

High Efficiency Power Amplifier HePA850

**Model: RF100306
(NTQA50UA)**

Operation Instruction

Date: January 9, 2006

Version. 1.2

Ref# : FCC ID: S8L-100306HEPA

IC ID: 2237F-RF100306

Introduction

This document presents description of the Andrew Corporation 850 Band HePA (High Efficiency Power Amplifier) amplifiers. The HePA850 amplifier is a high power, RF amplifier intended to provide signal amplification and conditioning. The HePA850 amplifier is compatible with GSM and EDGE air interfaces operating in U.S. domestic cell sites where FCC compliance is mandatory.

The Cell band (869 MHz to 894 MHz) HePA850 RF power amplifier is capable of amplifying a single carrier of different modulation types to a composite power level of 60Watts.

HePA850 Specifications

The HePA850 provide linear amplification of single-carrier signals in the cellular frequency band. The HePA850 have the following specifications:

Parameter	Specification
Operating RF Band	869-894MHz
In band RF gain	48dB (Tolerance ± 2 dB)
Input signal types	GSM or EDGE single carrier
Bandwidth	20dB Pass Bandwidth (Duplexer applied): 32MHz Occupied BW: GSM 248KHz & EDGE 245KHz
Input DC Power	-48 VDC, nominal
DC voltage input range	-38VDC to -58.5VDC
Input/Output Connector	50 Ohm /50Ohm
Rated Output Power @ -38VDC to -58.5VDC input	60W average for GSM/ 45W average for EDGE
DC-RF Efficiency	28%, rated output power, nominal input voltage
Physical dimensions	10" x 14" x 3"
Weight	< 15lbs
Cooling technique	External cooling when the Amplifier is placed in the customer frame.
Temperature Range	0°C to +60°C meeting specifications.

Table 1 HePA850 Specifications

Functional Blocks:

The Andrew HePA is comprised of the following functional areas:

- Preamplifier with unit gain control

This block gives to the unit its specified gain through 3 amplifier stages and helps keeping this gain constant over temperature through a variable attenuator, this one being controlled by the controller circuit.

- Amplifier power Final stage

This stage brings the signal to its desired high power level, it is the heart of the RF section of the unit. The unit power, linearity and efficiency directly come from this block.

– Power conversion and conditioning circuit

This block is made of a DC/DC converter and various voltage regulators to do the interface between the customer supply network and the internal functions of the unit. It provides all the voltages and signal interface to the internal blocks of the unit.

– Controller circuit

This block is the “intelligence” of the unit, it is based on the CPU and computes all the internal functions of the unit. These are the power up sequences, the performances compensation over temperature, manages the monitoring and control of the unit, it also records many events in the so called flight recorder .

– Communications circuit

The communication circuit is associated to the controller circuit to communicate with the outside world. It handles the customer specific protocol to bring in and out all monitoring and control commands.

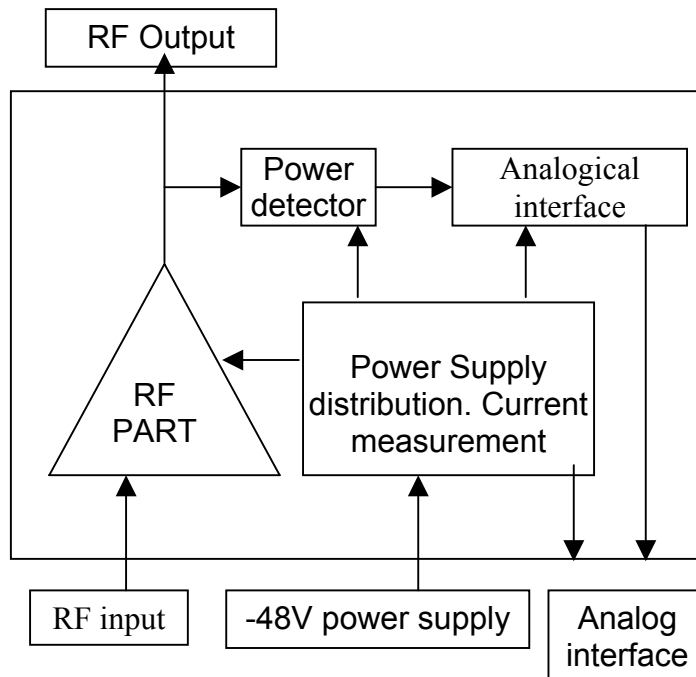


Figure PA Configuration

Inputs and Outputs:

The amplifier is powered from a DC supply voltage, which can range from -38VDC to -58.5VDC. The DC power is brought into the amplifier through a D-Sub connector located on the face plate of the amplifier.

