

# HHA1 High Power Amplifier

## High Powered Analog FM Amplifier!



## Design Features

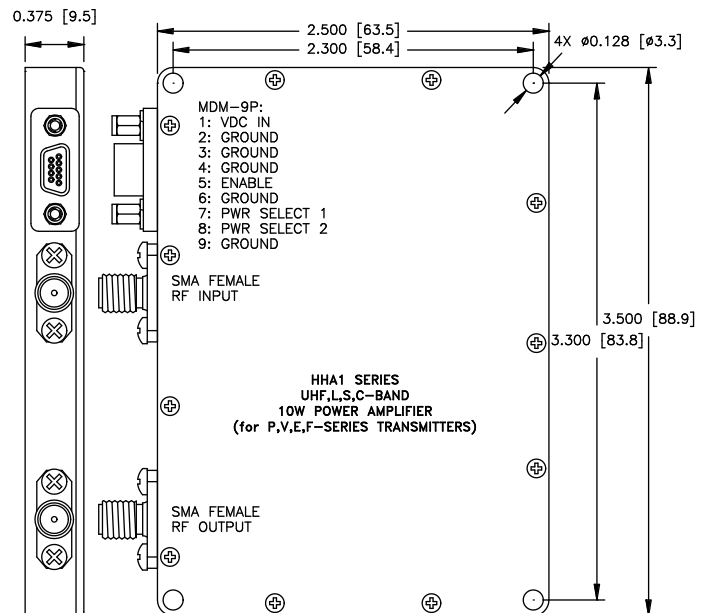
- 3.3 Cubic Inch Package (2.50"x3.50"x0.375")
- Weighs < 3.5 oz.
- Up to 10 Watts RF Output Power
- Up to 3 Selectable Power Modes
- Full Band Power Leveling
- Compatible with AMP FMT1, PLT1, PMT1, VST1, and EST1 Transmitters
- Dedicated PA Enable Pin
- Temperature Fold-Back
- J-STD-001D Class 3 Assembly (Medical/Aerospace)

## HHA1 Series

AMP's HHA1 Series 3.3 cubic inch High Power Amplifiers (HPAs) are designed to be mated with any of AMP's analog transmitters including the FMT1, PMT1, PST1, VST1, and EST1.

The HHA1 module provides up to 3 selectable output power levels including 2W, 5W, and 10W levels. Input and output RF power detection is used in conjunction with AMP's proprietary output power leveling circuitry and tuning algorithm to provide constant output power at all power levels across the frequency band.

With military telemetry heritage, HHA1 HPAs are designed to withstand harsh environments and are ideal for law enforcement, surveillance, UAV, UGV, Military, and other applications requiring efficient, high quality video/audio/data transmission in a compact, rugged package.



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## RF Characteristics

|                            |  |   |
|----------------------------|--|---|
| Frequency Range (Specify): | UHF:   | 340.0-399.9 MHz                             |
| (Other Ranges Available)   | 433 ISM:   | 433.0-434.8 MHz                             |
|                            | 868 ISM:   | 868.0-870.0 MHz                             |
|                            | 915 ISM:   | 902.0-928.0 MHz                             |
|                            | Lower L-Band:  | 1435-1535 MHz                               |
|                            | Upper L-Band:  | 1700-1850 MHz                               |
|                            | Lower S-Band:  | 2200-2399 MHz                               |
|                            | Upper S-Band:  | 2400-2499 MHz                               |
|                            | Full S-Band:   | 2200-2499 MHz                               |
|                            | Lower C-Band:  | 4400-4900 MHz                               |
|                            | Upper C-Band:  | 4900-4999 MHz                               |
|                            | Full C-Band:   | 4400-4999 MHz                               |
| Output Power (Specify):    | 2W, 5W, or 10W, Nominal  |   |
| Output Power, PA Disabled: | <+10 dBm   |   |
| Input Power (Specify):     | 250 mW (+/- 1dB), 500 mW (+/- 1dB), 1W (+/- 1dB), 2W (+/- 1dB)   |   |
| Power Modes (Specify):     | One (Fixed), Two (Specify), or Three (Specify), MDM-9P Pins 7 & 8, Open (10 k $\Omega$ pull up to 3.3 Vdc) = High, Ground (or <0.6 Vdc) = Low, see chart below for configuration |   |
| Output Impedance:          | 50 $\Omega$ Nominal, VSWR 2:1 Maximum  |   |
| Output Protection:         | UHF:   | None – 20:1 VSWR Indefinitely               |
|                            | L/S/C:   | Internal Isolator - Open/Short Indefinitely |
| Spurious Output:           | -13 dBm Maximum  |   |

## Power Requirements

|                             |   |
|-----------------------------|---|
| Input Voltage:              | +11 to +16 Vdc, Reverse Polarity Protected  |
| Current Draw (12V Typical): | 900mA for 2W, 1.5A for 5W, and 2.5A for 10W |
| PA Enable Control:          | Open = On, Ground (or <1.5 Vdc) = Off       |

## Mechanical

|                   |  |            |
|-------------------|--|------------|
| Material:         | CNC Machined T6061-T6 Aluminum             |            |
| Finish (Specify): | Nickel Plated or Gold Iridite              |            |
| Dimensions:       | 2.50" W x 3.50" L x 0.375" H               |            |
| Weight:           | <3.5 oz.                                   |            |
| Connectors:       | RF Input:                                  | SMA Female |
|                   | RF Output:                                 | SMA Female |
|                   | DC Supply, Power Select, PA Enable: MDM-9P |            |

## Environmental

|                          |   |
|--------------------------|---|
| Temperature (Operating): | -20°C to +60°C  |
| Acceleration:            | 100 g, 3 Axis   |
| Altitude:                | Unlimited   |
| Humidity:                | Up to 95% @ Any Temperature Forming Frost or Condensation |

| Output Power Configuration |                |              |
|----------------------------|----------------|--------------|
| Power Select 1             | Power Select 2 | Output Power |
| Ground                     | Ground         | Standby      |
| Ground                     | Open           | 2 W          |
| Open                       | Ground         | 5 W          |
| Open                       | Open           | 10 W         |

\* The HHA1 power amplifier does not require any configuring unless it includes optional multiple RF power output levels. If the HHA1 power amplifier is commanded to a power level with which the unit is not equipped, the unit will default to standby (disabled) until a valid power level command is applied.