18 gauge teflon insulated wires. Customer may optionally specify wire length and wire color.

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.

