

## High Power Pulsed Amplifier System 0.001-3MHz BNC Female / N Female Connectors, 2 Kilowatts Power

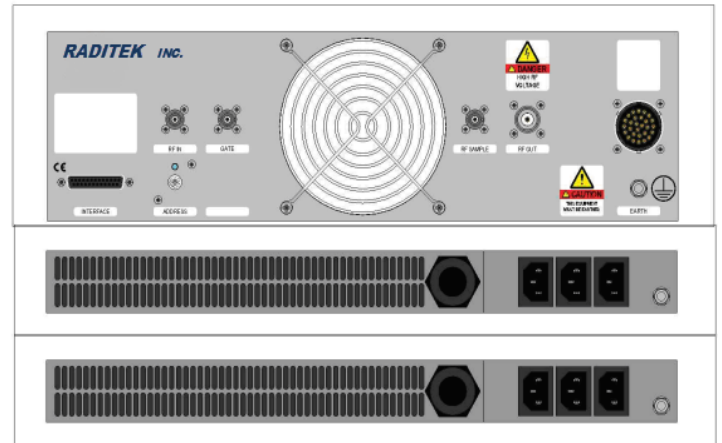
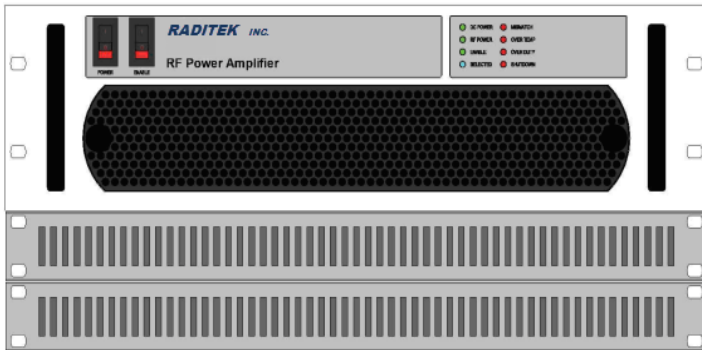
### Feature

The RRAMP-0.001-3M-BNC-Nf-2KW-PAS-t17 is a range of class AB RF power amplifiers covering the 10kHz to 3MHz frequency range

- Rugged, solid-state design – high reliability
- Extremely high phase and amplitude stability
- Very fast pulse rise/fall times
- High linearity
- Low power CW operation
- Very low interpulse noise
- Competitively priced
- Suitable for pulsed radar, NMR, MRI, NQR, EPR, ultrasound systems and other scientific applications.

### Applications

- NMR, MRI, EPR
- Radar
- Ultrasound
- Test & Measurement



### Order Examples: RAMP-0.001-3M-BNCf-Nf-2KW-PAS-t17

**Description:** (RF Power Amplifier, 0.001-3MHz, BNC female to N female Connector, 2 Kilowatts, Pulsed Amplifier System)

Parameter	Specifications
Power	2kW minimum <sup>1</sup>
P1dB	1.6kW minimum <sup>2</sup>
Type	Class AB MOSFET
Frequency	10kHz-3MHz <sup>3</sup>
Gain flatness	±1.5dB maximum (measured at 1/10th rated output power)
Max. duty cycle	20% <sup>4</sup>
Max. pulse width	100ms <sup>5</sup>
Rated power in CW mode	200W <sup>6</sup>
Pulse droop	0.5dB maximum <sup>7</sup>
Pulse rise and fall times	100ns typical using a pre-gate RF input signal
Gate delay	Rising edge: 800ns typical   Falling edge: 100ns typical <sup>8</sup>
Harmonics	Odd: -20dBc typical, -10dBc maximum Even: -30dBc typical, -20dBc maximum
Spurious	<-70dBc maximum
Output noise (blanked)	<10dB above thermal (1MHz bandwidth)
Phase change/power	<5O from -40dB to full power
Phase stability	<1O across 100ms pulse
Output sample	-50dB into 50 Ω (forward voltage sample)
Input/output impedance	50 Ω nominal
Load SWR	Tolerates at least 3:1 @ full rated power without shut down <sup>9</sup>

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Parameter	Specifications
Remote interface	Parallel status monitoring via 25 pin D connector <sup>10</sup> (See Descriptions on table below)
Connectors	RF output: N type      RF input, gate, sample: BNC <sup>11</sup>
Cooling	Forced air
Indicators	DC Power, RF Power, Enable, Selected, Over-temp, Over-duty, Mismatch, Shutdown
Gain control range	10dB minimum for 0-5V control voltage
RF drive	0dBm nominal, 10dBm for no damage
RF gate (blanking)	0-5V CMOS
Physical	19" W x 500mmD x 225mmH (5RU x 19" rack mounting), 35kg
Mains power	110-240V, 50-60Hz, single phase, 6kVA max. <sup>12</sup>
Compliance	CE
<b>Notes</b>	<ol style="list-style-type: none"> <li>1. PEP for input power of 1mW</li> <li>2. Minimum output power at 1dB gain compression</li> <li>3. The amp provides useful power outside this range, but performance is not guaranteed</li> <li>4. Duty cycle is internally limited in pulsed mode. Duty cycle limit increases to approx.30% for short pulses</li> <li>5. Maximum gate pulse width in pulsed mode (internally limited)</li> <li>6. CW mode automatically enabled at output power level less than approx. 10% of full rated power</li> <li>7. Measured at max. pulse width at nominal P1dB level</li> <li>8. Rising edge measured from rising edge of GATE pulse to 90% RF output voltage. Falling edge measured from falling edge of GATE pulse to 10% RF output voltage</li> <li>9. Self resetting protection shuts the amplifier off if the load SWR is excessive</li> <li>10. Pin out description See table below</li> <li>11. Other connector types available on request</li> <li>12. 6 x 3-pin IEC. Mains supply must include an earth</li> </ol>