A second multipoint connector located on the amplifier face plate is used for serial communication, monitoring and control. This connector is used both during factory tests and at the system level by the customer.

Alarms and operating state are communicated to the outside world through the serial communications bus and through the face plate LED.

The RF signal is brought into the amplifier through a female SMA type connector located on the face plate of the amplifier. The amplifier RF signal is brought out of the amplifier through a N type connector located on the face plate of the amplifier.

Control System:

A microprocessor controller is used to control the amplifier alarm system, control environmental compensation of the amplifier.

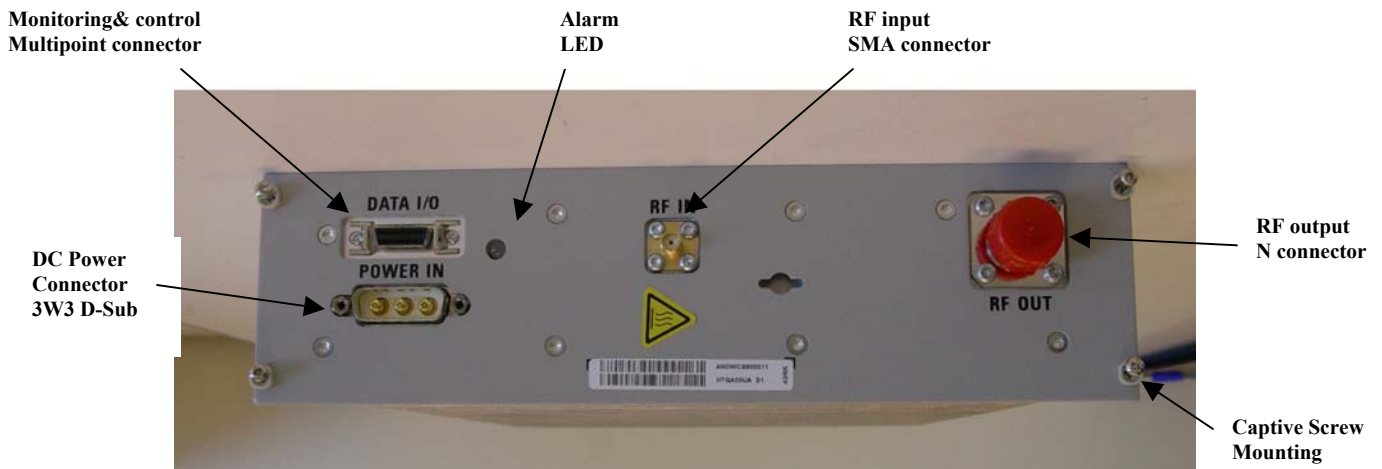


Figure HePA850 Face plate view



Figure HePA850 side view

The alarms are mapped to front panel LED behavior, as indicated:

- LED red =major alarm/reset/disable : the PA is not operational
- LED green = the PA is operational = synch present, no alarm, PA ready to amplify

The amplifier monitoring and control is also managed through a serial link and a customer specific protocol.

Installation and Operation Set-Up

The HePA850 is easy to operate and use, only requiring a special cables for DC power and serial bus control connection into the customer frame. RF input and output connections are done with industry standard SMA and N connectors.

FCC Statements:

FCC ID: S8L-100306HEPA

This devise complies with Part 2, 15 & 22 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

Warning

Changes of modifications not expressly approved by the manufacturer could void the user's authority to operate the equipments.

RF Exposure compliance is addressed at the time of licensing, as required by the responsible FCC Bureau(s), including antenna co-location requirements of 1.1307(b)(3).

IC Statements

1. Quality Norms :

The Testing of the equipment is carried out as the norms laid in IC standards.

2. Labeling :

HePA850 model : RF100306 (NTQA50UA) when sold in Canada will have

- (a) The certification number, prefixed by the term "IC: ", i.e. IC: 2237F-RF100306
- (b) The manufacturer's name, trade name or brand name, i.e. Andrew Corp
- (c) A model name or number, i.e. RF100306(NTQA50UA)
- (d) This device complies with RSS-131, RSS-102 of the IC Rules.

3. External Control

The HePA does not have any external controls accessible to the user for any adjustments, to operate in violation of the limits prescribed in this Standard. Furthermore, information on internal adjustments, reconfiguration or programmability of the device shall only be made available to service depots and agents of the equipment supplier and NOT to the public.

4. Exposure of Humans to RF Field : The equipment conform to RSS-102. RF Exposure compliance is also addressed at the time of licensing.

5. Multi carrier operation : Rated output power of this equipment is for single carrier operation.