PIN #	Function	Connector type: 25-pin D Female at rear of amplifier Description	
1	DC Power	Indicates that the unit has valid DC supply rails.	Digital status output. 0V=DC not OK, +5V=DC OK. The output resistance of this signal is 470 ohms.
2	RF Power	Indicates that the unit's output power is greater than approximately 1% of the nominal full output power.	Digital status output. 0V=RF Power<1%, +5V=RF Power>1%. The output resistance of this signal is 470 ohms.
3	Over Temp	Indicates if the unit is in an over-temperature condition.	Digital status output. 0V=Not Over temp, +5V=Over temp. The output resistance of this signal is 470 ohms.
4	Over Duty	Indicates if the unit is in an over-duty or over maximum pulse width condition. Over-duty means that the chosen combination of GATE duty-cycle and RF input level exceeds the preset limits. This applies to pulsed amplifiers only.	Digital status output. 0V=Not Over duty, +5V=Over duty. The output resistance of this signal is 470 ohms.
5	Gain Control	A control signal of 0 to +5V applied to this pin controls the gain of the amplifier over approximately 10dB range.	Analogue control input. 0V = maximum gain. +5V = minimum gain. For remote manual gain control, a 100-ohm potentiometer may be connected between the +5V AUX, 0V AUX, and GAIN CONTROL pins (wiper to the GAIN CONTROL pin).
6	Fold Back	This applies to CW amplifiers with gain fold back protection. When the load SWR exceeds a preset limit the amplifier gain is reduced and the FOLDBACK pin goes high.	Digital status output. 0V=Not in fold back, +5V=in fold back. The output resistance of this signal is 470 ohms.
7	VFWD	This is an analogue DC voltage representing a sample of the forward voltage at the output of the amplifier. Note that VFWD has an output impedance of 470-ohms, so take care not to load it down.	Analogue status output. 0V = No detected forward power 2.5V=> Full rated power (approximately). Output resistance approx 470 ohms.

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PIN #	Function	Connector type: 25-pin D Female at rear of amplifier Description	
8	VREFL	This is an analogue DC voltage representing a sample of the reflected voltage at the output of the amplifier. Note that VFWD has an output impedance of 470-ohms, so take care not to load it down.	Analog Status Output 0V = No detected reflected power 0.8V = Full rated power into a 2:1 load mismatch (approximately). Output resistance approx 470 ohms.
9	Fault	This is the logical OR of the status conditions DUTYLIMIT, OVERTEMP, MISMATCH. The output resistance of this signal is 470 ohms.	Digital status output. 0V=Not Fault, +5V=Fault
10	TRG/GT Select	Selects between TRIGGER mode and GATE mode for amplifiers with pulse shape generation capability. GATE mode (+5V or open) puts the amplifier in linear mode to enable external application of amplitude and phase modulation. The amplifier is biased on while the GATE/TRIGGER input is high. TRIGGER mode (0V) puts the amplifier in shape generation mode, where the positive edge of the GATE/TRIGGER input is used to start the internal shape and phase modulation system. <b>Implemented on selected amplifiers only.</b>	Digital control input. 0V=> Trigger mode. +5V or open=> Gate mode. Input resistance is 10K ohms.
11	Shutdown Status	SHUTDOWN STATUS provides read back of the SHUTDOWN control applied to pin 19, for safety interlock use.	Digital status output. 0V= Shutdown not asserted +5V=> Shutdown asserted. The output resistance of this signal is 470 ohms.
12	Not Used		
13	Not Used		
14	Enable	This indicates whether the unit has been Enabled such that it will respond to applied Gate and RF input signals.	Digital status output. 0V=Standby, +5V=Enabled The output resistance of this signal is 470 ohms.
15	Mismatch	This indicates whether the unit is experiencing a load mismatch condition.	Digital status output. 0V=Not Mismatched, +5V=Mismatched. The output resistance of this signal is 470 ohms.
16	PTT In	PTT is a "pull-down" version of GATE. The two signals are "ORed" internally.	Digital control input. Pull down to 0V AUX (pin 17) to transmit.
17	GND	This is a 0V DC return for the +5V AUX and status interface signals. Interface signals are referenced to this pin.	Reference Earth
18	+5V AUX	This is a +5V DC supply for use in external interface circuitry.	Aux. power supply output. ~4.7V, 100mA max.
19	Shutdown	SHUTDOWN is used to remotely prevent the amplifier from transmitting.	Digital Control Input. Pull down to 0V AUX (pin 17) to disable the amplifier. Input resistance = 1k ohm pull up.
20	GATE IN	This is an alternative input to the coaxial GATE input at the rear of the amplifier. The two inputs are connected together internally.	Digital Control Input. Input resistance = 10k ohm pull down.
21	GND	Same as pin 17	
22	PSU Adjust	This input may be pulled down to 0V AUX to reduce the main supply rail. Implemented on selected amplifiers to allow lower heat dissipation in CW mode.	Digital control input. High or open = default full-power pulsed operation. Low or pulled down = low-power CW operation. Input impedance = 1k ohm pull up.
23	Not Used		
24	Not Used		
25	Not Used		